

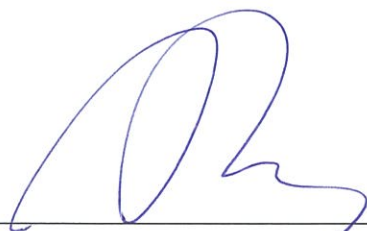
MTR Corporation Limited

HONG KONG SECTION OF GUANGZHOU –  
SHENZHEN – HONG KONG EXPRESS RAIL LINK  
(No. EP-349/2009/M)

**Commissioning Test Report  
for the Fixed Plant Noise at West Kowloon  
Station (WEK) and Public Transport  
Interchange (PTI)**

Verified by

:

  
\_\_\_\_\_  
(Eric Ching)

Position

:

Independent Environmental Checker

Date

:

15 Aug. 18

MTR Corporation Limited

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SHENZHEN – HONG KONG EXPRESS RAIL LINK  
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Certified by :   
(Raymond Wong)

Position : Environmental Team Leader

Date : 15 August 2018

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# Hong Kong Section of Guangzhou-Shenzhen- Hong Kong Express Rail Link (XRL)

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Commissioning Test Report for  
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(PTI)

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MTR Corporation

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August 2018

# Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link (XRL)

## Commissioning Test Report for the Fixed Plant Noise at West Kowloon Station (WEK) and Public Transport Interchange (PTI)

### 1 Introduction

The Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link (XRL) Project (hereinafter known as “XRL”) covers a 26km long underground rail line on dedicated tracks that run between the terminus in West Kowloon and the boundary at Huanggang, where connects with the XRL Mainland section. XRL Project also includes the construction of ventilation buildings, emergency access points, stabling sidings and maintenance facilities and an emergency rescue siding (ERS) (formerly known as rescue emergency station).

The Environmental Impact Assessment (EIA) Report (Register No.: AEIA-143/2009) was approved on 28 September 2009 by the Director of Environmental Protection (DEP) under the Environmental Impact Assessment Ordinance (EIAO). Following the approval of the EIA Report, an environmental permit (EP) was granted on 16 October 2009 (EP No: EP-349/2009) for the construction and operation of the Project. Variations of environmental permit (VEP) were subsequently applied and the latest Environmental Permit (EP No: EP-349/2009/M) (hereinafter known as “the EP”) was issued by Director of Environmental Protection (DEP) on 25 June 2018.

This report is prepared with reference to EP Condition 2.36, *“The Permit Holder shall, no later than two weeks before the commencement of the operation of the Project, deposit with the Director a Commissioning Test Report to confirm the compliance of the operational air-borne and ground-borne noise levels in accordance with the EIA Report and the application for variation of an environmental permit No. VEP-377/2012 and its attached documents”*.

A Commissioning Test Report for Fixed Plant Noise at West Kowloon Station (WEK) (formerly named as West Kowloon Terminus) and Public Transport Interchange (PTI) has been prepared to confirm the compliance of noise criteria in accordance with the fixed plant noise levels in accordance with the application for variation of an environmental permit No. VEP-407/2013 and its attached documents. This report presents the noise measurement methodology, results of noise measurement for the fixed plant noise sources installed at WEK and PTI, calculated Sound Power Levels from noise measurements having due regard to the characteristics of tonality, impulsiveness and intermittency.

## 2 Noise Criteria

### 2.1 Fixed Plant Noise Criteria in EIA

With reference to the IND-TM under the Noise Control Ordinance (NCO), the relevant acceptable noise levels (ANL) were determined based on the area sensitivity rating (ASR). The fixed plant noise criteria for the representative noise sensitive receivers (NSRs) were determined in EIA as follow (whichever is lower):

- 5dB(A) below the appropriate ANL set out in the IND-TM (the ANL-5dB(A) criterion); or
- The prevailing background noise levels where the prevailing background noise level is 5dB(A) below the appropriate ANL (i.e. ANL-5dB(A))

The noise criteria above were determined for planning purpose, while during operations; the fixed plant noise is controlled by a Noise Abatement Notices system governed by the NCO.

According to the fixed plant noise assessment in the Environmental Review Report (ERR)<sup>1</sup> for supporting the application for variation of an environmental permit No. VEP-407/2013, there would be two operation scenarios which are Day 1 Scenario (before occupation of West Kowloon Cultural District (WKCD)) and Day 2 Scenario (upon occupation of WKCD). Under Day 2 Scenario, the building structures with fixed plant noise sources of WEK located at WKCD would be fully integrated with the future WKCD development such that they would be encapsulated by future WKCD's building blocks. In such case, the noise sources as well as their locations would be different from Day 1 Scenario, and as the detailed design of WKCD has not been confirmed yet during the commissioning test, it is impossible to conduct assessment for the uncertain Day 2 Scenario. Therefore, this commissioning test has been conducted to confirm the noise compliance for Day 1 Scenario only. To ensure the compliance of fixed plant noise criteria for Day 2 Scenario upon occupation of the WKCD building(s) that would encapsulate VS 6, VS 7, PVS 6 and VS6-4, MTR will maintain continuous dialogue with the West Kowloon Cultural District Authority regarding the future noise sensitive development in WKCD. Relevant information of Day 2 Scenario to show compliance would be submitted, when the detailed design of WKCD development is confirmed and finalized. The fixed plant noise sources and the representative NSRs for Day 1 Scenario are shown in **Figure 2.1**.

The fixed plant noise criteria for the representative NSR in West Kowloon area under Day 1 Scenario are presented in **Table 2.1** below. Appropriate corrections in tonal, impulsive or intermittent characteristics should be applied to the results of noise measurement, where applicable, in accordance with IND-TM.

**Table 2.1 Summary of Fixed Plant Noise Criteria (Day 1 Scenario)**

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<sup>1</sup> Environmental Review Report – Design Changes in Mong Kok West Ventilation Building, West Kowloon Terminus and Its Associated Building Elements, June 2013.

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| NSR ID                                                                                | Description                                                   | Area Sensitivity Rating (ASR) <sup>(a)</sup> | Noise Criteria, $L_{eq,30min}$ dB(A) <sup>(a)</sup> |            |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------|----------------------------------------------|-----------------------------------------------------|------------|
|                                                                                       |                                                               |                                              | Day and Evening Time                                | Night-time |
| West Kowloon Station (WEK) and its associated building elements ( <b>Figure 2.1</b> ) |                                                               |                                              |                                                     |            |
| WK3                                                                                   | Man King Building, 46 - 48 Man Wui Street (South façade)      | B                                            | 60                                                  | 50         |
| WK3a                                                                                  | Man King Building, 46 - 48 Man Wui Street (West façade)       | B                                            | 60                                                  | 50         |
| WK4                                                                                   | Tower 6, Sorrento (East façade)                               | B                                            | 60                                                  | 50         |
| WK7a                                                                                  | Tsim Sha Tsui Fire Station                                    | C                                            | 65                                                  | 55         |
| WK8a                                                                                  | Tower 6, The Waterfront                                       | B                                            | 60                                                  | 50         |
| WK11a                                                                                 | Tower 3, The Austin (formerly named as Planned Development)   | B                                            | 60                                                  | 50         |
| WK12a                                                                                 | Tower 5, Grand Austin (formerly named as Planned Development) | B                                            | 60                                                  | 50         |
| WK14                                                                                  | Moon Tower, The Arch                                          | B                                            | 60                                                  | 50         |
| WK14a                                                                                 | Star Tower, The Arch                                          | B                                            | 60                                                  | 50         |
| WK18                                                                                  | Hindu Temple                                                  | C                                            | 65                                                  | 55         |

**Note:**

(a) ASR and noise criteria follow that defined in the relevant application for variation of environmental permit (VEP-407/2013) and its attached documents.

Major fixed plant noise sources at WEK and PTI include PTI ventilation, station ventilation, other electrical mechanical equipment, and tunnel ventilation, which are generally located inside plant rooms, except for fans in PTI. They would be operating concurrently under “normal scenario” for XRL operation during both daytime and evening time, and night-time period, as the worst case scenario. The worst case scenario was considered for compliance check against the fixed plant noise criteria and the noise measurement was conducted to confirm any characteristics of tonality, impulsiveness and intermittency at the identified NSRs.

**Table 2.2** below summarised the information of the fixed plant noise sources and the layout plans are shown in **Figure 2.2A – 2.2E**.

**Table 2.2 Summary of Fixed Plant Noise Sources in WEK and PTI**

| Location                                                                                       | Noise Source                  | Louvre ID                 |
|------------------------------------------------------------------------------------------------|-------------------------------|---------------------------|
| <i>West Kowloon Station (WEK) and Public Transport Interchange (PTI) (Figures 2.2A – 2.2E)</i> |                               |                           |
| West Kowloon Plant Building (WKP)                                                              | WKP (formerly named as TVS 3) | WKP-U1-E6PN-03A Section 1 |
|                                                                                                |                               | WKP-U1-E6PN-03A Section 2 |

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| Location                              | Noise Source                       | Louvre ID       |
|---------------------------------------|------------------------------------|-----------------|
|                                       |                                    | WKP-U1-E6PN-06A |
|                                       |                                    | WKP-U1-E6PN-04A |
|                                       |                                    | WKP-U1-E6VS-02  |
|                                       |                                    | WKP-U1-E6PN-09  |
|                                       | EAA (formerly named as VS 3 North) | WKT-VS3N-1      |
| West Kowloon Station (WEK)            | VS 3                               | WKT-VS3-1       |
|                                       |                                    | WKT-VS3-2       |
|                                       |                                    | WKT-VS3-3       |
|                                       |                                    | WKT-VS3-4       |
|                                       |                                    | WKT-VS3-5       |
|                                       |                                    | WKT-VS3-6A      |
|                                       |                                    | WKT-VS3-6B      |
|                                       |                                    | WKT-VS3-7       |
|                                       |                                    | WKT-VS3-8       |
|                                       | VS 2 East                          | WKT-VS2E-1      |
|                                       |                                    | WKT-VS2E-2      |
|                                       |                                    | WKT-VS2E-3      |
|                                       | VS 4                               | WKT-VS4-1       |
|                                       |                                    | WKT-VS4-3       |
|                                       |                                    | WKT-VS4-4       |
|                                       | VS 5                               | WKT-VS5-1       |
|                                       |                                    | WKT-VS5-2       |
|                                       |                                    | WKT-VS5-4       |
|                                       | VS 2 West                          | WKT-VS2W-1      |
|                                       |                                    | WKT-VS2W-2A     |
|                                       |                                    | WKT-VS2W-2B     |
|                                       |                                    | WKT-VS2W-2C     |
|                                       |                                    | WKT-VS2W-3      |
|                                       | VS 1                               | WKT-VS1-1       |
|                                       |                                    | WKT-VS1-2       |
|                                       |                                    | WKT-VS1-3       |
|                                       |                                    | WKT-VS1-4       |
| West Kowloon Cultural District (WKCD) | VS 6                               | WKT-VS6-1       |
|                                       |                                    | WKT-VS6-2A      |
|                                       |                                    | WKT-VS6-2B      |
|                                       |                                    | WKT-VS6-3A      |
|                                       |                                    | WKT-VS6-3B      |
|                                       |                                    | WKT-VS6-4       |
|                                       |                                    | WKT-VS6-5A      |
|                                       |                                    | WKT-VS6-5B      |
|                                       |                                    | WKT-VS6-6A      |
|                                       |                                    | WKT-VS6-6B      |
|                                       |                                    | WKT-VS6-7A      |
|                                       |                                    | WKT-VS6-7B      |
|                                       | PVS 6                              | WKT-PVS6-1      |

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| Location                           | Noise Source                    | Louvre ID                 |
|------------------------------------|---------------------------------|---------------------------|
|                                    |                                 | WKT-PVS6-2                |
|                                    |                                 | WKT-PVS6-3A               |
|                                    |                                 | WKT-PVS6-3B               |
|                                    |                                 | WKT-PVS6-4                |
|                                    | VS6-4 (formerly named as TVS 1) | WKT-G-G15VS-01A           |
|                                    |                                 | WKT-G-G15VS-01B           |
|                                    |                                 | WKT-G-G15VS-01C           |
|                                    |                                 | WKT-G-G15VS-03A Section 1 |
|                                    |                                 | WKT-G-G15VS-03A Section 2 |
|                                    | VS 7                            | WKT-G-D14VS-03A           |
|                                    |                                 | WKT-G-D14VS-04A           |
|                                    |                                 | WKT-VS7-1A                |
|                                    |                                 | WKT-VS7-1B                |
|                                    |                                 | WKT-VS7-2                 |
|                                    |                                 | WKT-VS7-3                 |
| Public Transport Interchange (PTI) | PTI Ventilation Shaft           | L-01                      |
|                                    |                                 | L-02                      |
|                                    |                                 | L-03                      |
|                                    |                                 | L-03a                     |
|                                    |                                 | L-06                      |
|                                    |                                 | L-07                      |
|                                    |                                 | L-08                      |
|                                    |                                 | L-08a                     |
|                                    |                                 | L-10                      |
|                                    |                                 | L-11                      |
|                                    |                                 | L-12                      |
|                                    |                                 | L-13                      |
|                                    |                                 | L-14                      |
|                                    |                                 | L-15a                     |
|                                    |                                 | L-15b                     |
|                                    |                                 | L-21                      |
|                                    |                                 | L-22                      |
|                                    |                                 | L-23                      |
|                                    |                                 | L-24                      |
|                                    |                                 | L-28                      |
|                                    |                                 | L-29                      |
|                                    |                                 | L-30                      |
|                                    |                                 | L-31                      |

## 3 Methodology

### 3.1 Noise Measurement for the Fixed Plants

Noise measurements to obtain the noise levels of the fixed plants were undertaken by Supreme Acoustics Research Limited, GAS Joint Venture, Gammon-Leighton Joint Venture and Wilson Acoustics Ltd. The commissioning tests were carried out by qualified persons

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possessing at least 7 years of noise control experience and a corporate member of Hong Kong Institute of Acoustics or equivalent in accordance with S3.22 of the XRL EM&A Manual.

#### 3.1.1 Methodology

Three measurement methods, namely Method 1 (at or near NSR), Method 2 (Far Field) and Method 3 (Near Field), have been developed based on NCO-TM, basic acoustic principles and *ISO 3746-2010: Acoustics – Determination of sound power levels and sound energy levels of noise sources using sound pressure – Survey method using an enveloping measurement surface over a reflecting plane*, respectively. Given the fixed plant noise sources are steady, all proposed methods could be adopted for all types of fixed plant source depending on the site environment/constraints that might affect the possibility to obtain valid results, considerations including but not limited to:

- Background noise with less influence to the measured noise levels
- Free of obstacles between measurement location and noise source
- Accessibility and Safety Concerns

For WEK and PTI, considering the background noise dominated by the road traffic noise from Jordan Road, Lin Cheung Road, Road D1A, Austin Road West, and Canton Road were immediately in front of the NSRs; obtaining valid results using Method 1 was considered unlikely. As such, only Method 2 and Method 3 were considered applicable. Method used for each louvre is presented in Appendix A3. Details of the measurement methodology are shown in **Appendix A1**.

#### Method 1 – Measuring Sound Pressure Level at NSR or Near NSR

- Measurement at NSR or near NSR at distance  $D$  away from the louvre, where  $D$  was at least two times the largest dimension  $b$  of the louvre and rounded up to integer, i.e.:  $D \geq 2b$
- The microphone was pointing toward the louvre and three measurements were taken when the noise source from the louvre was switched ON
- Background noise level was taken when the noise source from louvre was switched OFF
- The sound pressure level (SPL) at NSR or near NSR was determined by the following equation:  
$$\text{Background corrected } L_p = L_p + BG - [20\log D + 8] \text{ (if applicable) } + \text{façade correction (if applicable)}$$

Where

$L_p$  is the average  $L_{eq,1min}$  of all measurements, in dB(A);

$BG$  is the background correction factor, in dB(A);

$D$  is separation between the center of louvre or surface of the plant and the microphone, in metres.

#### Method 2 – Measuring Sound Power Level by Far Field Method for Louvres or for Plants

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- The microphone was positioned at the perpendicular distance  $D$  away from the center of the louvre or the surface of the plant, where  $D$  was at least two times the largest dimension  $b$  of the louvre or plant and rounded up to integer, i.e.:  $D \geq 2b$
- The microphone was pointing toward the center of the louvre/combined louvre area or the center the plant; and three measurements were taken when the noise source from the louvre was switched ON
- Background noise level was taken when the noise source from the louvre or plant was switched OFF
- The sound power level (SWL) of the louvre or the plant was determined, based on basic acoustic principles, by the following equation:

$$L_w = L_p + 20\log D, \text{center} + 8 + BG$$

Where

$L_p$  is the average  $L_{eq,1min}$  of all measurements, in dB(A);

$D, \text{center}$  is separation between the center of louvre or plant and the microphone, in metres;

$BG$  is the background correction factor, in dB(A).

#### Method 3 – Measuring Sound Power Level by Near Field Method for Louvres or for Plants

- A right parallelepiped hypothetical measurement box for each louvre or each surface of a plant was determined according to ISO 3746, with each side being spaced a distance  $D$  from the corresponding side of the louvre or plant
- Each of the 5 planes of the measurement box was subdivided into equal-sized rectangular grids, the length of each side of the grids should be less than or equal to 3 times of distance  $D$ , i.e. grid length  $\leq 3D$
- The microphone was pointing toward the center of each grid, and a measurement was taken for each grid during the noise source from the louvre was switched ON
- Background noise level was taken when the noise source from louvre or plant was switched OFF
- The SWL of the louvre or the plant was determined by the following equation:

$$L_w = L_p + 10\log(S) - K_{1A} - K_{2A}$$

Where

$L_p$  is the averaged measured  $L_{eq}$  of all measurement points, in dB(A);

$S$  is the total surface area over the measurement box (total 5 planes), in  $m^2$ ;

$K_{1A}$  is the background correction factor as described in ISO 3746:2010, in dB(A);

$K_{2A}$  is the environmental correction for sound absorption and reflection as described in ISO 3746:2010, in dB(A).

Except for Method 3, which was adopted with reference to ISO 3746; the noise sources measured using Method 1 or Method 2 were considered steady if the difference between the maximum and minimum  $L_{eq}$  is less than or equal to 1dB(A), ie,  $\leq 1dB(A)$ ; average  $L_{eq}$  was

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therefore considered. Otherwise, the maximum Leq would be adopted for SWL determination as a conservative approach.

#### 3.1.2 Measurement Equipment

The sound level meters and calibrators used for noise measurements are listed in **Table 3.1**. The instruments complied with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) or equivalent international standards. Calibration certificates are shown in **Appendix A2a**.

**Table 3.1 Noise Measurement Equipment**

| Equipment         | Model      | Serial Number |
|-------------------|------------|---------------|
| Sound Level Meter | Rion NL-52 | 00564841      |
|                   | Rion NL-31 | 00593586      |
|                   | SVAN 955   | 15234         |
|                   | SVAN 958   | 20890         |
|                   | SVAN 958   | 59120         |
|                   | SVAN 958   | 59121         |
|                   | SVAN 959   | 11228         |
| Calibrator        | Rion NC-74 | 34984065      |
|                   | SV30A      | 29088         |

Before and after each series of measurements, a calibration check was carried out on the sound level meter by the calibrator. The difference between the readings made before and after each series of measurements shall be less than or equal to 1.0 dB.

#### 3.1.3 Measurement Schedule

The noise measurements were carried out during daytime, evening time and night-time periods, where the fixed plant items were operated steadily and continuously at their noisiest operating mode under normal scenario. The noise measurement schedule is shown in **Table 3.2**.

**Table 3.2 Measurement Schedule**

| Location | Date                 | Daytime and Evening Time / Night-time |
|----------|----------------------|---------------------------------------|
| PTI      | 10 – 11 May 2018     | Night-time                            |
|          | 20 May 2018          | Daytime and Evening Time              |
|          | 30 May 2018          | Daytime and Evening Time              |
|          | 30 – 31 May 2018     | Night-time                            |
| WEK      | 29 – 30 May 2018     | Night-time                            |
|          | 31 May – 1 June 2018 | Night-time                            |
|          | 5 – 6 June 2018      | Night-time                            |
|          | 14-15 June 2018      | Night-time                            |
|          | 21-22 June 2018      | Night-time                            |

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| Location | Date                | Daytime and Evening Time / Night-time |
|----------|---------------------|---------------------------------------|
|          | 23-24 June 2018     | Night-time                            |
|          | 25-26 June 2018     | Night-time                            |
|          | 26-27 June 2018     | Night-time                            |
|          | 27-28 June 2018     | Night-time                            |
|          | 30 June-1 July 2018 | Night-time                            |
|          | 1-2 July 2018       | Night-time                            |
|          | 6-7 July 2018       | Night-time                            |
|          | 9-10 July 2018      | Night-time                            |
|          | 18-19 July 2018     | Night-time                            |
|          | 25-26 July 2018     | Night-time                            |

### 3.2 Noise Measurement to Confirm Any Characteristics of Tonality, Impulsiveness and Intermittency at NSRs

#### 3.2.1 Measurement Equipment

The sound level meters and calibrators used for noise measurements are listed in **Table 3.3**. The instruments complied with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) or equivalent international standards. Calibration certificates are shown in **Appendix A2b**.

**Table 3.3 Noise Measurement Equipment**

| Equipment         | Model           | Serial Number |
|-------------------|-----------------|---------------|
| Sound Level Meter | B&K 2250        | 2551242       |
|                   | B&K 2250        | 2551244       |
|                   | B&K 2250        | 2718890       |
|                   | B&K 2250-L      | 2741137       |
|                   | B&K 2250-L      | 2701819       |
|                   | B&K 2250-L      | 2701830       |
|                   | B&K 2250-L      | 2718884       |
|                   | NTI Audio M2230 | 6240          |
| Calibrator        | B&K 4231        | 1858983       |
|                   | B&K 4231        | 2725557       |

#### 3.2.2 Measurement Parameters

With reference to the IND-TM, the noise measurement was conducted at the representative NSRs for  $L_{Aeq(30min)}$ , in one-third octave band under the worst case scenario, i.e., “normal scenario” during night-time period at which with minimal influence from traffic noise.

The fixed plant noise sources will be operated steadily and continuously, and therefore no intermittency and impulsiveness are expected at the NSRs. However, the characteristics of intermittency and impulsiveness will be recorded, if any, based on observation during measurement.

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2 sets of background noise level,  $L_{Aeq}(5min)$ , and in one-third octave band, were measured at each measurement location when all fixed plant noise sources were not in operation.

#### 3.2.3 Measurement Location and Date

Based on the representative NSRs as listed in **Table 2.1** for WEK and PTI, some of the representative NSRs were selected for noise measurement. The selected representative NSRs include WK3a, WK4, WK7a, WK8a, WK11, WK12a, WK14 and WK14a. WK18 is a planned NSR and thus no measurement was conducted at this planned NSR for checking of any characteristics of tonality, impulsiveness and intermittency. The measurement location is shown in **Figure 2.1**.

The noise measurement was carried out at the selected existing representative NSRs (**Table 4.3** refers) on 6 and 7 Jul 2018 during which the fixed plant items were operated steadily and continuously at their noisiest operating mode under normal scenario.

## 4 Measurement Results

### 4.1 The Noise Levels of Fixed Plant Noise Sources

The noise levels measured under the worst case scenario are determined and presented in **Table 4.1**. Details of the measurement results are shown in **Appendix A3**.

**Table 4.1 Summary of Sound Power Levels for Fixed Plants**

| Location | Noise Sources                      | Louvre ID                 | Calculated SWL $L_{Aeq}$ , dB(A) |
|----------|------------------------------------|---------------------------|----------------------------------|
| WKP      | WKP(formerly named as TVS 3)       | WKP-U1-E6PN-03A Section 1 | 82                               |
|          |                                    | WKP-U1-E6PN-03A Section 2 | 80                               |
|          |                                    | WKP-U1-E6PN-06A           | 69                               |
|          |                                    | WKP-U1-E6PN-04A           | 83                               |
|          |                                    | WKP-U1-E6VS-02            | 66                               |
|          |                                    | WKP-U1-E6PN-09            | 74                               |
|          | EAA (formerly named as VS 3 North) | WKT-VS3N-1                | 80                               |
| WEK      | VS 3                               | WKT-VS3-1                 | 67                               |
|          |                                    | WKT-VS3-2                 | 67                               |
|          |                                    | WKT-VS3-3                 | 72                               |
|          |                                    | WKT-VS3-4                 | 72                               |
|          |                                    | WKT-VS3-5                 | 69                               |
|          |                                    | WKT-VS3-6A                | 66                               |
|          |                                    | WKT-VS3-6B                | 67                               |
|          |                                    | WKT-VS3-7                 | 65                               |
|          |                                    | WKT-VS3-8                 | 66                               |

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| Location | Noise Sources                            | Louvre ID                    | Calculated SWL $L_{Aeq}$ , dB(A) |
|----------|------------------------------------------|------------------------------|----------------------------------|
|          | VS 2 East                                | WKT-VS2E-1                   | 72                               |
|          |                                          | WKT-VS2E-2                   | 69                               |
|          |                                          | WKT-VS2E-3                   | 69                               |
|          | VS 4                                     | WKT-VS4-1                    | 79                               |
|          |                                          | WKT-VS4-3                    | 73                               |
|          |                                          | WKT-VS4-4                    | 74                               |
|          | VS 5                                     | WKT-VS5-1                    | 70                               |
|          |                                          | WKT-VS5-2                    | 92                               |
|          |                                          | WKT-VS5-4                    | 79                               |
|          | VS 2 West                                | WKT-VS2W-1                   | 75                               |
|          |                                          | WKT-VS2W-2A                  | 68                               |
|          |                                          | WKT-VS2W-2B                  | 70                               |
|          |                                          | WKT-VS2W-2C                  | 70                               |
|          |                                          | WKT-VS2W-3                   | 76                               |
|          | VS 1                                     | WKT-VS1-1                    | 67                               |
|          |                                          | WKT-VS1-2                    | 72                               |
|          |                                          | WKT-VS1-3                    | 72                               |
|          |                                          | WKT-VS1-4                    | 75                               |
| WKCD     | VS 6                                     | WKT-VS6-1                    | 77                               |
|          |                                          | WKT-VS6-2A                   | 60                               |
|          |                                          | WKT-VS6-2B                   | 62                               |
|          |                                          | WKT-VS6-3A                   | 62                               |
|          |                                          | WKT-VS6-3B                   | 66                               |
|          |                                          | WKT-VS6-4                    | 75                               |
|          |                                          | WKT-VS6-5A                   | 76                               |
|          |                                          | WKT-VS6-5B                   | 76                               |
|          |                                          | WKT-VS6-6A                   | 65                               |
|          |                                          | WKT-VS6-6B                   | 70                               |
|          |                                          | WKT-VS6-7A                   | 69                               |
|          |                                          | WKT-VS6-7B                   | 63                               |
|          | PVS 6                                    | WKT-PVS6-1                   | 63                               |
|          |                                          | WKT-PVS6-2                   | 68                               |
|          |                                          | WKT-PVS6-3A                  | 69                               |
|          |                                          | WKT-PVS6-3B                  | 73                               |
|          |                                          | WKT-PVS6-4                   | 72                               |
|          | VS6-4<br>(formerly<br>named as<br>TVS 1) | WKT-G-G15VS-01A              | 75                               |
|          |                                          | WKT-G-G15VS-01B              | 76                               |
|          |                                          | WKT-G-G15VS-01C              | 74                               |
|          |                                          | WKT-G-G15VS-03A<br>Section 1 | 72                               |
|          |                                          | WKT-G-G15VS-03A<br>Section 2 | 73                               |
|          | VS 7                                     | WKT-G-D14VS-03A              | 81                               |
|          |                                          | WKT-G-D14VS-04A              | 78                               |
|          |                                          | WKT-VS7-1A                   | 77                               |

## Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link (XRL)

### Commissioning Test Report for the Fixed Plant Noise at West Kowloon Station (WEK) and Public Transport Interchange (PTI)

| Location | Noise Sources         | Louvre ID  | Calculated SWL $L_{Aeq}$ , dB(A) |
|----------|-----------------------|------------|----------------------------------|
| PTI      | WKT-VS7-1B            | WKT-VS7-1B | 74                               |
|          |                       | WKT-VS7-2  | 69                               |
|          |                       | WKT-VS7-3  | 80                               |
|          | PTI Ventilation Shaft | L-01       | 83                               |
|          |                       | L-02       | 79                               |
|          |                       | L-03       | 81                               |
|          |                       | L-03a      | 80                               |
|          |                       | L-06       | 75                               |
|          |                       | L-07       | 69                               |
|          |                       | L-08       | 72                               |
|          |                       | L-08a      | 69                               |
|          |                       | L-10       | 86                               |
|          |                       | L-11       | 84                               |
|          |                       | L-12       | 84                               |
|          |                       | L-13       | 90                               |
|          |                       | L-14       | 88                               |
|          |                       | L-15a      | 86                               |
|          |                       | L-15b      | 82                               |
|          |                       | L-21       | 75                               |
|          |                       | L-22       | 76                               |
|          |                       | L-23       | 78                               |
|          |                       | L-24       | 78                               |
|          |                       | L-28       | 72                               |
|          |                       | L-29       | 79                               |
|          |                       | L-30       | 75                               |
|          |                       | L-31       | 83                               |

A compliance check against the fixed plant noise criteria at NSRs was conducted. The cumulative noise levels from noise sources were assessed to ensure the compliance with the noise criteria. **Table 4.2** show the results, details of the calculation are also given in **Appendix A3**.

**Table 4.2 Cumulative Fixed Plant Noise Levels at Representative NSRs under Day 1 Operation**

| NSR ID | Description                                            | Cumulative SPL, dB(A) |            | Noise Criteria, dB(A) |            | Compliance (Y/N)     |            |
|--------|--------------------------------------------------------|-----------------------|------------|-----------------------|------------|----------------------|------------|
|        |                                                        | Day and Evening Time  | Night-time | Day and Evening Time  | Night-time | Day and Evening Time | Night-time |
| WK3    | Man King Building, 46-48 Man Wui Street (South facade) | 46                    | 46         | 60                    | 50         | Y                    | Y          |

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### Commissioning Test Report for the Fixed Plant Noise at West Kowloon Station (WEK) and Public Transport Interchange (PTI)

| NSR ID | Description                                           | Cumulative SPL, dB(A) |                    | Noise Criteria, dB(A) |            | Compliance (Y/N)     |            |
|--------|-------------------------------------------------------|-----------------------|--------------------|-----------------------|------------|----------------------|------------|
|        |                                                       | Day and Evening Time  | Night-time         | Day and Evening Time  | Night-time | Day and Evening Time | Night-time |
| WK3a   | Man King Building, 46-48 Man Wui Street (West facade) | 48                    | 48                 | 60                    | 50         | Y                    | Y          |
| WK4    | Tower 6, Sorrento (East facade)                       | 47                    | 47                 | 60                    | 50         | Y                    | Y          |
| WK7a   | Tsim Sha Tsui Fire Station                            | 41                    | 41                 | 65                    | 55         | Y                    | Y          |
| WK8a   | Tower 6, The Waterfront                               | 46                    | 46                 | 60                    | 50         | Y                    | Y          |
| WK11a  | Tower 3, The Austin                                   | 45                    | 45                 | 60                    | 50         | Y                    | Y          |
| WK12a  | Tower 5, Grand Austin                                 | 47                    | 47                 | 60                    | 50         | Y                    | Y          |
| WK14   | Moon Tower, The Arch                                  | 41                    | 41                 | 60                    | 50         | Y                    | Y          |
| WK14a  | Star Tower, The Arch                                  | 41                    | 41                 | 60                    | 50         | Y                    | Y          |
| WK18   | Hindu Temple                                          | 55                    | N/A <sup>(a)</sup> | 65                    | 55         | Y                    | Y          |

**Note:**

(a) No sensitive use at WK18 during night-time period.

#### 4.2 The Characteristics of Tonality, Impulsiveness and Intermittency at NSRs

Noise measurement to confirm any characteristics of tonality, impulsiveness and intermittency at the identified NSRs were conducted under the normal scenarios during night-time period. Measurement results are summarised in **Table 4.3** below. Two sets of noise measurements,  $L_{Aeq(30min)}$ , in one-third octave band, were carried out to confirm that the difference in the measured noise levels with and without operation of fixed plant noise sources were less than 3.0 dB(A). That means fixed plant noise sources are not considered as significant noise sources at the NSRs.

Noise measurements at the selected representative NSRs were dominated by road traffic noise; characteristics of tonality, impulsiveness and intermittency due to the fixed plant noise sources from fixed plant noise sources in West Kowloon was not noticeable during the measurement. Detailed results of noise measurements are shown in **Appendix A4**.

**Table 4.3 Noise measurement Results at NSR Under Scenario 1**

## Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link (XRL)

### Commissioning Test Report for the Fixed Plant Noise at West Kowloon Station (WEK) and Public Transport Interchange (PTI)

| NSR   | Time Period | Measured Noise Level $L_{Aeq(30min)}$ , dB(A), (measurement time) | Averaged Background Level $L_{Aeq(5min)}$ , dB(A), (measurement time) | Difference between Measured Noise Level and Background Level, dB(A), (< 3 or >= 3) |
|-------|-------------|-------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------------------|
| WK3a  | Night-time  | 54.9 (23:46-00:16)                                                | 55.1 (01:13-1:34)                                                     | < 3                                                                                |
|       |             | 54.3 (00:22-00:52)                                                |                                                                       |                                                                                    |
| WK4   | Night-time  | 60.4 (00:02-00:32)                                                | 59.5 (01:17-01:27)                                                    | < 3                                                                                |
|       |             | 60.2 (12:32-01:02)                                                |                                                                       |                                                                                    |
| WK7a  | Night-time  | 56.2 (23:52-00:22)                                                | 54.4 (01:20-01:41)                                                    | < 3                                                                                |
|       |             | 56.0 (00:23-00:53)                                                |                                                                       |                                                                                    |
| WK8a  | Night-time  | 58.4 (23:52-00:22)                                                | 57.3 (01:24-01:34)                                                    | < 3                                                                                |
|       |             | 56.9 (00:22-00:52)                                                |                                                                       |                                                                                    |
| WK11  | Night-time  | 58.5 (23:54-00:24)                                                | 56.7 (01:16-01:36)                                                    | < 3                                                                                |
|       |             | 58.0 (00:24-00:54)                                                |                                                                       |                                                                                    |
| WK12a | Night-time  | 52.4 (23:53-00:23)                                                | 50.0 (01:13-01:33)                                                    | < 3                                                                                |
|       |             | 51.4 (00:23-00:53)                                                |                                                                       |                                                                                    |
| WK14  | Night-time  | 56.0 (23:51-00:22)                                                | 54.5 (01:12-01:33)                                                    | < 3                                                                                |
|       |             | 54.3 (00:22-00:52)                                                |                                                                       |                                                                                    |
| WK14a | Night-time  | 56.4 (00:00-00:30)                                                | 56.1 (01:13-01:33)                                                    | < 3                                                                                |
|       |             | 56.0 (00:30-01:00)                                                |                                                                       |                                                                                    |

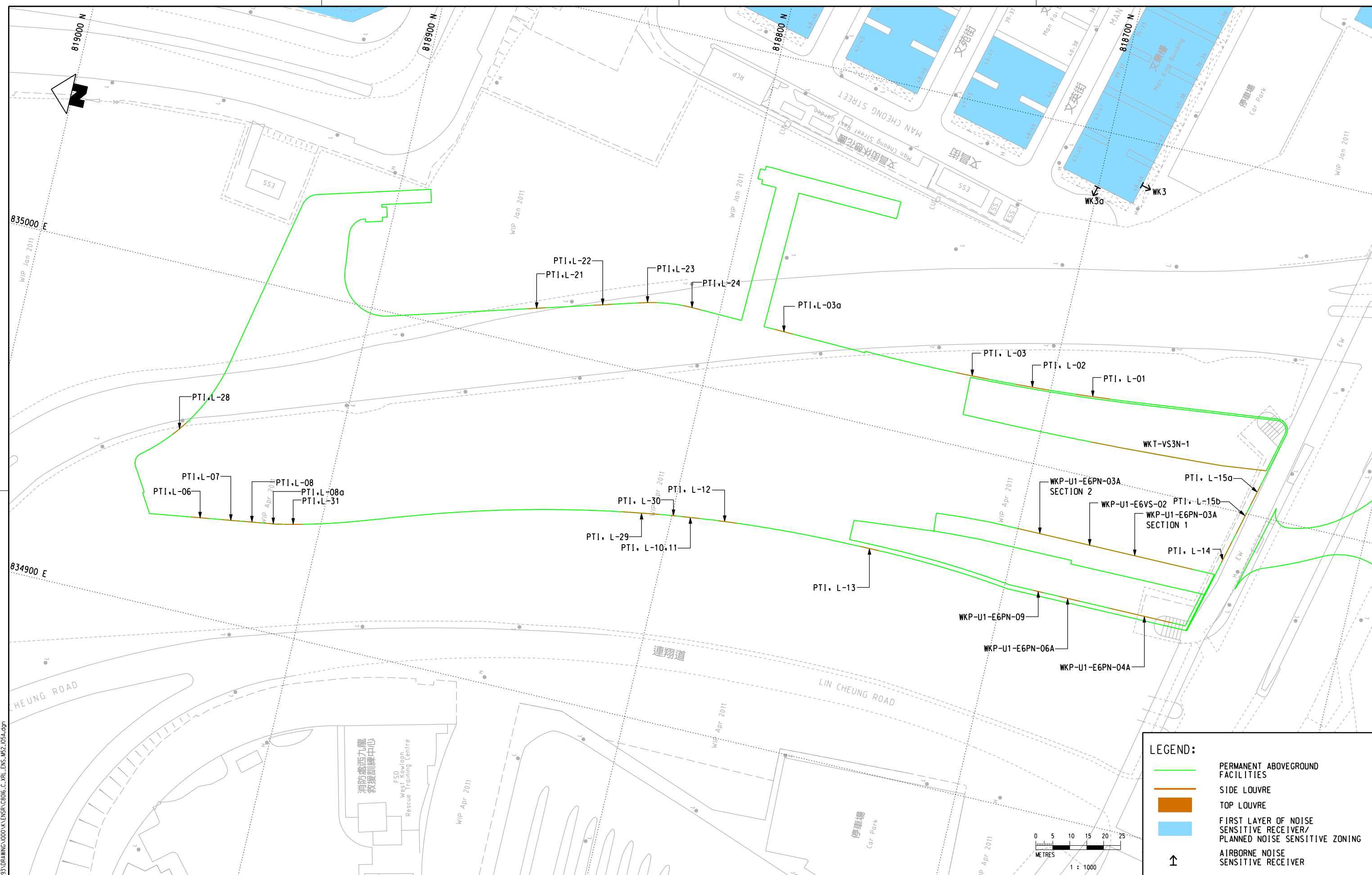
As the differences between measured noise levels and background levels are all less than 3.0 dB(A), it was unable to obtain reliable corrected noise levels at the NSRs and corrections for tonality, impulsiveness or intermittency were therefore not applicable.

## 5 Conclusions

To fulfil the XRL EP condition 2.36, the fixed plant noise verification were undertaken and the measurement results indicated all the fixed plant noise levels in WEK and PTI are in compliance with the fixed plant noise criteria.

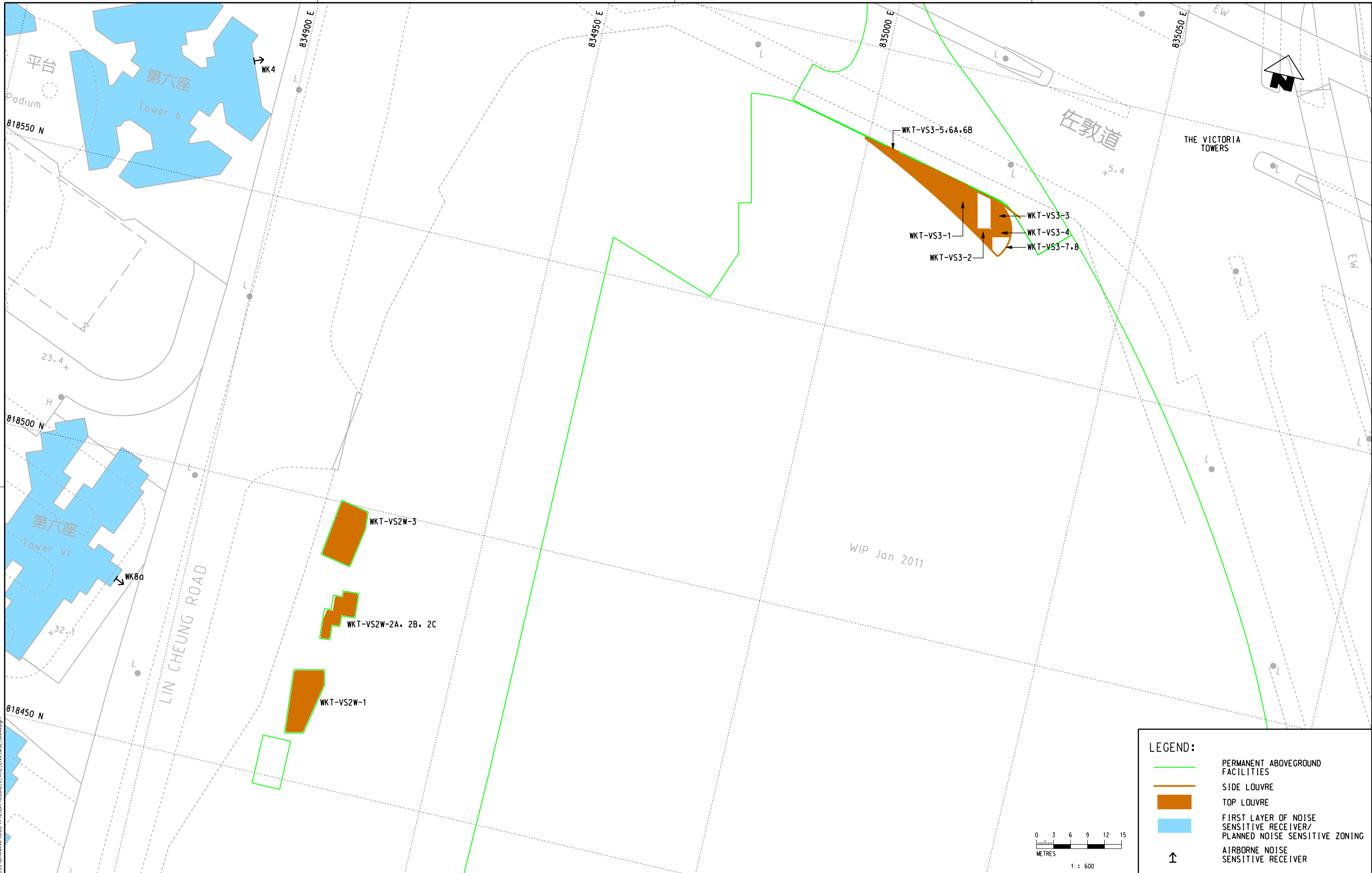


Plot Drw: V:\usr\mtr\p10\DRIVER\WINDOWS\3 COLOR\p10.dgn  
Model Name: C8016\_C\_XRL\_ENS\_M52\_105A.dgn  
P1:prj\obj\ets\G050393\DRAWING\000\K\ENSR\C8016\_C\_XRL\_ENS\_M52\_105A.dgn  
Default: 2018/7/3 12:28:05

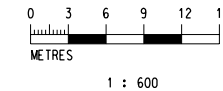


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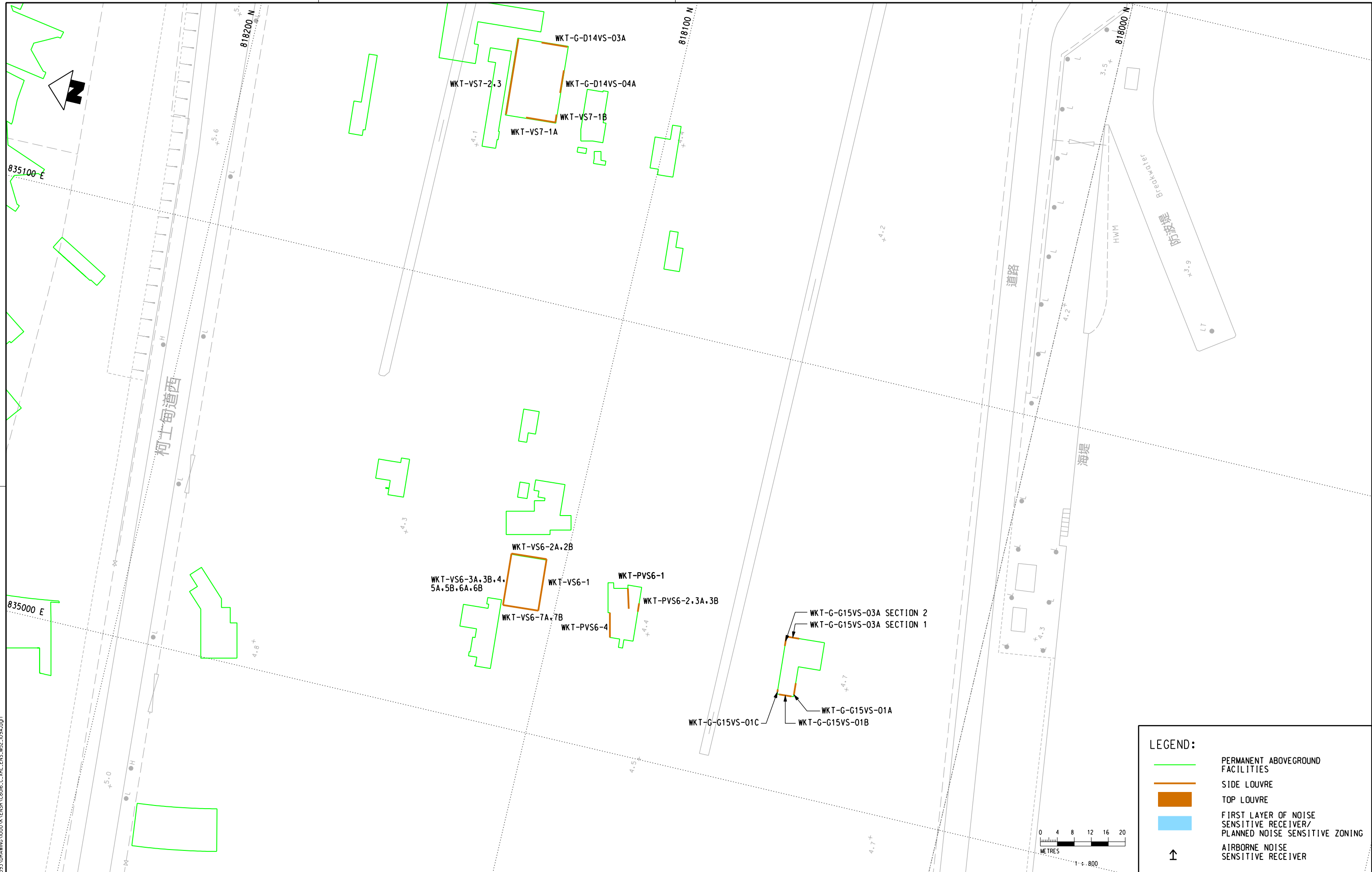


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## **Appendix A1 –Measurement Methodology**

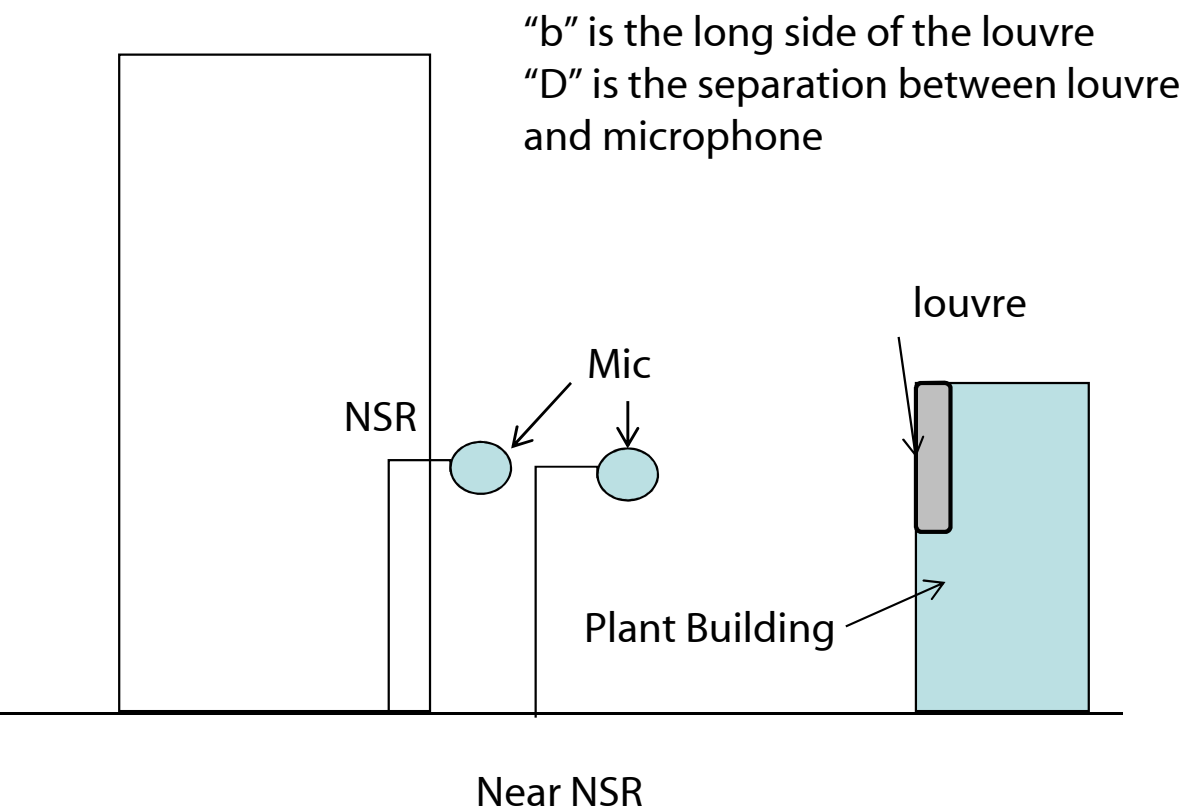
# Summary of Testing Methodology

| Method                          | Standard                        | No of repeated measurement               | No of measurement point                                                                                | Measurement distance, D                                                | To Verify                      |
|---------------------------------|---------------------------------|------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|--------------------------------|
| Method 1<br>(NSR Method)        | NCO - TM                        | 3 sets of Leq<br>1min                    | Depend on number of NSRs nearby                                                                        | At the most affected NSR or near NSR                                   | ANL-5 or Background Prevailing |
| Method 2<br>(Far Field Method)  | Basic Acoustic Principle        | 3 sets of Leq<br>1min                    | 1 (for louvre/plant with uniform plane source)                                                         | $D \geq 2b$ and roundup to integer                                     | ANL-5 or Background Prevailing |
| Method 3<br>(Near Field Method) | Developed based on ISO3746:2010 | 1 set of Leq 10s <sup>(a)</sup><br>/1min | Depend on the size of the louvre/plant and the measurement distance should follow guideline in ISO3746 | At least 1m from the louvre opening/plant (unless otherwise specified) | ANL-5 or Background Prevailing |

**Note :**

(a) If fixed plant items are operated at their noisiest operating modes and are steady during measurement, 10-second will be adopted for the duration of measurement.

# Method 1 – Sound Pressure Level at NSR or Near NSR for louvre or Plant

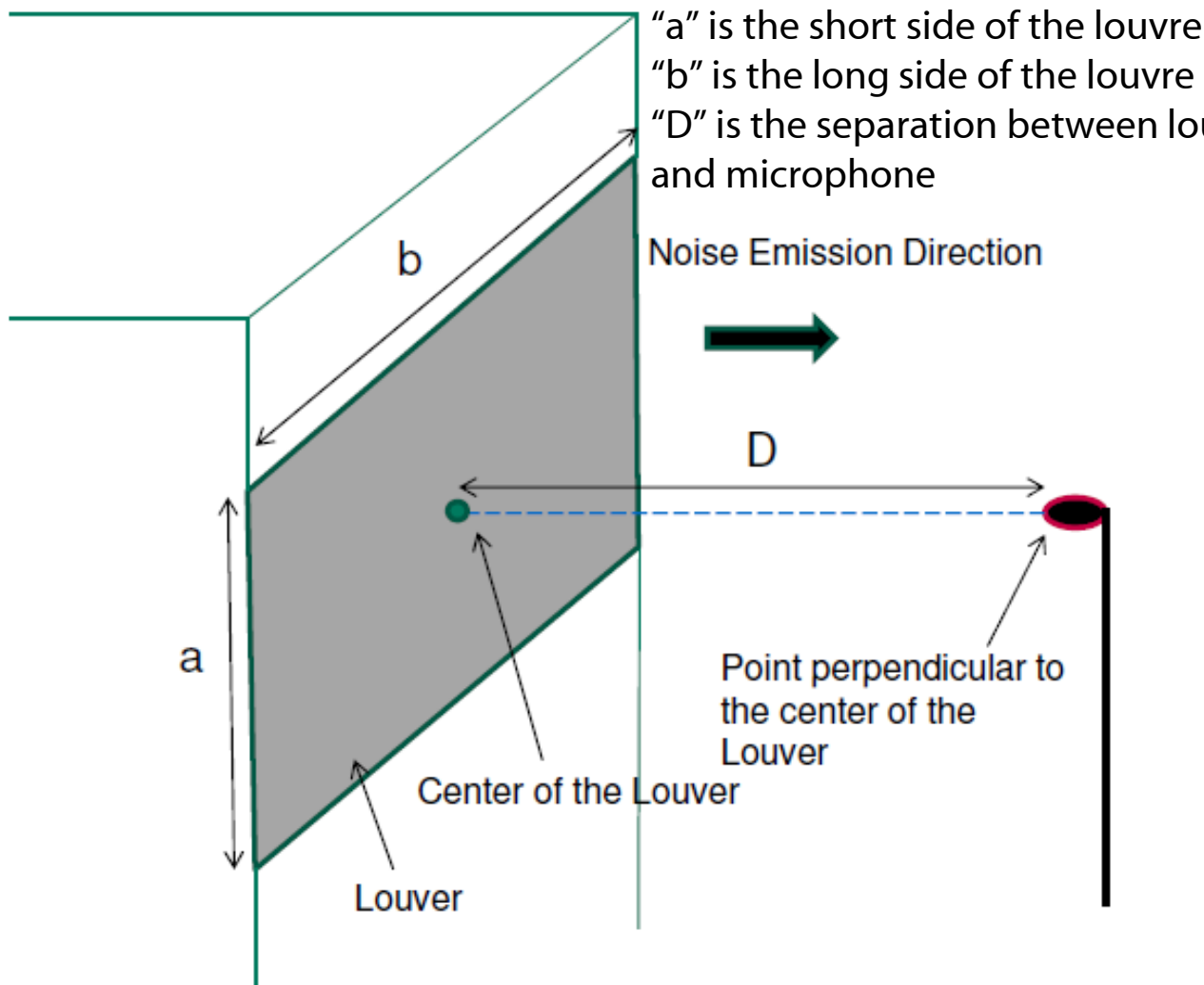


- Based on NCO - TM
- The locations of measurement points are depended on the site situation
- 3.0 dB façade correction should be considered if the location of measurement point is not at assessment point as defined in NCO-TM
- "D" must be greater than 2b and roundup to integer
- Detail calculation of the SPL should refer to the NCO-TM.
- Background noise level (BGL) should be taken for determination of background correction (BG)
- If the difference between the BGL and measured noise level (MNL) is less than 3.0 dB, BG should be capped to 3.0 dB

$$\text{Background corrected SPL} = \text{Mean } L_{Aeq1min} + \text{BG} - [20\log(D) + 8] \text{ (if applicable) + façade correction (if applicable)}$$

if the difference between the maximum and minimum  $L_{eq} > 1\text{dB(A)}$ ; maximum  $L_{eq}$  would be adopted as a conservative approach

## Method 2 – Far Field Sound Power Testing Method for louvre



"a" is the short side of the louvre  
"b" is the long side of the louvre  
"D" is the separation between louvre and microphone

Noise Emission Direction

- Based on basic acoustic principle
- "D" must be greater than 2b and roundup to integer, i.e.:  $D \geq 2b$
- The microphone must point to the center of the louvre.
- At least 3 sets of  $L_{Aeq}$ , 1 min should be obtained
- Background noise level (BGL) should be taken for determination of background correction (BG)
- If the difference between the BGL and measured noise level (MNL) is less than 3.0 dB, BG should be capped to 3.0 dB

$$SWL \text{ (Sound Power Level)} = \text{Mean measured } L_{Aeq1min} + 20 \log (D, \text{center}) + 8 + BG$$

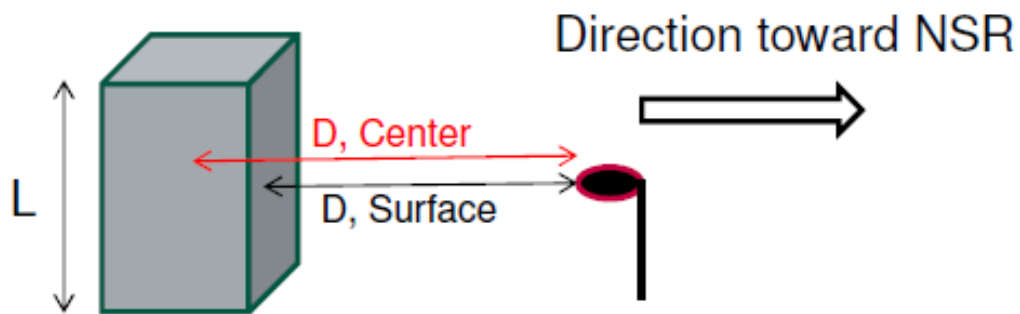
if the difference between the maximum and minimum  $L_{eq} > 1 \text{ dB(A)}$ ; maximum  $L_{eq}$  would be adopted as a conservative approach

## Method 2 – Far Field Sound Power Testing Method for Plant

“L” is the longest side of the plant item

“D, Center” is the separation between center of the plant item and microphone

“D, Surface” is the separation between surface of the plant item and microphone

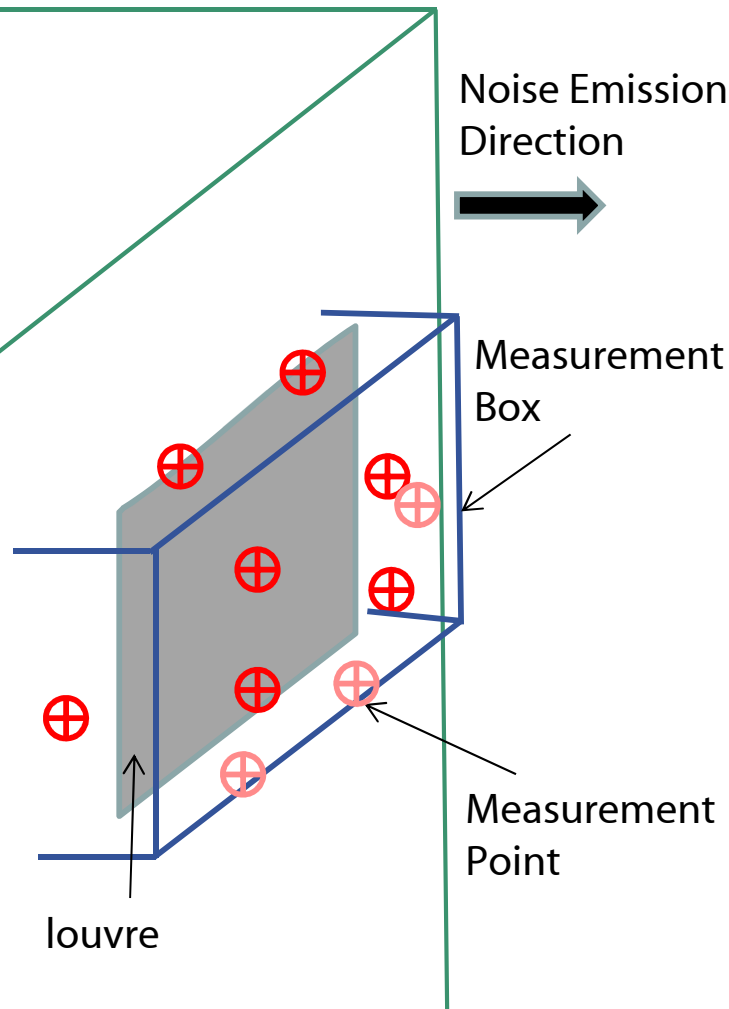


- “D, Surface” must be greater than twice of L (2L) and roundup to integer
- The microphone must be pointing to the center of the plant
- At least 3 sets of LAeq, 1min should be obtained at each measurement point.
- Background noise level (BGL) should be taken for determination of background correction (BG)
- If the difference between the BGL and measured noise level (MNL) is less than 3.0 dB, BG should be capped to 3.0 dB

$$\text{SWL (Sound Power Level)} = \text{Mean measured } L_{\text{Aeq}1\text{min}} + 20 \log (D, \text{center}) + 8 + \text{BG}$$

if the difference between the maximum and minimum Leq > 1dB(A); maximum Leq would be adopted as a conservative approach

## Method 3 – Near Field Sound Power Testing Method for louvre



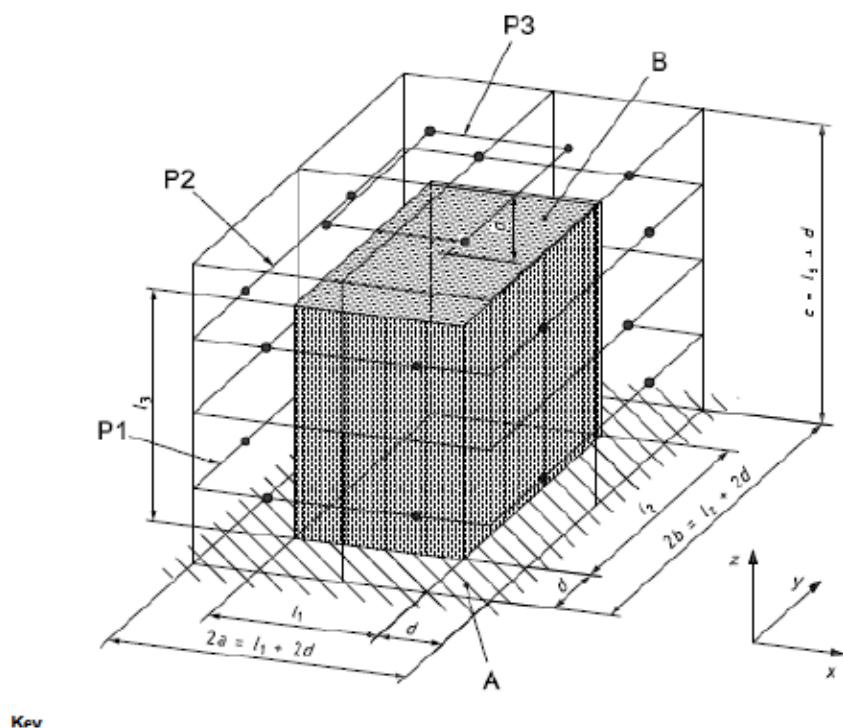
- Based on the principle of ISO3746 – 2010
- First step is to determine a hypothetical measurement surface /box with not less than 1m separation from the louvre.
- Second, determine the location of measurement point in accordance with the latest edition of ISO3746.
- Background noise level (BGL) should be taken at each measurement point for determination of background correction (K1A)
- At least 1 set of Leq, 10s/1min should be obtained at each measurement point
- Extra localized microphone positions on the measurement surface in the region of high noise radiation would be considered following relevant procedures in ISO 3744
- If the difference between the BGL and measured noise level (MNL) is less than 3.0 dB, K1A should be capped to 3.0 dB
- The measurement distance would be reduced if necessary to obtain higher MNL for valid measurement results
- Details calculation of the SWL should refer to the latest edition of ISO3746.

**SWL = Mean  $L_{Aeq}$  over all measurement points + 10 log (total surface area over the measurement box) - K1A - K2A (sound absorption and reflection correction)**

K1A refers to background noise correction factor

K2A refers to environmental correction for sound absorption and reflection

## Method 3 – Near Field Sound Power Testing Method for Plant



- Based on ISO 3746
- The locations of measurement points are depended on the size of the plant, which cannot be easily generalised (See figure on the left for example).
- Extra localized microphone positions on the measurement surface in the region of high noise radiation would be considered following relevant procedures in ISO 3744
- If the difference between the BGL and measured noise level (MNL) is less than 3.0 dB, K1A should be capped to 3.0 dB
- The measurement distance would be reduced if necessary to obtain higher MNL for valid measurement results
- Detail calculation of the SWL should refer to the latest edition of ISO 3746.

**SWL = Mean  $L_{Aeq}$  over all measurement points + 10 log (total surface area over the measurement box) - K1A - K2A (sound absorption and reflection correction)**

K1A refers to background noise correction factor

K2A refers to environmental correction for sound absorption and reflection

## **Appendix A2 – Calibration Certificates**

**Appendix A2a – Calibration Certificates (Noise Measurement for the  
Fixed Plants)**



**MAXLAB**

## CALIBRATION CERTIFICATE

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                            |                    |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------|-------------|--------------|--|-------------------|-----------|-----|------------------|--------------|--|--------------|------------|--|--------------|------------------|
| <b>Certificate Information</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                            |                    |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Date of Issue                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 6-Feb-2018                                                                                                                                                                                                                                                                                                                                                 | Certificate Number |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                            | MLCN180200S        |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| <b>Customer Information</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                            |                    |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Company Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Wilson Acoustics Limited                                                                                                                                                                                                                                                                                                                                   |                    |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Address                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Unit 601, Block A, Shatin Industrial Centre,<br>Yuen Shun Circuit,<br>Shatin, N. T.                                                                                                                                                                                                                                                                        |                    |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| <b>Equipment-under-Test (EUT)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                            |                    |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Sound Level Meter                                                                                                                                                                                                                                                                                                                                          |                    |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Manufacturer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Svantek                                                                                                                                                                                                                                                                                                                                                    |                    |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Model Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | SVAN 955                                                                                                                                                                                                                                                                                                                                                   |                    |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Serial Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 15234                                                                                                                                                                                                                                                                                                                                                      |                    |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Equipment Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | --                                                                                                                                                                                                                                                                                                                                                         |                    |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| <b>Calibration Particular</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                            |                    |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Date of Calibration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 6-Feb-2018                                                                                                                                                                                                                                                                                                                                                 |                    |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Calibration Equipment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 4231(MLTE008) / PA160059 / 20-May-2018                                                                                                                                                                                                                                                                                                                     |                    |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Calibration Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | MLCG00, MLCG15                                                                                                                                                                                                                                                                                                                                             |                    |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Calibration Conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <table border="1"><tr><td>Laboratory</td><td>Temperature</td><td>23 °C ± 5 °C</td></tr><tr><td></td><td>Relative Humidity</td><td>55% ± 25%</td></tr><tr><td>EUT</td><td>Stabilizing Time</td><td>Over 3 hours</td></tr><tr><td></td><td>Warm-up Time</td><td>10 minutes</td></tr><tr><td></td><td>Power Supply</td><td>Internal battery</td></tr></table> |                    | Laboratory | Temperature | 23 °C ± 5 °C |  | Relative Humidity | 55% ± 25% | EUT | Stabilizing Time | Over 3 hours |  | Warm-up Time | 10 minutes |  | Power Supply | Internal battery |
| Laboratory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Temperature                                                                                                                                                                                                                                                                                                                                                | 23 °C ± 5 °C       |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Relative Humidity                                                                                                                                                                                                                                                                                                                                          | 55% ± 25%          |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| EUT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Stabilizing Time                                                                                                                                                                                                                                                                                                                                           | Over 3 hours       |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Warm-up Time                                                                                                                                                                                                                                                                                                                                               | 10 minutes         |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Power Supply                                                                                                                                                                                                                                                                                                                                               | Internal battery   |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Calibration Results                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Calibration data were detailed in the continuation pages.                                                                                                                                                                                                                                                                                                  |                    |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| <b>Approved By &amp; Date</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                            |                    |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                            | K.O. Lo            |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                            | 6-Feb-2018         |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| <b>Statements</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                            |                    |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| <ul style="list-style-type: none"><li>* Calibration equipment used for this calibration are traceable to national / international standards.</li><li>* The results on this Calibration Certificate only relate to the values measured at the time of the calibration and the uncertainties quoted will not include allowance for the EUT long term drift, variation with environmental changes, vibration and shock during transportation, overloading, mishandling, misuse, and the capacity of any other laboratory to repeat the measurement.</li><li>* MaxLab Calibration Centre Limited shall not be liable for any loss or damage resulting from the use of the EUT.</li><li>* The copy of this Certificate is owned by MaxLab Calibration Centre Limited. No part of this Certificate may be reproduced without the prior written approval of MaxLab Calibration Centre Limited.</li></ul> |                                                                                                                                                                                                                                                                                                                                                            |                    |            |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |

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MaxLab Calibration Centre Limited

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Certificate No. MLCN180200S

| Calibration Data |                     |            |                |             |                  |           |                         |
|------------------|---------------------|------------|----------------|-------------|------------------|-----------|-------------------------|
| Parameter        | Frequency Weighting | Range (dB) | Time Weighting | EUT Reading | Standard Reading | EUT Error | Calibration Uncertainty |
| SPL              | A<br>(1 kHz Input)  | 25 - 130   | F              | 94 dB       | 94.0 dB          | 0.0 dB    | 0.2 dB                  |
|                  |                     |            | S              | 94 dB       | 94.0 dB          | 0.0 dB    | 0.2 dB                  |
|                  |                     |            | I              | 94 dB       | 94.0 dB          | 0.0 dB    | 0.2 dB                  |
|                  | C<br>(1 kHz Input)  | 25 - 130   | F              | 94 dB       | 94.0 dB          | 0.0 dB    | 0.2 dB                  |
|                  |                     |            | S              | 94 dB       | 94.0 dB          | 0.0 dB    | 0.2 dB                  |
|                  |                     |            | I              | 94 dB       | 94.0 dB          | 0.0 dB    | 0.2 dB                  |
|                  | Z<br>(1 kHz Input)  | 25 - 130   | F              | 94 dB       | 94.0 dB          | 0.0 dB    | 0.2 dB                  |
|                  |                     |            | S              | 94 dB       | 94.0 dB          | 0.0 dB    | 0.2 dB                  |
|                  |                     |            | I              | 94 dB       | 94.0 dB          | 0.0 dB    | 0.2 dB                  |
|                  | A<br>(1 kHz Input)  | 25 - 130   | F              | 114 dB      | 114.0 dB         | 0.0 dB    | 0.2 dB                  |
|                  |                     |            | S              | 114 dB      | 114.0 dB         | 0.0 dB    | 0.2 dB                  |
|                  |                     |            | I              | 114 dB      | 114.0 dB         | 0.0 dB    | 0.2 dB                  |
|                  | C<br>(1 kHz Input)  | 25 - 130   | F              | 114 dB      | 114.0 dB         | 0.0 dB    | 0.2 dB                  |
|                  |                     |            | S              | 114 dB      | 114.0 dB         | 0.0 dB    | 0.2 dB                  |
|                  |                     |            | I              | 114 dB      | 114.0 dB         | 0.0 dB    | 0.2 dB                  |
|                  | Z<br>(1 kHz Input)  | 25 - 130   | F              | 114 dB      | 114.0 dB         | 0.0 dB    | 0.2 dB                  |
|                  |                     |            | S              | 114 dB      | 114.0 dB         | 0.0 dB    | 0.2 dB                  |
|                  |                     |            | I              | 114 dB      | 114.0 dB         | 0.0 dB    | 0.2 dB                  |

- END -

Calibrated By :  
Date :

Patrick  
6-Feb-2018

Checked By :  
Date :

K.O. Lo  
6-Feb-2018  
Page 2 of 2

萬儀校正中心有限公司  
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## CALIBRATION CERTIFICATE

### Certificate Information

Date of Issue 23-Jun-2017 Certificate Number MLCN171137S

### Customer Information

Company Name Wilson Accoustics Limited  
Address Unit 601, Block A, Shatin Industrial Centre,  
Yuen Shun Circuit,  
Shatin, N. T.,  
Hong Kong

### Equipment-under-Test (EUT)

Description Sound & Vibration Analyser  
Manufacturer Svantek  
Model Number SVAN 958  
Serial Number 20890  
Equipment Number --

### Calibration Particular

Date of Calibration 23-Jun-2017  
Calibration Equipment 4231(MLTE008) / PA160059 / 20-May-2018

Calibration Procedure MLCG00, MLCG15

|                        |            |                   |                  |
|------------------------|------------|-------------------|------------------|
| Calibration Conditions | Laboratory | Temperature       | 23 °C ± 5 °C     |
|                        |            | Relative Humidity | 55% ± 25%        |
|                        | EUT        | Stabilizing Time  | Over 3 hours     |
|                        |            | Warm-up Time      | 10 minutes       |
|                        |            | Power Supply      | Internal battery |

Calibration Results Calibration data were detailed in the continuation pages.

### Approved By & Date

K.O. Lo

23-Jun-2017

### Statements

- \* Calibration equipment used for this calibration are traceable to national / international standards.
- \* The results on this Calibration Certificate only relate to the values measured at the time of the calibration and the uncertainties quoted will not include allowance for the EUT long term drift, variation with environmental changes, vibration and shock during transportation, overloading, mishandling, misuse, and the capacity of any other laboratory to repeat the measurement.
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Certificate NoMLCN171137S

| Calibration Data |                                |        |             |                  |           |                         |  |
|------------------|--------------------------------|--------|-------------|------------------|-----------|-------------------------|--|
| Channel / Mode   | Filter / Detector              | Range  | EUT Reading | Standard Reading | EUT Error | Calibration Uncertainty |  |
| CH4 / Sound      | A / FAST<br>(1 kHz Input)      | 105 dB | 94.0 dB     | 94.0 dB          | 0.0 dB    | 0.2 dB                  |  |
|                  |                                | 130 dB | 94.1 dB     | 94.0 dB          | 0.1 dB    | 0.2 dB                  |  |
|                  |                                |        | 114.1 dB    | 114.0 dB         | 0.1 dB    | 0.2 dB                  |  |
|                  | C / FAST<br>(1 kHz Input)      | 105 dB | 94.0 dB     | 94.0 dB          | 0.0 dB    | 0.2 dB                  |  |
|                  |                                | 130 dB | 94.1 dB     | 94.0 dB          | 0.1 dB    | 0.2 dB                  |  |
|                  |                                |        | 114.1 dB    | 114.0 dB         | 0.1 dB    | 0.2 dB                  |  |
|                  | LIN / FAST<br>(1 kHz Input)    | 105 dB | 94.0 dB     | 94.0 dB          | 0.0 dB    | 0.2 dB                  |  |
|                  |                                | 130 dB | 94.1 dB     | 94.0 dB          | 0.1 dB    | 0.2 dB                  |  |
|                  |                                |        | 114.1 dB    | 114.0 dB         | 0.1 dB    | 0.2 dB                  |  |
|                  | A / SLOW<br>(1 kHz Input)      | 105 dB | 94.0 dB     | 94.0 dB          | 0.0 dB    | 0.2 dB                  |  |
|                  |                                | 130 dB | 114.1 dB    | 114.0 dB         | 0.1 dB    | 0.2 dB                  |  |
|                  | C / SLOW<br>(1 kHz Input)      | 105 dB | 94.0 dB     | 94.0 dB          | 0.0 dB    | 0.2 dB                  |  |
|                  |                                | 130 dB | 114.1 dB    | 114.0 dB         | 0.1 dB    | 0.2 dB                  |  |
|                  | LIN / SLOW<br>(1 kHz Input)    | 105 dB | 94.0 dB     | 94.0 dB          | 0.0 dB    | 0.2 dB                  |  |
|                  |                                | 130 dB | 114.1 dB    | 114.0 dB         | 0.1 dB    | 0.2 dB                  |  |
|                  | A / IMPULSE<br>(1 kHz Input)   | 105 dB | 94.0 dB     | 94.0 dB          | 0.0 dB    | 0.2 dB                  |  |
|                  |                                | 130 dB | 114.1 dB    | 114.0 dB         | 0.1 dB    | 0.2 dB                  |  |
|                  | C / IMPULSE<br>(1 kHz Input)   | 105 dB | 94.0 dB     | 94.0 dB          | 0.0 dB    | 0.2 dB                  |  |
|                  |                                | 130 dB | 114.1 dB    | 114.0 dB         | 0.1 dB    | 0.2 dB                  |  |
|                  | LIN / IMPULSE<br>(1 kHz Input) | 105 dB | 94.0 dB     | 94.0 dB          | 0.0 dB    | 0.2 dB                  |  |
|                  |                                | 130 dB | 114.1 dB    | 114.0 dB         | 0.1 dB    | 0.2 dB                  |  |

- END -

Calibrated By :  
Date :

Patrick  
23-Jun-2017

Checked By :  
Date :

K.O. Lo  
23-Jun-2017  
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## FACTORY CALIBRATION DATA OF THE SVAN 958 No. 59120

### SOUND LEVEL METER

#### 1. CALIBRATION (electrical)

LEVEL METER; Filter: LIN; Input signal = 114.0dB,  $f_{\text{ref}}=1\text{kHz}$

|           | Range 105dB     |            | Range 130dB     |            |
|-----------|-----------------|------------|-----------------|------------|
|           | Indication [dB] | Error [dB] | Indication [dB] | Error [dB] |
| Channel 1 | 113.99          | -0.01      | 114.02          | 0.02       |
| Channel 2 | 113.98          | -0.02      | 114.03          | 0.03       |
| Channel 3 | 113.98          | -0.02      | 114.03          | 0.03       |
| Channel 4 | 113.98          | -0.02      | 114.02          | 0.02       |

#### 2. CALIBRATION\* (acoustical)

LEVEL METER; Range: 130 dB; Reference frequency: 1000Hz;

| Filter    | LIN             |            | A               |            | C               |            |
|-----------|-----------------|------------|-----------------|------------|-----------------|------------|
|           | Indication [dB] | Error [dB] | Indication [dB] | Error [dB] | Indication [dB] | Error [dB] |
| Channel 1 | 114.0           | 0.0        | 114.0           | 0.0        | 114.0           | 0.0        |
| Channel 2 | 114.0           | 0.0        | 114.0           | 0.0        | 114.0           | 0.0        |
| Channel 3 | 114.0           | 0.0        | 114.0           | 0.0        | 114.0           | 0.0        |
| Channel 4 | 114.0           | 0.0        | 114.0           | 0.0        | 114.0           | 0.0        |

Calibration measured with the microphone SVANTEK type SV22 No. 4013604. Calibration factor: -0.4dB

#### 3. LINEARITY TEST\* (electrical)

LEVEL METER; Range: 105 dB; Filter: A;  $f_{\text{ref}}=1000\text{ Hz}$

|           | Input [dB] | 24.0 | 30.0 | 40.0 | 60.0  | 80.0 | 100.0 | 114.0 |
|-----------|------------|------|------|------|-------|------|-------|-------|
| Channel 1 | Error [dB] | 0.24 | 0.11 | 0.04 | -0.01 | 0.00 | 0.01  | 0.01  |
| Channel 2 | Error [dB] | 0.28 | 0.10 | 0.04 | -0.01 | 0.00 | 0.01  | 0.01  |
| Channel 3 | Error [dB] | 0.20 | 0.10 | 0.04 | -0.01 | 0.00 | 0.01  | 0.01  |
| Channel 4 | Error [dB] | 0.21 | 0.09 | 0.04 | -0.01 | 0.00 | 0.01  | 0.01  |

LEVEL METER; Range: 130 dB; Filter: A;  $f_{\text{ref}}=1000\text{ Hz}$

|           | Input [dB] | 45.0 | 50.0 | 60.0 | 80.0 | 100.0 | 120.0 | 135.0 |
|-----------|------------|------|------|------|------|-------|-------|-------|
| Channel 1 | Error [dB] | 0.09 | 0.07 | 0.03 | 0.00 | 0.01  | 0.00  | 0.01  |
| Channel 2 | Error [dB] | 0.10 | 0.06 | 0.03 | 0.00 | 0.01  | 0.00  | 0.01  |
| Channel 3 | Error [dB] | 0.03 | 0.05 | 0.02 | 0.01 | 0.01  | 0.01  | 0.02  |
| Channel 4 | Error [dB] | 0.00 | 0.04 | 0.02 | 0.00 | 0.01  | 0.00  | 0.01  |

1/3 OCTAVE (1kHz); Range: 130 dB; Filter: A;  $f_{\text{ref}}=1000\text{ Hz}$

|           | Input [dB] | 35.0 | 40.0 | 60.0 | 80.0 | 100.0 | 120.0 | 135.0 |
|-----------|------------|------|------|------|------|-------|-------|-------|
| Channel 1 | Error [dB] | 0.39 | 0.15 | 0.03 | 0.01 | 0.01  | 0.00  | 0.01  |
| Channel 2 | Error [dB] | 0.37 | 0.14 | 0.03 | 0.01 | 0.01  | -0.00 | 0.02  |
| Channel 3 | Error [dB] | 0.23 | 0.05 | 0.03 | 0.00 | 0.01  | 0.00  | 0.01  |
| Channel 4 | Error [dB] | 0.23 | 0.03 | 0.02 | 0.01 | 0.01  | 0.01  | 0.02  |

#### 4. TONEBURST RESPONSE\* (electrical)

LEVEL METER, Characteristic: A;  $f_{\text{sin}} = 4000 \text{ Hz}$ ; Burst duration: 2s;

Range: 105dB; Equivalent input steady level = 112dB

| Result | Detector | Ch. | Duration [ms]   | 1000  | 500   | 200   | 100   | 50    | 20    | 10    | 5    | 2    | 1    | 0.5  | 0.25 |
|--------|----------|-----|-----------------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|
| MAX    | Fast     | 1   | Indication [dB] | 112.0 | 111.9 | 111.0 | 109.4 | 107.2 | 103.7 | 100.9 | 97.9 | 94.0 | 91.0 | 87.9 | 84.9 |
|        |          |     | Error [dB]      | 0.0   | 0.0   | 0.0   | 0.0   | -0.0  | -0.0  | -0.0  | 0.0  | -0.0 | -0.0 | -0.1 | -0.1 |
|        |          | 2   | Indication [dB] | 112.0 | 111.9 | 111.0 | 109.4 | 107.2 | 103.7 | 100.8 | 97.9 | 94.0 | 90.9 | 87.9 | 84.9 |
|        |          |     | Error [dB]      | 0.0   | 0.0   | 0.0   | 0.0   | -0.0  | 0.0   | -0.1  | 0.0  | -0.0 | -0.0 | -0.1 | -0.1 |
|        |          | 3   | Indication [dB] | 112.0 | 111.9 | 111.0 | 109.4 | 107.1 | 103.7 | 100.8 | 97.9 | 93.9 | 90.9 | 87.9 | 84.8 |
|        |          |     | Error [dB]      | 0.0   | 0.0   | 0.0   | 0.0   | -0.0  | 0.0   | -0.1  | 0.0  | -0.0 | -0.0 | -0.1 | -0.1 |
|        |          | 4   | Indication [dB] | 112.0 | 111.9 | 111.0 | 109.4 | 107.2 | 103.7 | 100.9 | 97.9 | 94.0 | 91.0 | 87.9 | 84.9 |
|        |          |     | Error [dB]      | 0.0   | 0.0   | 0.0   | 0.0   | -0.0  | 0.0   | -0.0  | 0.0  | -0.0 | -0.0 | -0.1 | -0.1 |
|        | Slow     | 1   | Indication [dB] | 109.9 | 108.0 | 104.6 | 101.8 | 98.9  | 95.0  | 92.0  | 89.0 | 85.0 | -    | -    | -    |
|        |          |     | Error [dB]      | -0.1  | 0.1   | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0 | -0.0 | -    | -    | -    |
|        |          | 2   | Indication [dB] | 109.9 | 107.9 | 104.6 | 101.8 | 98.9  | 95.0  | 92.0  | 89.0 | 85.0 | -    | -    | -    |
|        |          |     | Error [dB]      | -0.1  | 0.1   | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0 | -0.0 | -    | -    | -    |
|        |          | 3   | Indication [dB] | 109.9 | 107.9 | 104.5 | 101.7 | 98.8  | 94.9  | 91.9  | 88.9 | 84.9 | -    | -    | -    |
|        |          |     | Error [dB]      | -0.1  | 0.1   | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0 | -0.0 | -    | -    | -    |
|        |          | 4   | Indication [dB] | 109.9 | 108.0 | 104.6 | 101.8 | 98.9  | 95.0  | 92.0  | 89.0 | 85.0 | -    | -    | -    |
|        |          |     | Error [dB]      | -0.1  | 0.1   | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0 | -0.0 | -    | -    | -    |
| SEL    | -        | 1   | Indication [dB] | 111.8 | 109.0 | 105.0 | 102.0 | 99.0  | 95.0  | 92.0  | 89.0 | 85.0 | 82.0 | 78.9 | 75.9 |
|        |          |     | Error [dB]      | -0.2  | -0.0  | 0.0   | 0.0   | -0.0  | 0.0   | 0.0   | -0.0 | -0.0 | -0.0 | -0.1 | -0.1 |
|        |          | 2   | Indication [dB] | 111.8 | 109.0 | 105.0 | 102.0 | 99.0  | 95.0  | 92.0  | 89.0 | 85.0 | 81.9 | 78.9 | 75.9 |
|        |          |     | Error [dB]      | -0.2  | -0.0  | 0.0   | 0.0   | -0.0  | 0.0   | 0.0   | -0.0 | -0.0 | -0.0 | -0.1 | -0.1 |
|        |          | 3   | Indication [dB] | 111.8 | 108.9 | 105.0 | 102.0 | 98.9  | 95.0  | 92.0  | 88.9 | 84.9 | 81.9 | 78.9 | 75.8 |
|        |          |     | Error [dB]      | -0.2  | -0.0  | 0.0   | 0.0   | -0.0  | 0.0   | 0.0   | -0.0 | -0.0 | -0.0 | -0.1 | -0.1 |
|        |          | 4   | Indication [dB] | 111.8 | 109.0 | 105.0 | 102.0 | 99.0  | 95.0  | 92.0  | 89.0 | 85.0 | 82.0 | 78.9 | 75.9 |
|        |          |     | Error [dB]      | -0.2  | -0.0  | 0.0   | 0.0   | -0.0  | 0.0   | 0.0   | -0.0 | -0.0 | -0.0 | -0.1 | -0.1 |

Range: 105dB; Equivalent input steady level = 52dB

| Result | Detector | Ch. | Duration [ms]   | 1000 | 500  | 200  | 100  | 50   | 20   | 10   | 5    |
|--------|----------|-----|-----------------|------|------|------|------|------|------|------|------|
| MAX    | Fast     | 1   | Indication [dB] | 52.0 | 51.9 | 51.0 | 49.4 | 47.2 | 43.7 | 40.8 | 37.9 |
|        |          |     | Error [dB]      | -0.0 | 0.0  | 0.0  | -0.0 | -0.0 | -0.0 | -0.1 | 0.0  |
|        |          | 2   | Indication [dB] | 52.0 | 51.9 | 51.0 | 49.4 | 47.1 | 43.7 | 40.8 | 37.9 |
|        |          |     | Error [dB]      | -0.0 | 0.0  | 0.0  | 0.0  | -0.0 | -0.0 | -0.1 | 0.0  |
|        |          | 3   | Indication [dB] | 51.9 | 51.9 | 51.0 | 49.3 | 47.1 | 43.6 | 40.8 | 37.9 |
|        |          |     | Error [dB]      | 0.0  | 0.0  | 0.0  | 0.0  | -0.0 | 0.0  | -0.1 | 0.0  |
|        |          | 4   | Indication [dB] | 52.0 | 51.9 | 51.0 | 49.4 | 47.2 | 43.7 | 40.8 | 37.9 |
|        |          |     | Error [dB]      | 0.0  | 0.0  | 0.0  | -0.0 | -0.0 | 0.0  | -0.1 | -0.0 |
|        | Slow     | 1   | Indication [dB] | 49.9 | 47.9 | 44.6 | 41.8 | 38.9 | 35.0 | 32.0 | 29.0 |
|        |          |     | Error [dB]      | -0.1 | 0.0  | -0.0 | -0.0 | -0.0 | -0.0 | -0.0 | 0.0  |
|        |          | 2   | Indication [dB] | 49.9 | 47.9 | 44.6 | 41.8 | 38.9 | 34.9 | 31.9 | 29.1 |
|        |          |     | Error [dB]      | -0.1 | 0.0  | -0.0 | -0.0 | -0.0 | -0.0 | -0.0 | 0.1  |
|        |          | 3   | Indication [dB] | 49.9 | 47.9 | 44.5 | 41.7 | 38.8 | 34.9 | 31.9 | 29.0 |
|        |          |     | Error [dB]      | -0.1 | 0.1  | -0.0 | -0.0 | -0.0 | -0.0 | 0.0  | 0.1  |
|        |          | 4   | Indication [dB] | 49.9 | 47.9 | 44.6 | 41.8 | 38.9 | 35.0 | 32.1 | 29.0 |
|        |          |     | Error [dB]      | -0.1 | 0.0  | -0.0 | -0.0 | -0.0 | 0.0  | 0.1  | 0.0  |
| SEL    | -        | 1   | Indication [dB] | 51.8 | 49.0 | 45.0 | 42.0 | 39.0 | 35.1 | 32.1 | 29.2 |
|        |          |     | Error [dB]      | -0.2 | -0.0 | 0.0  | 0.0  | 0.0  | 0.1  | 0.1  | 0.2  |
|        |          | 2   | Indication [dB] | 51.8 | 49.0 | 45.0 | 42.0 | 39.0 | 35.0 | 32.0 | 29.2 |
|        |          |     | Error [dB]      | -0.2 | -0.0 | 0.0  | 0.0  | 0.0  | 0.1  | 0.1  | 0.2  |
|        |          | 3   | Indication [dB] | 51.8 | 48.9 | 45.0 | 41.9 | 38.9 | 35.0 | 32.0 | 29.1 |
|        |          |     | Error [dB]      | -0.2 | -0.0 | 0.0  | 0.0  | 0.0  | 0.1  | 0.1  | 0.1  |
|        |          | 4   | Indication [dB] | 51.8 | 49.0 | 45.0 | 42.0 | 39.0 | 35.1 | 32.1 | 29.1 |
|        |          |     | Error [dB]      | -0.2 | 0.0  | 0.0  | -0.0 | 0.0  | 0.1  | 0.1  | 0.1  |

Range: 105dB; Equivalent input steady level = 34dB

| Result | Detector | Ch. | Duration [ms]   | 1000 | 500  |
|--------|----------|-----|-----------------|------|------|
| MAX    | Fast     | 1   | Indication [dB] | 34.1 | 34.0 |
|        |          |     | Error [dB]      | 0.0  | 0.0  |
|        |          | 2   | Indication [dB] | 34.1 | 33.9 |
|        |          |     | Error [dB]      | 0.0  | -0.0 |
|        |          | 3   | Indication [dB] | 34.0 | 33.9 |
|        |          |     | Error [dB]      | 0.0  | 0.0  |
|        |          | 4   | Indication [dB] | 34.0 | 33.9 |
|        |          |     | Error [dB]      | -0.0 | -0.1 |
|        | Slow     | 1   | Indication [dB] | 32.0 | 30.1 |
|        |          |     | Error [dB]      | -0.1 | 0.1  |
|        |          | 2   | Indication [dB] | 32.0 | 30.0 |
|        |          |     | Error [dB]      | -0.1 | 0.1  |
|        |          | 3   | Indication [dB] | 31.9 | 29.9 |
|        |          |     | Error [dB]      | -0.1 | 0.1  |
|        |          | 4   | Indication [dB] | 31.9 | 30.0 |
|        |          |     | Error [dB]      | -0.1 | 0.0  |
| SEL    |          | 1   | Indication [dB] | 33.9 | 31.2 |
|        |          |     | Error [dB]      | -0.1 | 0.1  |
|        |          | 2   | Indication [dB] | 33.9 | 31.1 |
|        |          |     | Error [dB]      | -0.1 | 0.1  |
|        |          | 3   | Indication [dB] | 33.8 | 31.1 |
|        |          |     | Error [dB]      | -0.2 | 0.1  |
|        |          | 4   | Indication [dB] | 33.8 | 31.1 |
|        |          |     | Error [dB]      | -0.2 | 0.0  |

Range: 130dB; Equivalent input steady level = 134dB

| Result | Detector | Ch. | Duration [ms]   | 1000  | 500   | 200   | 100   | 50    | 20    | 10    | 5     | 2     | 1     | 0.5   | 0.25  |
|--------|----------|-----|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| MAX    | Fast     | 1   | Indication [dB] | 134.0 | 133.9 | 133.0 | 131.4 | 129.2 | 125.7 | 122.8 | 119.9 | 116.0 | 112.9 | 109.9 | 106.9 |
|        |          |     | Error [dB]      | 0.0   | 0.0   | 0.0   | 0.0   | -0.0  | -0.0  | -0.1  | 0.0   | -0.0  | -0.1  | -0.1  | -0.1  |
|        |          | 2   | Indication [dB] | 134.0 | 133.9 | 133.0 | 131.4 | 129.2 | 125.7 | 122.8 | 119.9 | 116.0 | 112.9 | 109.9 | 106.9 |
|        |          |     | Error [dB]      | 0.0   | 0.0   | 0.0   | 0.0   | -0.0  | -0.0  | -0.1  | 0.0   | -0.0  | -0.1  | -0.1  | -0.1  |
|        |          | 3   | Indication [dB] | 134.0 | 133.9 | 133.0 | 131.4 | 129.1 | 125.7 | 122.8 | 119.9 | 115.9 | 112.9 | 109.9 | 106.8 |
|        |          |     | Error [dB]      | 0.0   | 0.0   | 0.0   | 0.0   | -0.0  | -0.0  | -0.1  | 0.0   | -0.0  | -0.1  | -0.1  | -0.1  |
|        |          | 4   | Indication [dB] | 134.0 | 133.9 | 133.0 | 131.4 | 129.2 | 125.7 | 122.9 | 119.9 | 116.0 | 113.0 | 109.9 | 106.9 |
|        |          |     | Error [dB]      | -0.0  | 0.0   | 0.0   | 0.0   | 129.2 | -0.0  | -0.1  | 0.0   | -0.0  | -0.1  | -0.1  | -0.1  |
|        | Slow     | 1   | Indication [dB] | 131.9 | 129.9 | 126.6 | 123.8 | 120.9 | 117.0 | 114.0 | 111.0 | 107.0 | -     | -     | -     |
|        |          |     | Error [dB]      | -0.1  | 0.0   | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -     | -     | -     |
|        |          | 2   | Indication [dB] | 131.9 | 129.9 | 126.6 | 123.8 | 120.9 | 117.0 | 114.0 | 111.0 | 107.0 | -     | -     | -     |
|        |          |     | Error [dB]      | -0.1  | 0.0   | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -     | -     | -     |
|        |          | 3   | Indication [dB] | 131.9 | 129.9 | 126.5 | 123.8 | 120.8 | 116.9 | 113.9 | 110.9 | 106.9 | -     | -     | -     |
|        |          |     | Error [dB]      | -0.1  | 0.0   | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -     | -     | -     |
|        |          | 4   | Indication [dB] | 131.9 | 129.9 | 126.6 | 123.8 | 120.9 | 117.0 | 114.0 | 111.0 | 107.0 | -     | -     | -     |
|        |          |     | Error [dB]      | -0.1  | 0.0   | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -     | -     | -     |
| SEL    |          | 1   | Indication [dB] | 133.8 | 131.0 | 127.0 | 124.0 | 121.0 | 117.0 | 114.0 | 111.0 | 107.0 | 104.0 | 100.9 | 97.9  |
|        |          |     | Error [dB]      | -0.2  | -0.0  | 0.0   | 0.0   | -0.0  | 0.0   | -0.0  | -0.0  | -0.0  | -0.0  | -0.1  | -0.1  |
|        |          | 2   | Indication [dB] | 133.8 | 131.0 | 127.0 | 124.0 | 121.0 | 117.0 | 114.0 | 111.0 | 107.0 | 103.9 | 100.9 | 97.9  |
|        |          |     | Error [dB]      | -0.2  | -0.0  | 0.0   | 0.0   | -0.0  | 0.0   | -0.0  | -0.0  | -0.0  | -0.1  | -0.1  | -0.1  |
|        |          | 3   | Indication [dB] | 133.8 | 130.9 | 127.0 | 124.0 | 121.0 | 117.0 | 114.0 | 110.9 | 107.0 | 103.9 | 100.9 | 97.8  |
|        |          |     | Error [dB]      | -0.2  | -0.0  | 0.0   | 0.0   | -0.0  | 0.0   | 0.0   | -0.0  | -0.0  | -0.1  | -0.1  | -0.1  |
|        |          | 4   | Indication [dB] | 133.8 | 131.0 | 127.0 | 124.0 | 121.0 | 117.0 | 114.0 | 111.0 | 107.0 | 104.0 | 100.9 | 97.9  |
|        |          |     | Error [dB]      | -0.2  | -0.0  | 0.0   | 0.0   | -0.0  | 0.0   | -0.0  | -0.0  | -0.0  | -0.1  | -0.1  | -0.1  |

Range: 130dB, Equivalent input steady level = 74dB

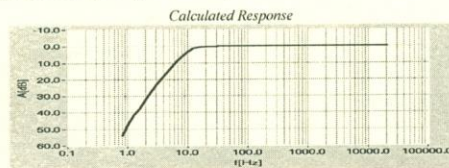
| Result | Detector | Ch. | Duration [ms]   | 1000 | 500  | 200  | 100  | 50   | 20   | 10   | 5    |
|--------|----------|-----|-----------------|------|------|------|------|------|------|------|------|
| MAX    | Fast     | 1   | Indication [dB] | 74.0 | 73.9 | 73.0 | 71.4 | 69.2 | 65.7 | 62.8 | 59.9 |
|        |          |     | Error [dB]      | 0.0  | 0.0  | 0.0  | -0.0 | -0.0 | -0.0 | -0.1 | -0.0 |
|        |          | 2   | Indication [dB] | 74.0 | 73.9 | 73.0 | 71.4 | 69.2 | 65.7 | 62.8 | 59.9 |
|        |          |     | Error [dB]      | 0.0  | 0.0  | 73.0 | 0.0  | -0.0 | -0.0 | -0.0 | 0.0  |
|        |          | 3   | Indication [dB] | 73.9 | 73.9 | 73.0 | 71.3 | 69.1 | 65.6 | 62.8 | 59.9 |
|        |          |     | Error [dB]      | -0.0 | 0.0  | 0.0  | -0.0 | -0.0 | -0.0 | -0.0 | -0.0 |
|        |          | 4   | Indication [dB] | 74.0 | 73.9 | 73.0 | 71.4 | 69.2 | 65.7 | 62.8 | 59.9 |
|        |          |     | Error [dB]      | 0.0  | 0.0  | 0.0  | 0.0  | -0.0 | -0.0 | -0.1 | 0.0  |
|        | Slow     | 1   | Indication [dB] | 71.9 | 69.9 | 66.6 | 63.8 | 60.9 | 57.0 | 54.0 | 51.0 |
|        |          |     | Error [dB]      | -0.1 | 0.1  | -0.0 | -0.0 | -0.0 | -0.0 | -0.0 | 0.0  |
|        |          | 2   | Indication [dB] | 71.9 | 69.9 | 66.5 | 63.8 | 60.9 | 56.9 | 54.0 | 51.0 |
|        |          |     | Error [dB]      | -0.1 | 0.1  | -0.0 | -0.0 | -0.0 | -0.0 | 0.0  | 0.0  |
|        |          | 3   | Indication [dB] | 71.9 | 69.9 | 66.5 | 63.7 | 60.8 | 56.9 | 54.0 | 51.0 |
|        |          |     | Error [dB]      | -0.1 | 0.0  | -0.0 | -0.0 | -0.0 | -0.0 | 0.0  | 0.1  |
|        |          | 4   | Indication [dB] | 71.9 | 69.9 | 66.6 | 63.8 | 60.9 | 57.0 | 54.0 | 51.0 |
|        |          |     | Error [dB]      | -0.1 | 0.1  | -0.0 | -0.0 | -0.0 | -0.0 | -0.0 | 0.1  |
| SEL    | -        | 1   | Indication [dB] | 73.8 | 71.0 | 67.0 | 64.0 | 61.0 | 57.0 | 54.1 | 51.1 |
|        |          |     | Error [dB]      | -0.2 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.1  |
|        |          | 2   | Indication [dB] | 73.8 | 71.0 | 67.0 | 64.0 | 61.0 | 57.0 | 54.0 | 51.1 |
|        |          |     | Error [dB]      | -0.2 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.1  |
|        |          | 3   | Indication [dB] | 73.8 | 70.9 | 67.0 | 63.9 | 61.0 | 57.0 | 54.0 | 51.0 |
|        |          |     | Error [dB]      | -0.2 | -0.0 | 0.0  | -0.0 | 0.0  | 0.0  | 0.0  | 0.0  |
|        |          | 4   | Indication [dB] | 73.8 | 71.0 | 67.0 | 64.0 | 61.0 | 57.0 | 54.0 | 51.1 |
|        |          |     | Error [dB]      | -0.2 | -0.0 | 0.0  | 0.0  | -0.0 | 0.0  | 0.0  | 0.1  |

Range: 130dB, Equivalent input steady level = 54dB

| Result | Detector | Ch. | Duration [ms]   | 1000 | 500  |
|--------|----------|-----|-----------------|------|------|
| MAX    | Fast     | 1   | Indication [dB] | 54.1 | 53.9 |
|        |          |     | Error [dB]      | 0.0  | -0.0 |
|        |          | 2   | Indication [dB] | 54.0 | 53.9 |
|        |          |     | Error [dB]      | -0.0 | -0.0 |
|        |          | 3   | Indication [dB] | 54.0 | 53.9 |
|        |          |     | Error [dB]      | 0.1  | 0.1  |
|        |          | 4   | Indication [dB] | 54.0 | 54.0 |
|        |          |     | Error [dB]      | 0.0  | 0.1  |
|        | Slow     | 1   | Indication [dB] | 52.0 | 50.0 |
|        |          |     | Error [dB]      | -0.1 | 0.1  |
|        |          | 2   | Indication [dB] | 51.9 | 50.0 |
|        |          |     | Error [dB]      | -0.1 | 0.1  |
|        |          | 3   | Indication [dB] | 51.9 | 49.9 |
|        |          |     | Error [dB]      | -0.0 | 0.1  |
|        |          | 4   | Indication [dB] | 51.9 | 50.0 |
|        |          |     | Error [dB]      | -0.1 | 0.1  |
| SEL    | -        | 1   | Indication [dB] | 53.9 | 51.1 |
|        |          |     | Error [dB]      | -0.1 | 0.1  |
|        |          | 2   | Indication [dB] | 53.9 | 51.1 |
|        |          |     | Error [dB]      | -0.2 | 0.1  |
|        |          | 3   | Indication [dB] | 53.8 | 51.0 |
|        |          |     | Error [dB]      | -0.1 | 0.1  |
|        |          | 4   | Indication [dB] | 53.9 | 51.1 |
|        |          |     | Error [dB]      | -0.1 | 0.1  |

## 6. FREQUENCY RESPONSE (electrical)

LEVEL METER; Filter: Z; Range: 130 dB; Input signal =135 dB;



Measured Response with Preamplifier SV12 (f-frequency, An-attenuation in channel n)

| f [Hz] | A1[dB] | A2[dB] | A3[dB] | A4[dB] | f [Hz] | A1[dB] | A2[dB] | A3[dB] | A4[dB] |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 10     | 3.2    | 3.2    | 3.2    | 3.2    | 250    | 0.0    | 0.0    | -0.0   | 0.0    |
| 12.5   | 1.4    | 1.4    | 1.4    | 1.4    | 500    | 0.0    | 0.0    | -0.0   | 0.0    |
| 16     | 0.5    | 0.5    | 0.5    | 0.5    | 1000   | 0.0    | 0.0    | -0.0   | 0.0    |
| 20     | 0.1    | 0.1    | 0.1    | 0.1    | 2000   | 0.0    | 0.0    | 0.0    | 0.0    |
| 25     | 0.0    | 0.0    | 0.0    | 0.0    | 4000   | 0.0    | 0.0    | 0.0    | 0.0    |
| 31.5   | -0.0   | -0.0   | -0.0   | -0.0   | 8000   | 0.0    | 0.0    | 0.0    | 0.0    |
| 63     | -0.0   | -0.0   | -0.0   | -0.0   | 16000  | 0.0    | 0.0    | 0.0    | -0.0   |
| 125    | 0.0    | 0.0    | -0.0   | 0.0    | 20000  | -0.0   | 0.0    | 0.0    | -0.1   |

All frequencies are nominal center values for the 1/3 octave bands

## 7. INTERNAL NOISE LEVEL\* (electrical)

LEVEL METER; Range: 105 dB; Back-light – off; Calibration factor: 0dB

| Filter    | Z          | A    | C    |
|-----------|------------|------|------|
| Channel 1 | Level [dB] | 14.7 | 13.3 |
| Channel 2 | Level [dB] | 17.4 | 13.0 |
| Channel 3 | Level [dB] | 17.8 | 11.7 |
| Channel 4 | Level [dB] | 14.9 | 11.8 |

\* measured with preamplifier SVANTEK type SV12 No. 1771.

## VIBRATION LEVEL METER

### 1. CALIBRATION (electrical)

LEVEL METER; Filter: HP10; Input signal =140.0dB (10.0 m/s<sup>2</sup>), f<sub>0</sub>=79.6Hz

|           | Range 145dB     |            | Range 170dB     |            |
|-----------|-----------------|------------|-----------------|------------|
|           | Indication [dB] | Error [dB] | Indication [dB] | Error [dB] |
| Channel 1 | 139.98          | -0.02      | 140.03          | 0.03       |
| Channel 2 | 139.99          | -0.01      | 140.04          | 0.04       |
| Channel 3 | 139.98          | -0.02      | 140.04          | 0.04       |
| Channel 4 | 139.98          | -0.02      | 140.03          | 0.03       |

### 2. CALIBRATION (vibrational)

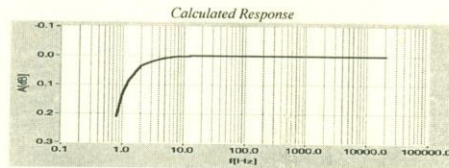
LEVEL METER; Range: 145dB; Input signal: 120dB;

| Filter    | HP1             |            | HP10            |            | Wd              |            | Wm              |            | Wh              |            |
|-----------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|------------|
|           | Indication [dB] | Error [dB] | Indication [dB] | Error [dB] | Indication [dB] | Error [dB] | Indication [dB] | Error [dB] | Indication [dB] | Error [dB] |
| Channel 1 | 119.8           | -0.2       | 119.8           | -0.2       | 105.9           | -0.2       | 102.2           | 0.1        | 110.7           | 0.1        |
| Channel 2 | 119.8           | -0.2       | 119.8           | -0.2       | 105.9           | -0.2       | 102.2           | 0.1        | 110.7           | 0.1        |
| Channel 3 | 119.8           | -0.2       | 119.8           | -0.2       | 105.9           | -0.2       | 102.1           | 0.1        | 110.7           | 0.1        |
| Channel 4 | 119.8           | -0.2       | 119.8           | -0.2       | 105.9           | -0.2       | 102.2           | 0.1        | 110.7           | 0.1        |

Calibration measured with the accelerometer DYTRAN type 3185D No. 2975. Calibration factor: -0.3dB

### 3. FREQUENCY RESPONSE (electrical)

1/3 OCTAVE, Filter: HP, Range: 170 dB; input=175 dB;



Measured Response (f-frequency, An-attenuation in channel n)

| f [Hz] | A1[dB] | A2[dB] | A3[dB] | A4[dB] | f [Hz] | A1[dB] | A2 [dB] | A3[dB] | A4[dB] | f [Hz] | A1[dB] | A2[dB] | A3[dB] | A4[dB] |
|--------|--------|--------|--------|--------|--------|--------|---------|--------|--------|--------|--------|--------|--------|--------|
| 0.8    | 0.21   | 0.21   | 0.20   | 0.21   | 5      | 0.01   | 0.01    | 0.01   | 0.02   | 500    | 0.00   | 0.00   | 0.00   | 0.00   |
| 1      | 0.12   | 0.12   | 0.12   | 0.12   | 6.3    | 0.01   | 0.01    | 0.01   | 0.01   | 1000   | 0.00   | 0.00   | 0.00   | 0.00   |
| 1.25   | 0.09   | 0.09   | 0.09   | 0.09   | 8      | 0.01   | 0.01    | 0.01   | 0.01   | 2000   | 0.00   | 0.00   | 0.00   | 0.00   |
| 1.6    | 0.04   | 0.04   | 0.04   | 0.05   | 16     | 0.00   | 0.00    | 0.00   | 0.00   | 4000   | 0.01   | 0.02   | 0.02   | 0.01   |
| 2      | 0.04   | 0.04   | 0.03   | 0.04   | 31.5   | -0.01  | 0.00    | -0.01  | 0.00   | 8000   | 0.04   | 0.04   | 0.05   | 0.02   |
| 2.5    | 0.02   | 0.02   | 0.02   | 0.03   | 63     | 0.00   | 0.00    | 0.00   | 0.00   | 16000  | 0.02   | 0.02   | 0.04   | -0.04  |
| 3.15   | 0.03   | 0.03   | 0.03   | 0.03   | 125    | 0.00   | 0.00    | 0.00   | 0.00   | 20000  | -0.01  | 0.00   | 0.02   | -0.07  |
| 4      | 0.03   | 0.03   | 0.03   | 0.03   | 250    | 0.00   | 0.00    | -0.01  | 0.00   |        |        |        |        |        |

All frequencies are nominal center values for the 1/3 octave bands

### 4. INTERNAL NOISE LEVEL (electrical)

LEVEL METER func.; Range: 145 dB; Back-light - off

|           | Filter          | HP1  | HP10 | Wd   | Wm   | Wh   |
|-----------|-----------------|------|------|------|------|------|
| Channel 1 | Indication [dB] | 54.4 | 52.1 | 42.2 | 39.0 | 36.5 |
| Channel 2 | Indication [dB] | 55.0 | 52.5 | 42.5 | 39.0 | 36.5 |
| Channel 3 | Indication [dB] | 53.2 | 50.2 | 42.7 | 38.8 | 36.8 |
| Channel 4 | Indication [dB] | 54.9 | 52.7 | 42.9 | 39.4 | 37.1 |

#### ENVIRONMENTAL CONDITIONS

| Temperature | Relative humidity | Ambient pressure |
|-------------|-------------------|------------------|
| 22 °C       | 31 %              | 1004 hPa         |

#### TEST EQUIPMENT

| Item | Manufacturer | Model     | Serial no. | Description                                       |
|------|--------------|-----------|------------|---------------------------------------------------|
| 1.   | SVANTEK      | SVAN 401  | 100        | Signal generator                                  |
| 2.   | SVANTEK      | SVAN 912A | 15900      | Sound & Vibration Analyser                        |
| 3.   | KEITHLEY     | 2000      | 0910165    | Digital multimeter                                |
| 4.   | SVANTEK      | SV30A     | 24563      | Acoustic calibrator                               |
| 5.   | SVANTEK      | ST02      | -          | Microphone equivalent electrical impedance (18pF) |
| 6.   | DYTRAN       | 3233A     | 747        | Reference accelerometer                           |

#### CONFORMITY & TEST DECLARATION

1. Herewith Svantek company declares that this instrument has been calibrated and tested in compliance with the internal ISO9001 procedures and meets all specification given in the Manual(s) or respectively surpass them.
2. Traceability of the calibration is guaranteed by the above mentioned ISO9001 procedures.
3. The information appearing on this sheet has been compiled specifically for this instrument. This form is produced with advanced equipment & procedures which permit comprehensive quality assurance verification of all data supplied herein.
4. This calibration sheet shall not be reproduced except in full, without written permission of the SVANTEK Ltd.

Calibration specialist: Paweł Bednarczyk 

Test date: 2016-09-20

## FACTORY CALIBRATION DATA OF THE SVAN 958 No. 59121

### SOUND LEVEL METER

#### 1. CALIBRATION (electrical)

LEVEL METER; Filter: LIN; Input signal =114.0dB,  $f_{in}=1\text{kHz}$ 

|           | Range 105dB     |            | Range 130dB     |            |
|-----------|-----------------|------------|-----------------|------------|
|           | Indication [dB] | Error [dB] | Indication [dB] | Error [dB] |
| Channel 1 | 113.98          | -0.02      | 114.02          | 0.02       |
| Channel 2 | 113.97          | -0.03      | 114.02          | 0.02       |
| Channel 3 | 113.97          | -0.03      | 114.02          | 0.02       |
| Channel 4 | 113.97          | -0.03      | 114.02          | 0.02       |

#### 2. CALIBRATION\* (acoustical)

LEVEL METER; Range: 130 dB; Reference frequency: 1000Hz;

| Filter    | LIN             |            | A               |            | C               |            |
|-----------|-----------------|------------|-----------------|------------|-----------------|------------|
|           | Indication [dB] | Error [dB] | Indication [dB] | Error [dB] | Indication [dB] | Error [dB] |
| Channel 1 | 114.0           | 0.0        | 114.0           | 0.0        | 114.0           | 0.0        |
| Channel 2 | 114.0           | 0.0        | 114.0           | 0.0        | 114.0           | 0.0        |
| Channel 3 | 114.0           | 0.0        | 114.0           | 0.0        | 114.0           | 0.0        |
| Channel 4 | 114.0           | 0.0        | 114.0           | 0.0        | 114.0           | 0.0        |

Calibration measured with the microphone SVANTEK type SV22 No. 4013604. Calibration factor: -0.4dB

#### 3. LINEARITY TEST\* (electrical)

LEVEL METER; Range: 105 dB; Filter: A;  $f_{in}=1000\text{ Hz}$ 

|           | Input [dB] | 24.0 | 30.0 | 40.0 | 60.0  | 80.0  | 100.0 | 114.0 |
|-----------|------------|------|------|------|-------|-------|-------|-------|
| Channel 1 | Error [dB] | 0.32 | 0.13 | 0.04 | -0.01 | 0.00  | 0.01  | 0.01  |
| Channel 2 | Error [dB] | 0.29 | 0.11 | 0.04 | -0.01 | 0.00  | 0.01  | 0.01  |
| Channel 3 | Error [dB] | 0.25 | 0.09 | 0.04 | -0.01 | 0.00  | 0.01  | 0.01  |
| Channel 4 | Error [dB] | 0.35 | 0.11 | 0.03 | -0.01 | -0.00 | 0.01  | 0.01  |

LEVEL METER; Range: 130 dB; Filter: A;  $f_{in}=1000\text{ Hz}$ 

|           | Input [dB] | 45.0  | 50.0 | 60.0 | 80.0 | 100.0 | 120.0 | 135.0 |
|-----------|------------|-------|------|------|------|-------|-------|-------|
| Channel 1 | Error [dB] | 0.07  | 0.09 | 0.04 | 0.01 | 0.01  | 0.00  | 0.01  |
| Channel 2 | Error [dB] | 0.09  | 0.10 | 0.04 | 0.01 | 0.01  | 0.00  | 0.01  |
| Channel 3 | Error [dB] | 0.00  | 0.01 | 0.00 | 0.01 | 0.01  | 0.00  | 0.01  |
| Channel 4 | Error [dB] | -0.02 | 0.00 | 0.01 | 0.01 | 0.01  | 0.00  | 0.01  |

1/3 OCTAVE (1kHz); Range: 130 dB; Filter: A;  $f_{in}=1000\text{ Hz}$ 

|           | Input [dB] | 35.0 | 40.0 | 60.0 | 80.0 | 100.0 | 120.0 | 135.0 |
|-----------|------------|------|------|------|------|-------|-------|-------|
| Channel 1 | Error [dB] | 0.32 | 0.11 | 0.03 | 0.00 | 0.00  | -0.01 | 0.00  |
| Channel 2 | Error [dB] | 0.34 | 0.11 | 0.03 | 0.00 | 0.01  | 0.00  | 0.01  |
| Channel 3 | Error [dB] | 0.30 | 0.07 | 0.03 | 0.00 | 0.01  | 0.00  | 0.01  |
| Channel 4 | Error [dB] | 0.28 | 0.08 | 0.04 | 0.00 | 0.01  | -0.01 | -0.00 |

#### 4. TONEBURST RESPONSE\* (electrical)

LEVEL METER, Characteristic: A,  $f_{sin} = 4000$  Hz; Burst duration: 2s;

Range: 105dB, Equivalent input steady level = 112dB

| Result | Detector | Ch. | Duration [ms]   | 1000  | 500   | 200   | 100   | 50    | 20    | 10    | 5    | 2    | 1    | 0.5  | 0.25 |
|--------|----------|-----|-----------------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|
| MAX    | Fast     | 1   | Indication [dB] | 111.9 | 111.9 | 111.0 | 109.3 | 107.1 | 103.6 | 100.8 | 97.9 | 93.9 | 90.9 | 87.8 | 84.8 |
|        |          |     | Error [dB]      | 0.0   | 0.0   | 0.0   | 0.0   | -0.0  | -0.0  | -0.1  | 0.0  | -0.0 | -0.1 | -0.1 | -0.1 |
|        |          | 2   | Indication [dB] | 111.9 | 111.8 | 110.9 | 109.3 | 107.1 | 103.6 | 100.8 | 97.8 | 93.9 | 90.9 | 87.8 | 84.8 |
|        |          |     | Error [dB]      | 0.0   | 0.0   | 0.0   | 0.0   | -0.0  | -0.0  | -0.1  | 0.0  | -0.0 | -0.0 | -0.1 | -0.1 |
|        |          | 3   | Indication [dB] | 112.0 | 111.9 | 111.0 | 109.4 | 107.2 | 103.7 | 100.8 | 97.9 | 94.0 | 90.9 | 87.9 | 84.9 |
|        |          |     | Error [dB]      | 0.0   | 0.0   | 0.0   | 0.0   | -0.0  | -0.0  | -0.1  | 0.0  | -0.0 | -0.0 | -0.1 | -0.1 |
|        |          | 4   | Indication [dB] | 111.9 | 111.9 | 111.0 | 109.3 | 107.1 | 103.6 | 100.8 | 97.9 | 93.9 | 90.9 | 87.8 | 84.8 |
|        |          |     | Error [dB]      | -0.0  | 0.0   | 0.0   | 0.0   | -0.0  | -0.0  | -0.1  | 0.0  | -0.0 | -0.0 | -0.1 | -0.1 |
|        | Slow     | 1   | Indication [dB] | 109.9 | 107.9 | 104.5 | 101.7 | 98.8  | 94.9  | 91.9  | 88.9 | 84.9 | -    | -    | -    |
|        |          |     | Error [dB]      | 0.0   | 0.0   | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0 | -0.0 | -    | -    | -    |
|        |          | 2   | Indication [dB] | 109.9 | 107.9 | 104.5 | 101.7 | 98.8  | 94.9  | 91.9  | 88.9 | 84.9 | -    | -    | -    |
|        |          |     | Error [dB]      | 0.0   | 0.1   | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0 | -0.0 | -    | -    | -    |
|        |          | 3   | Indication [dB] | 110.0 | 107.9 | 104.6 | 101.8 | 98.9  | 95.0  | 92.0  | 89.0 | 85.0 | -    | -    | -    |
|        |          |     | Error [dB]      | 0.0   | 0.1   | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0 | -0.0 | -    | -    | -    |
|        |          | 4   | Indication [dB] | 109.9 | 107.9 | 104.5 | 101.7 | 98.8  | 94.9  | 91.9  | 88.9 | 84.9 | -    | -    | -    |
|        |          |     | Error [dB]      | 0.0   | 0.0   | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0 | -0.0 | -    | -    | -    |
| SEL    |          | 1   | Indication [dB] | 111.9 | 108.9 | 104.9 | 101.9 | 98.9  | 94.9  | 91.9  | 88.9 | 84.9 | 81.9 | 78.8 | 75.8 |
|        |          |     | Error [dB]      | 0.0   | -0.0  | 0.0   | 0.0   | -0.0  | 0.0   | 0.0   | -0.0 | -0.0 | -0.1 | -0.1 | -0.1 |
|        |          | 2   | Indication [dB] | 111.9 | 108.9 | 104.9 | 101.9 | 98.9  | 94.9  | 91.9  | 88.9 | 84.9 | 81.9 | 78.8 | 75.8 |
|        |          |     | Error [dB]      | 0.0   | -0.0  | 0.0   | 0.0   | -0.0  | 0.0   | 0.0   | -0.0 | -0.0 | -0.0 | -0.1 | -0.1 |
|        |          | 3   | Indication [dB] | 112.0 | 109.0 | 105.0 | 102.0 | 99.0  | 95.0  | 92.0  | 89.0 | 85.0 | 81.9 | 78.9 | 75.9 |
|        |          |     | Error [dB]      | 0.0   | -0.0  | 0.0   | 0.0   | -0.0  | 0.0   | 0.0   | -0.0 | -0.0 | -0.0 | -0.1 | -0.1 |
|        |          | 4   | Indication [dB] | 111.9 | 108.9 | 105.0 | 101.9 | 98.9  | 94.9  | 91.9  | 88.9 | 84.9 | 81.9 | 78.8 | 75.8 |
|        |          |     | Error [dB]      | 0.0   | -0.0  | 0.0   | -0.0  | -0.0  | 0.0   | -0.0  | -0.0 | -0.0 | -0.1 | -0.1 | -0.1 |

Range: 105dB, Equivalent input steady level = 52dB

| Result | Detector | Ch. | Duration [ms]   | 1000 | 500  | 200  | 100  | 50   | 20   | 10   | 5    |
|--------|----------|-----|-----------------|------|------|------|------|------|------|------|------|
| MAX    | Fast     | 1   | Indication [dB] | 51.9 | 51.8 | 50.9 | 49.3 | 47.1 | 43.6 | 40.8 | 37.9 |
|        |          |     | Error [dB]      | 0.0  | 0.0  | 0.0  | -0.0 | -0.0 | -0.0 | -0.1 | 0.0  |
|        |          | 2   | Indication [dB] | 51.9 | 51.8 | 50.9 | 49.3 | 47.1 | 43.6 | 40.7 | 37.8 |
|        |          |     | Error [dB]      | 0.0  | 0.0  | 0.0  | 0.0  | -0.0 | 0.0  | -0.1 | 0.0  |
|        |          | 3   | Indication [dB] | 52.0 | 51.9 | 51.0 | 49.4 | 47.1 | 43.7 | 40.8 | 37.9 |
|        |          |     | Error [dB]      | 0.0  | 0.0  | 0.0  | 0.0  | -0.0 | 0.0  | -0.1 | 0.0  |
|        |          | 4   | Indication [dB] | 51.9 | 51.8 | 50.9 | 49.3 | 47.1 | 43.6 | 40.8 | 37.9 |
|        |          |     | Error [dB]      | 0.0  | 0.0  | 0.0  | -0.0 | -0.0 | -0.0 | -0.1 | 0.0  |
|        | Slow     | 1   | Indication [dB] | 49.9 | 47.9 | 44.5 | 41.7 | 38.8 | 34.9 | 31.9 | 28.9 |
|        |          |     | Error [dB]      | 0.0  | 0.1  | -0.0 | -0.0 | -0.0 | 0.0  | -0.0 | 0.0  |
|        |          | 2   | Indication [dB] | 49.9 | 47.9 | 44.5 | 41.7 | 38.8 | 34.9 | 31.9 | 28.9 |
|        |          |     | Error [dB]      | 0.0  | 0.1  | -0.0 | -0.0 | -0.0 | 0.0  | -0.0 | -0.0 |
|        |          | 3   | Indication [dB] | 50.0 | 47.9 | 44.6 | 41.8 | 38.8 | 35.0 | 31.9 | 29.0 |
|        |          |     | Error [dB]      | 0.0  | 0.1  | -0.0 | -0.0 | -0.0 | 0.0  | -0.0 | 0.0  |
|        |          | 4   | Indication [dB] | 49.9 | 47.9 | 44.5 | 41.7 | 38.8 | 34.9 | 31.9 | 29.2 |
|        |          |     | Error [dB]      | 0.0  | 0.0  | -0.0 | -0.0 | -0.0 | 0.0  | -0.0 | 0.3  |
| SEL    |          | 1   | Indication [dB] | 51.9 | 48.9 | 44.9 | 41.9 | 38.9 | 35.0 | 32.0 | 29.1 |
|        |          |     | Error [dB]      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.1  | 0.2  |
|        |          | 2   | Indication [dB] | 51.9 | 48.9 | 44.9 | 41.9 | 38.9 | 35.0 | 32.0 | 29.0 |
|        |          |     | Error [dB]      | 0.0  | -0.0 | 0.0  | 0.0  | 0.0  | 0.1  | 0.1  | 0.1  |
|        |          | 3   | Indication [dB] | 52.0 | 49.0 | 45.0 | 42.0 | 39.0 | 35.0 | 32.0 | 29.1 |
|        |          |     | Error [dB]      | 0.0  | -0.0 | 0.0  | 0.0  | 0.0  | 0.1  | 0.1  | 0.2  |
|        |          | 4   | Indication [dB] | 51.9 | 48.9 | 44.9 | 41.9 | 38.9 | 35.0 | 32.0 | 29.1 |
|        |          |     | Error [dB]      | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.1  | 0.2  |

Range: 105dB, Equivalent input steady level = 34dB

| Result | Detector | Ch. | Duration [ms]   | 1000 | 500  |
|--------|----------|-----|-----------------|------|------|
| MAX    | Fast     | 1   | Indication [dB] | 34.0 | 33.9 |
|        |          |     | Error [dB]      | 0.0  | -0.0 |
|        |          | 2   | Indication [dB] | 34.0 | 33.9 |
|        |          |     | Error [dB]      | -0.0 | 0.0  |
|        |          | 3   | Indication [dB] | 34.0 | 33.9 |
|        |          |     | Error [dB]      | 0.0  | 0.0  |
|        |          | 4   | Indication [dB] | 34.0 | 33.9 |
|        |          |     | Error [dB]      | 0.0  | 0.0  |
|        | Slow     | 1   | Indication [dB] | 32.0 | 30.0 |
|        |          |     | Error [dB]      | 0.0  | 0.1  |
|        |          | 2   | Indication [dB] | 32.0 | 30.0 |
|        |          |     | Error [dB]      | 0.0  | 0.1  |
|        |          | 3   | Indication [dB] | 32.0 | 29.9 |
|        |          |     | Error [dB]      | 0.0  | 0.1  |
|        |          | 4   | Indication [dB] | 31.9 | 30.1 |
|        |          |     | Error [dB]      | 0.0  | 0.3  |
| SEL    |          | 1   | Indication [dB] | 34.0 | 31.1 |
|        |          |     | Error [dB]      | 0.0  | 0.1  |
|        |          | 2   | Indication [dB] | 34.0 | 31.1 |
|        |          |     | Error [dB]      | 0.0  | 0.1  |
|        |          | 3   | Indication [dB] | 34.0 | 31.1 |
|        |          |     | Error [dB]      | 0.0  | 0.1  |
|        |          | 4   | Indication [dB] | 34.0 | 31.0 |
|        |          |     | Error [dB]      | 0.0  | 0.1  |

Range: 130dB, Equivalent input steady level = 134dB

| Result | Detector | Ch. | Duration [ms]   | 1000  | 500   | 200   | 100   | 50    | 20    | 10    | 5     | 2     | 1     | 0.5   | 0.25  |
|--------|----------|-----|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| MAX    | Fast     | 1   | Indication [dB] | 133.9 | 133.8 | 132.9 | 131.3 | 129.1 | 125.6 | 122.8 | 119.8 | 115.9 | 112.9 | 109.8 | 106.8 |
|        |          |     | Error [dB]      | -0.0  | 0.0   | 0.0   | 0.0   | -0.0  | -0.0  | -0.1  | 0.0   | -0.0  | -0.1  | -0.1  | -0.1  |
|        |          | 2   | Indication [dB] | 133.9 | 133.8 | 132.9 | 131.3 | 129.1 | 125.6 | 122.8 | 119.8 | 115.9 | 112.9 | 109.8 | 106.8 |
|        |          |     | Error [dB]      | 0.0   | 0.0   | 0.0   | 0.0   | -0.0  | -0.0  | -0.1  | 0.0   | -0.0  | -0.1  | -0.1  | -0.1  |
|        |          | 3   | Indication [dB] | 134.0 | 133.9 | 133.0 | 131.4 | 129.2 | 125.7 | 122.8 | 119.9 | 116.0 | 112.9 | 109.9 | 106.9 |
|        |          |     | Error [dB]      | 0.0   | 0.0   | 0.0   | 0.0   | -0.0  | -0.0  | -0.1  | 0.0   | -0.0  | -0.1  | -0.1  | -0.1  |
|        |          | 4   | Indication [dB] | 133.9 | 133.9 | 133.0 | 131.3 | 129.1 | 125.6 | 122.8 | 119.9 | 115.9 | 112.9 | 109.8 | 106.8 |
|        |          |     | Error [dB]      | 0.0   | 0.0   | 0.0   | 0.0   | 129.1 | -0.0  | -0.0  | 0.0   | -0.0  | -0.0  | -0.1  | -0.1  |
|        | Slow     | 1   | Indication [dB] | 131.9 | 129.9 | 126.5 | 123.7 | 120.8 | 116.9 | 113.9 | 110.9 | 106.9 | -     | -     | -     |
|        |          |     | Error [dB]      | 0.0   | 0.0   | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -     | -     | -     |
|        |          | 2   | Indication [dB] | 131.9 | 129.9 | 126.5 | 123.7 | 120.8 | 116.9 | 113.9 | 110.9 | 106.9 | -     | -     | -     |
|        |          |     | Error [dB]      | 0.0   | 0.0   | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -     | -     | -     |
|        |          | 3   | Indication [dB] | 132.0 | 129.9 | 126.6 | 123.8 | 120.9 | 117.0 | 114.0 | 111.0 | 107.0 | -     | -     | -     |
|        |          |     | Error [dB]      | 0.0   | 0.0   | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -     | -     | -     |
|        |          | 4   | Indication [dB] | 131.9 | 129.9 | 126.5 | 123.7 | 120.8 | 116.9 | 113.9 | 110.9 | 106.9 | -     | -     | -     |
|        |          |     | Error [dB]      | 0.0   | 0.1   | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -0.0  | -     | -     | -     |
| SEL    |          | 1   | Indication [dB] | 133.9 | 130.9 | 126.9 | 123.9 | 120.9 | 116.9 | 113.9 | 110.9 | 106.9 | 103.9 | 100.8 | 97.8  |
|        |          |     | Error [dB]      | 0.0   | -0.0  | 0.0   | 0.0   | -0.0  | 0.0   | -0.0  | -0.0  | -0.0  | -0.1  | -0.1  | -0.1  |
|        |          | 2   | Indication [dB] | 133.9 | 130.9 | 126.9 | 123.9 | 120.9 | 116.9 | 113.9 | 110.9 | 106.9 | 103.9 | 100.8 | 97.8  |
|        |          |     | Error [dB]      | 0.0   | -0.0  | 0.0   | -0.0  | -0.0  | 0.0   | -0.0  | -0.0  | -0.0  | -0.1  | -0.1  | -0.1  |
|        |          | 3   | Indication [dB] | 134.0 | 131.0 | 127.0 | 124.0 | 121.0 | 117.0 | 114.0 | 111.0 | 107.0 | 103.9 | 100.9 | 97.9  |
|        |          |     | Error [dB]      | 0.0   | -0.0  | 0.0   | 0.0   | -0.0  | 0.0   | -0.0  | -0.0  | -0.0  | -0.1  | -0.1  | -0.1  |
|        |          | 4   | Indication [dB] | 133.9 | 130.9 | 127.0 | 123.9 | 120.9 | 116.9 | 113.9 | 110.9 | 106.9 | 103.9 | 100.8 | 97.8  |
|        |          |     | Error [dB]      | 0.0   | -0.0  | 0.0   | 0.0   | -0.0  | 0.0   | -0.0  | -0.0  | -0.0  | -0.0  | -0.1  | -0.1  |

Range: 130dB; Equivalent input steady level = 74dB

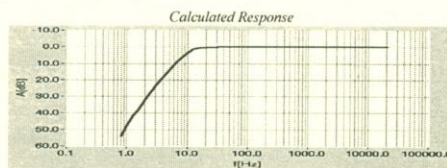
| Result | Detector | Ch. | Duration [ms]   | 1000 | 500  | 200  | 100  | 50   | 20   | 10   | 5    |
|--------|----------|-----|-----------------|------|------|------|------|------|------|------|------|
| MAX    | Fast     | 1   | Indication [dB] | 73.9 | 73.8 | 72.9 | 71.3 | 69.1 | 65.6 | 62.8 | 59.8 |
|        |          |     | Error [dB]      | -0.0 | 0.0  | 0.0  | 0.0  | -0.0 | -0.0 | -0.1 | 0.0  |
|        |          | 2   | Indication [dB] | 73.9 | 73.8 | 72.9 | 71.3 | 69.1 | 65.6 | 62.8 | 59.8 |
|        |          |     | Error [dB]      | -0.0 | 0.0  | 72.9 | 0.0  | -0.0 | -0.0 | -0.0 | 0.0  |
|        |          | 3   | Indication [dB] | 74.0 | 73.9 | 73.0 | 71.4 | 69.1 | 65.7 | 62.8 | 59.9 |
|        |          |     | Error [dB]      | 0.0  | 0.0  | 0.0  | 0.0  | -0.0 | -0.0 | -0.0 | 0.0  |
|        |          | 4   | Indication [dB] | 73.9 | 73.9 | 72.9 | 71.3 | 69.1 | 65.6 | 62.8 | 59.8 |
|        |          |     | Error [dB]      | 0.0  | 0.0  | 0.0  | 0.0  | -0.0 | -0.0 | -0.1 | 0.0  |
|        | Slow     | 1   | Indication [dB] | 71.9 | 69.9 | 66.5 | 63.7 | 60.8 | 56.9 | 54.0 | 50.9 |
|        |          |     | Error [dB]      | 0.0  | 0.0  | -0.0 | -0.0 | -0.0 | -0.0 | 0.0  | -0.0 |
|        |          | 2   | Indication [dB] | 71.9 | 69.9 | 66.5 | 63.7 | 60.8 | 56.9 | 53.9 | 51.0 |
|        |          |     | Error [dB]      | 0.0  | 0.0  | -0.0 | -0.0 | -0.0 | -0.0 | -0.0 | 0.1  |
|        |          | 3   | Indication [dB] | 72.0 | 69.9 | 66.5 | 63.8 | 60.9 | 56.9 | 54.0 | 50.9 |
|        |          |     | Error [dB]      | 0.0  | 0.1  | -0.0 | -0.0 | -0.0 | -0.0 | -0.0 | -0.0 |
|        |          | 4   | Indication [dB] | 71.9 | 69.9 | 66.5 | 63.7 | 60.8 | 56.9 | 53.9 | 50.9 |
|        |          |     | Error [dB]      | 0.0  | 0.1  | -0.0 | -0.0 | -0.0 | -0.0 | -0.0 | -0.0 |
| SEL    | -        | 1   | Indication [dB] | 73.9 | 70.9 | 66.9 | 63.9 | 60.9 | 56.9 | 54.0 | 51.0 |
|        |          |     | Error [dB]      | -0.0 | -0.0 | 0.0  | 0.0  | -0.0 | 0.0  | 0.0  | 0.1  |
|        |          | 2   | Indication [dB] | 73.9 | 70.9 | 66.9 | 63.9 | 60.9 | 56.9 | 54.0 | 51.0 |
|        |          |     | Error [dB]      | 0.0  | -0.0 | 0.0  | -0.0 | -0.0 | 0.0  | 0.0  | 0.1  |
|        |          | 3   | Indication [dB] | 74.0 | 71.0 | 67.0 | 64.0 | 61.0 | 57.0 | 54.0 | 51.0 |
|        |          |     | Error [dB]      | 0.0  | -0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  |
|        |          | 4   | Indication [dB] | 73.9 | 70.9 | 66.9 | 63.9 | 60.9 | 56.9 | 54.0 | 51.0 |
|        |          |     | Error [dB]      | 0.0  | -0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  |

Range: 130dB; Equivalent input steady level = 54dB

| Result | Detector | Ch. | Duration [ms]   | 1000 | 500  |
|--------|----------|-----|-----------------|------|------|
| MAX    | Fast     | 1   | Indication [dB] | 54.0 | 53.9 |
|        |          |     | Error [dB]      | 0.0  | 0.1  |
|        |          | 2   | Indication [dB] | 54.0 | 53.8 |
|        |          |     | Error [dB]      | 0.1  | -0.0 |
|        |          | 3   | Indication [dB] | 54.0 | 53.9 |
|        |          |     | Error [dB]      | 0.0  | -0.0 |
|        |          | 4   | Indication [dB] | 53.9 | 53.9 |
|        |          |     | Error [dB]      | -0.0 | 0.0  |
|        | Slow     | 1   | Indication [dB] | 52.0 | 49.9 |
|        |          |     | Error [dB]      | 0.0  | 0.1  |
|        |          | 2   | Indication [dB] | 52.0 | 49.9 |
|        |          |     | Error [dB]      | 0.0  | 0.1  |
|        |          | 3   | Indication [dB] | 52.0 | 50.0 |
|        |          |     | Error [dB]      | 0.0  | 0.1  |
|        |          | 4   | Indication [dB] | 51.9 | 50.0 |
|        |          |     | Error [dB]      | -0.0 | 0.1  |
| SEL    | -        | 1   | Indication [dB] | 54.0 | 51.0 |
|        |          |     | Error [dB]      | 0.0  | 0.1  |
|        |          | 2   | Indication [dB] | 54.0 | 51.0 |
|        |          |     | Error [dB]      | 0.0  | 0.0  |
|        |          | 3   | Indication [dB] | 54.0 | 51.0 |
|        |          |     | Error [dB]      | 0.0  | 0.0  |
|        |          | 4   | Indication [dB] | 54.0 | 51.0 |
|        |          |     | Error [dB]      | -0.0 | 0.0  |

## 6. FREQUENCY RESPONSE (electrical)

LEVEL METER; Filter: Z; Range: 130 dB; Input signal =135 dB;



*Measured Response with Preamplifier SV12 (f-frequency. An-attenuation in channel n)*

| f [Hz] | A1[dB] | A2[dB] | A3[dB] | A4[dB] | f [Hz] | A1[dB] | A2[dB] | A3[dB] | A4[dB] |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 10     | 3.2    | 3.2    | 3.2    | 3.2    | 250    | 0.0    | -0.0   | -0.0   | 0.0    |
| 12.5   | 1.4    | 1.4    | 1.4    | 1.4    | 500    | 0.0    | -0.0   | 0.0    | 0.0    |
| 16     | 0.5    | 0.5    | 0.5    | 0.5    | 1000   | 0.0    | 0.0    | 0.0    | 0.0    |
| 20     | 0.1    | 0.1    | 0.1    | 0.1    | 2000   | 0.0    | 0.0    | 0.0    | 0.0    |
| 25     | 0.0    | 0.0    | 0.0    | 0.0    | 4000   | 0.0    | 0.0    | 0.0    | 0.0    |
| 31.5   | -0.0   | -0.0   | -0.0   | -0.0   | 8000   | 0.0    | 0.0    | 0.0    | 0.0    |
| 63     | -0.0   | -0.0   | -0.0   | -0.0   | 16000  | 0.0    | 0.0    | 0.0    | 0.0    |
| 125    | 0.0    | -0.0   | -0.0   | -0.0   | 20000  | 0.0    | 0.0    | 0.1    | 0.0    |

All frequencies are nominal center values for the 1/3 octave bands

## 7. INTERNAL NOISE LEVEL\* (electrical)

LEVEL METER; Range: 105 dB; Back-light – off; Calibration factor: 0dB

| Filter    | Z          | A    | C    |
|-----------|------------|------|------|
| Channel 1 | Level [dB] | 14.2 | 11.6 |
| Channel 2 | Level [dB] | 13.2 | 10.7 |
| Channel 3 | Level [dB] | 13.9 | 11.2 |
| Channel 4 | Level [dB] | 14.0 | 11.4 |

\* measured with preamplifier SVANTEK type SV12 No. 1771.

## VIBRATION LEVEL METER

### 1. CALIBRATION (electrical)

LEVEL METER; Filter: HP10; Input signal =140.0dB (10.0 m/s<sup>2</sup>), f<sub>0</sub>=79.6Hz

|           | Range 145dB     |            | Range 170dB     |            |
|-----------|-----------------|------------|-----------------|------------|
|           | Indication [dB] | Error [dB] | Indication [dB] | Error [dB] |
| Channel 1 | 139.99          | -0.01      | 140.03          | 0.03       |
| Channel 2 | 139.98          | -0.02      | 140.02          | 0.02       |
| Channel 3 | 139.98          | -0.02      | 140.03          | 0.03       |
| Channel 4 | 139.98          | -0.02      | 140.02          | 0.02       |

### 2. CALIBRATION (vibrational)

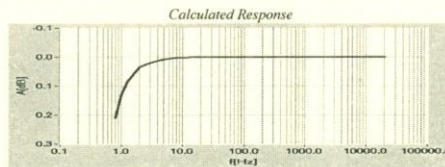
LEVEL METER; Range: 145dB; Input signal: 120dB;

| Filter    | HP1             |            | HP10            |            | Wd              |            | Wm              |            | Wh              |            |
|-----------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|------------|
|           | Indication [dB] | Error [dB] | Indication [dB] | Error [dB] | Indication [dB] | Error [dB] | Indication [dB] | Error [dB] | Indication [dB] | Error [dB] |
| Channel 1 | 119.8           | -0.2       | 119.8           | -0.2       | 106.0           | -0.2       | 102.2           | 0.1        | 110.7           | 0.1        |
| Channel 2 | 119.8           | -0.2       | 119.8           | -0.2       | 105.9           | -0.2       | 102.1           | 0.1        | 110.7           | 0.1        |
| Channel 3 | 119.8           | -0.2       | 119.8           | -0.2       | 105.9           | -0.2       | 102.1           | 0.1        | 110.6           | 0.1        |
| Channel 4 | 119.8           | -0.2       | 119.8           | -0.2       | 105.9           | -0.2       | 102.1           | 0.1        | 110.7           | 0.1        |

Calibration measured with the accelerometer DYTRAN type 3185D No. 2975 Calibration factor: -0.3dB

### 3. FREQUENCY RESPONSE (electrical)

1/3 OCTAVE, Filter: HP, Range: 170 dB, input=175 dB,



Measured Response (f-frequency, An-attenuation in channel n)

| f [Hz] | A1[dB] | A2[dB] | A3[dB] | A4[dB] | f [Hz] | A1[dB] | A2[dB] | A3[dB] | A4[dB] | f [Hz] | A1[dB] | A2[dB] | A3[dB] | A4[dB] |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0.8    | 0.18   | 0.19   | 0.18   | 0.18   | 5      | 0.01   | 0.01   | 0.01   | 0.01   | 500    | -0.01  | -0.01  | -0.01  | -0.01  |
| 1      | 0.13   | 0.13   | 0.13   | 0.13   | 6.3    | -0.00  | -0.00  | -0.00  | -0.00  | 1000   | -0.01  | -0.00  | -0.01  | -0.00  |
| 1.25   | 0.08   | 0.08   | 0.07   | 0.08   | 8      | -0.00  | -0.00  | -0.00  | -0.00  | 2000   | -0.01  | -0.00  | -0.01  | -0.00  |
| 1.6    | 0.06   | 0.07   | 0.06   | 0.06   | 16     | -0.01  | -0.00  | -0.01  | -0.00  | 4000   | -0.00  | 0.01   | -0.00  | 0.01   |
| 2      | 0.04   | 0.05   | 0.04   | 0.05   | 31.5   | -0.01  | -0.01  | -0.01  | -0.01  | 8000   | 0.03   | 0.04   | 0.03   | 0.03   |
| 2.5    | 0.01   | 0.02   | 0.01   | 0.02   | 63     | -0.01  | -0.00  | -0.01  | -0.00  | 16000  | 0.01   | 0.02   | 0.03   | 0.02   |
| 3.15   | -0.00  | -0.00  | -0.00  | -0.00  | 125    | -0.01  | -0.01  | -0.01  | -0.01  | 20000  | 0.01   | 0.02   | 0.04   | 0.03   |
| 4      | -0.00  | 0.01   | -0.00  | 0.01   | 250    | -0.01  | -0.01  | -0.01  | -0.01  |        |        |        |        |        |

All frequencies are nominal center values for the 1/3 octave bands

### 4. INTERNAL NOISE LEVEL (electrical)

LEVEL METER func.; Range: 145 dB; Back-light - off

|           | Filter          | HP1  | HP10 | Wd   | Wm   | Wh   |
|-----------|-----------------|------|------|------|------|------|
| Channel 1 | Indication [dB] | 53.7 | 51.0 | 42.4 | 39.4 | 36.2 |
| Channel 2 | Indication [dB] | 54.8 | 52.5 | 42.5 | 38.5 | 36.3 |
| Channel 3 | Indication [dB] | 53.0 | 50.3 | 42.7 | 39.4 | 36.9 |
| Channel 4 | Indication [dB] | 54.8 | 52.6 | 42.7 | 39.1 | 36.7 |

#### ENVIRONMENTAL CONDITIONS

| Temperature | Relative humidity | Ambient pressure |
|-------------|-------------------|------------------|
| 22 °C       | 31 %              | 1004 hPa         |

#### TEST EQUIPMENT

| Item | Manufacturer | Model     | Serial no. | Description                                       |
|------|--------------|-----------|------------|---------------------------------------------------|
| 1.   | SVANTEK      | SVAN 401  | 100        | Signal generator                                  |
| 2.   | SVANTEK      | SVAN 912A | 15900      | Sound & Vibration Analyser                        |
| 3.   | KEITHLEY     | 2000      | 0910165    | Digital multimeter                                |
| 4.   | SVANTEK      | SV30A     | 24563      | Acoustic calibrator                               |
| 5.   | SVANTEK      | ST02      | -          | Microphone equivalent electrical impedance (18pF) |
| 6.   | DYTRAN       | 3233A     | 747        | Reference accelerometer                           |

### CONFORMITY & TEST DECLARATION

- Herewith Svantek company declares that this instrument has been calibrated and tested in compliance with the internal ISO9001 procedures and meets all specification given in the Manual(s) or respectively surpass them.
- Traceability of the calibration is guarantied by the above mentioned ISO9001 procedures.
- The information appearing on this sheet has been compiled specifically for this instrument. This form is produced with advanced equipment & procedures which permit comprehensive quality assurance verification of all data supplied herein.
- This calibration sheet shall not be reproduced except in full, without written permission of the SVANTEK Ltd.

Calibration specialist: Paweł Bednarczyk

*Pm*

Test date: 2016-09-20



## CALIBRATION CERTIFICATE

| Certificate Information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                            |                  |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------|--------------|--|-------------------|-----------|-----|------------------|--------------|--|--------------|------------|--|--------------|------------------|
| Date of Issue                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 7-May-2018                                                                                                                                                                                                                                                                                                                                                 |                  |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Certificate Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | MLCN180789S                                                                                                                                                                                                                                                                                                                                                |                  |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Customer Information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                            |                  |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Company Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Wilson Accoustics Limited                                                                                                                                                                                                                                                                                                                                  |                  |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Address                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Unit 601, Block A, Shatin Industrial Centre,<br>Yuen Shun Circuit,<br>Shatin, N. T.,<br>Hong Kong                                                                                                                                                                                                                                                          |                  |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Equipment-under-Test (EUT)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                            |                  |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Sound & Vibration Analyser                                                                                                                                                                                                                                                                                                                                 |                  |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Manufacturer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Svantek                                                                                                                                                                                                                                                                                                                                                    |                  |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Model Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | SVAN 959                                                                                                                                                                                                                                                                                                                                                   |                  |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Serial Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 11228                                                                                                                                                                                                                                                                                                                                                      |                  |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Equipment Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | --                                                                                                                                                                                                                                                                                                                                                         |                  |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Calibration Particular                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                            |                  |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Date of Calibration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 7-May-2018                                                                                                                                                                                                                                                                                                                                                 |                  |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Calibration Equipment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 4231(MLTE008) / PA160059 / 20-May-2018                                                                                                                                                                                                                                                                                                                     |                  |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Calibration Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | MLCG00, MLCG15                                                                                                                                                                                                                                                                                                                                             |                  |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Calibration Conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <table border="1"><tr><td>Laboratory</td><td>Temperature</td><td>23 °C ± 5 °C</td></tr><tr><td></td><td>Relative Humidity</td><td>55% ± 25%</td></tr><tr><td>EUT</td><td>Stabilizing Time</td><td>Over 3 hours</td></tr><tr><td></td><td>Warm-up Time</td><td>10 minutes</td></tr><tr><td></td><td>Power Supply</td><td>Internal battery</td></tr></table> | Laboratory       | Temperature | 23 °C ± 5 °C |  | Relative Humidity | 55% ± 25% | EUT | Stabilizing Time | Over 3 hours |  | Warm-up Time | 10 minutes |  | Power Supply | Internal battery |
| Laboratory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Temperature                                                                                                                                                                                                                                                                                                                                                | 23 °C ± 5 °C     |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Relative Humidity                                                                                                                                                                                                                                                                                                                                          | 55% ± 25%        |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| EUT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Stabilizing Time                                                                                                                                                                                                                                                                                                                                           | Over 3 hours     |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Warm-up Time                                                                                                                                                                                                                                                                                                                                               | 10 minutes       |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Power Supply                                                                                                                                                                                                                                                                                                                                               | Internal battery |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Calibration Results                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Calibration data were detailed in the continuation pages.<br>All calibration results were within EUT specification.                                                                                                                                                                                                                                        |                  |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Approved By & Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                            |                  |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  K.O. Lo 7-May-2018                                                                                                                                                                                                                                                     |                  |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| Statements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                            |                  |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |
| <ul style="list-style-type: none"><li>* Calibration equipment used for this calibration are traceable to national / international standards.</li><li>* The results on this Calibration Certificate only relate to the values measured at the time of the calibration and the uncertainties quoted will not include allowance for the EUT long term drift, variation with environmental changes, vibration and shock during transportation, overloading, mishandling, misuse, and the capacity of any other laboratory to repeat the measurement.</li><li>* MaxLab Calibration Centre Limited shall not be liable for any loss or damage resulting from the use of the EUT.</li><li>* The copy of this Certificate is owned by MaxLab Calibration Centre Limited. No part of this Certificate may be reproduced without the prior written approval of MaxLab Calibration Centre Limited.</li></ul> |                                                                                                                                                                                                                                                                                                                                                            |                  |             |              |  |                   |           |     |                  |              |  |              |            |  |              |                  |



Certificate No. MLCN180789S

| Calibration Data             |       |             |                  |           |                         |                   |
|------------------------------|-------|-------------|------------------|-----------|-------------------------|-------------------|
| Weighting / Time             | Range | EUT Reading | Standard Reading | EUT Error | Calibration Uncertainty | EUT Specification |
| A / FAST<br>(1 kHz Input)    | LOW   | 93.9 dB     | 94.0 dB          | -0.1 dB   | 0.2 dB                  | ± 0.7 dB          |
|                              |       | 113.9 dB    | 114.0 dB         | -0.1 dB   | 0.2 dB                  | ± 0.7 dB          |
|                              | HIGH  | 94.0 dB     | 94.0 dB          | 0.0 dB    | 0.2 dB                  | ± 0.7 dB          |
|                              |       | 113.9 dB    | 114.0 dB         | -0.1 dB   | 0.2 dB                  | ± 0.7 dB          |
| C / FAST<br>(1 kHz Input)    | LOW   | 94.0 dB     | 94.0 dB          | 0.0 dB    | 0.2 dB                  | ± 0.7 dB          |
|                              |       | 113.9 dB    | 114.0 dB         | -0.1 dB   | 0.2 dB                  | ± 0.7 dB          |
|                              | HIGH  | 94.0 dB     | 94.0 dB          | 0.0 dB    | 0.2 dB                  | ± 0.7 dB          |
|                              |       | 113.9 dB    | 114.0 dB         | -0.1 dB   | 0.2 dB                  | ± 0.7 dB          |
| Z / FAST<br>(1 kHz Input)    | LOW   | 94.0 dB     | 94.0 dB          | 0.0 dB    | 0.2 dB                  | ± 0.7 dB          |
|                              |       | 113.9 dB    | 114.0 dB         | -0.1 dB   | 0.2 dB                  | ± 0.7 dB          |
|                              | HIGH  | 94.0 dB     | 94.0 dB          | 0.0 dB    | 0.2 dB                  | ± 0.7 dB          |
|                              |       | 113.9 dB    | 114.0 dB         | -0.1 dB   | 0.2 dB                  | ± 0.7 dB          |
| A / SLOW<br>(1 kHz Input)    | LOW   | 93.9 dB     | 94.0 dB          | -0.1 dB   | 0.2 dB                  | ± 0.7 dB          |
|                              | HIGH  | 113.9 dB    | 114.0 dB         | -0.1 dB   | 0.2 dB                  | ± 0.7 dB          |
| C / SLOW<br>(1 kHz Input)    | LOW   | 94.0 dB     | 94.0 dB          | 0.0 dB    | 0.2 dB                  | ± 0.7 dB          |
|                              | HIGH  | 113.9 dB    | 114.0 dB         | -0.1 dB   | 0.2 dB                  | ± 0.7 dB          |
| Z / SLOW<br>(1 kHz Input)    | LOW   | 94.0 dB     | 94.0 dB          | 0.0 dB    | 0.2 dB                  | ± 0.7 dB          |
|                              | HIGH  | 113.9 dB    | 114.0 dB         | -0.1 dB   | 0.2 dB                  | ± 0.7 dB          |
| A / IMPULSE<br>(1 kHz Input) | LOW   | 93.9 dB     | 94.0 dB          | -0.1 dB   | 0.2 dB                  | ± 0.7 dB          |
|                              | HIGH  | 113.9 dB    | 114.0 dB         | -0.1 dB   | 0.2 dB                  | ± 0.7 dB          |
| C / IMPULSE<br>(1 kHz Input) | LOW   | 94.0 dB     | 94.0 dB          | 0.0 dB    | 0.2 dB                  | ± 0.7 dB          |
|                              | HIGH  | 113.9 dB    | 114.0 dB         | -0.1 dB   | 0.2 dB                  | ± 0.7 dB          |
| Z / IMPULSE<br>(1 kHz Input) | LOW   | 94.0 dB     | 94.0 dB          | 0.0 dB    | 0.2 dB                  | ± 0.7 dB          |
|                              | HIGH  | 113.9 dB    | 114.0 dB         | -0.1 dB   | 0.2 dB                  | ± 0.7 dB          |

- END -

Calibrated By :  
Date :

Dan  
7-May-2018

Checked By :  
Date :

K.O. Lo  
7-May-2018  
Page 2 of 2

**Cert F6: Acoustic Calibrator – SV 30A (SN: 29088)**



**CALIBRATION CERTIFICATE**

**Certificate Information**

**Date of Issue** 5-Mar-2018

**Certificate Number** MLCN180297S

**Customer Information**

**Company Name** Wilson Accoustics Limited  
**Address** Unit 601, Block A, Shatin Industrial Centre,  
Yuen Shun Circuit,  
Shatin, N. T.,  
Hong Kong

**Equipment-under-Test (EUT)**

**Description** Acoustic Calibrator  
**Manufacturer** Svantek  
**Model Number** SV 30A  
**Serial Number** 29088  
**Equipment Number** --

**Calibration Particular**

**Date of Calibration** 5-Mar-2018  
**Calibration Equipment** 4231(MLTE008) / PA160059 / 20-May-18  
1351(MLTE049) / MLEC17/06/02 / 6-Jun-18

**Calibration Procedure** MLCG00, MLCG15

| Calibration Conditions |                                                                                               |
|------------------------|-----------------------------------------------------------------------------------------------|
| Laboratory             | Temperature 23 °C ± 5 °C<br>Relative Humidity 55% ± 25%                                       |
| EUT                    | Stabilizing Time Over 3 hours<br>Warm-up Time Not applicable<br>Power Supply Internal battery |

**Calibration Results** Calibration data were detailed in the continuation pages.  
All calibration results were within EUT specification.

**Approved By & Date**

K.O. Lo

5-Mar-2018

**Statements**

- \* Calibration equipment used for this calibration are traceable to national / international standards.
- \* The results on this Calibration Certificate only relate to the values measured at the time of the calibration and the uncertainties quoted will not include allowance for the EUT long term drift, variation with environmental changes, vibration and shock during transportation, overloading, mishandling, misuse, and the capacity of any other laboratory to repeat the measurement.
- \* MaxLab Calibration Centre Limited shall not be liable for any loss or damage resulting from the use of the EUT.
- \* The copy of this Certificate is owned by MaxLab Calibration Centre Limited. No part of this Certificate may be reproduced without the prior written approval of MaxLab Calibration Centre Limited.



Certificate No. MLCN180297S

| Calibration Data |                  |           |                         |                   |
|------------------|------------------|-----------|-------------------------|-------------------|
| EUT Setting      | Standard Reading | EUT Error | Calibration Uncertainty | EUT Specification |
| 94 dB            | 93.7 dB          | 0.3 dB    | 0.15 dB                 | $\pm$ 0.3 dB      |
| 114 dB           | 113.7 dB         | 0.3 dB    | 0.15 dB                 | $\pm$ 0.3 dB      |

- END -

Calibrated By : Patrick  
Date : 5-Mar-18

Checked By : K.O. Lo  
Date : 5-Mar-18  
Page 2 of 2

萬儀校正中心有限公司  
MaxLab Calibration Centre Limited

香港新界葵涌華星街 16-18 號保盈工業大廈 9 樓 B2 室  
Unit B2, 9/F., Boldwin Industrial Bldg., 16-18 Wah Sing Street, Kwai Chung, N.T., Hong Kong Tel: (852) 2116 1380 Fax: (852) 2264 6480 Email: info@maxlab.com.hk



輝創工程有限公司

Sun Creation Engineering Limited

Calibration & Testing Laboratory

# Certificate of Calibration

## 校正證書

Certificate No. : C181756

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC18-0613)

Date of Receipt / 收件日期 : 20 March 2018

Description / 儀器名稱 : Sound Calibrator

Manufacturer / 製造商 : Rion

Model No. / 型號 : NC-74

Serial No. / 編號 : 34984065

Supplied By / 委託者 : Gammon Construction Limited

28/F., Devon House, Taikoo Place, 979 King's Road, Hong Kong

### TEST CONDITIONS / 測試條件

Temperature / 溫度 :  $(23 \pm 2)^{\circ}\text{C}$

Relative Humidity / 相對濕度 :  $(50 \pm 25)\%$

Line Voltage / 電壓 : ---

### TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 5 April 2018

### TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

The results do not exceed manufacturer's specification.

The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By  
測試

K C Lee  
Engineer

Certified By  
核證

H C Chan  
Engineer

Date of Issue  
簽發日期

10 April 2018

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Sun Creation Engineering Limited

Calibration & Testing Laboratory

# Certificate of Calibration

## 校正證書

Certificate No. : C181756

證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.
2. The results presented are the mean of 3 measurements at each calibration point.
3. Test equipment :

Equipment ID

CL130

CL281

TST150A

Description

Universal Counter

Multifunction Acoustic Calibrator

Measuring Amplifier

Certificate No.

C173864

PA160023

C181288

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

| UUT<br>Nominal Value | Measured Value<br>(dB) | Mfr's Spec.<br>(dB) | Uncertainty of Measured Value<br>(dB) |
|----------------------|------------------------|---------------------|---------------------------------------|
| 94 dB, 1 kHz         | 94.0                   | $\pm 0.3$           | $\pm 0.2$                             |

5.2 Frequency Accuracy

| UUT Nominal Value<br>(kHz) | Measured Value<br>(kHz) | Mfr's<br>Spec.  | Uncertainty of Measured Value<br>(Hz) |
|----------------------------|-------------------------|-----------------|---------------------------------------|
| 1                          | 1.000                   | 1 kHz $\pm 1\%$ | $\pm 1$                               |

Remark : The uncertainties are for a confidence probability of not less than 95 %.

Note :

Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

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Calibration & Testing Laboratory

# Certificate of Calibration

## 校正證書

Certificate No. : C181757

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC18-0613)

Date of Receipt / 收件日期: 20 March 2018

Description / 儀器名稱 : Sound Level Meter

Manufacturer / 製造商 : Rion

Model No. / 型號 : NL-31

Serial No. / 編號 : 00593586

Supplied By / 委託者 : Gammon Construction Limited

28/F., Devon House, Taikoo Place, 979 King's Road, Hong Kong

### TEST CONDITIONS / 測試條件

Temperature / 溫度 :  $(23 \pm 2)^{\circ}\text{C}$

Relative Humidity / 相對濕度 :  $(50 \pm 25)\%$

Line Voltage / 電壓 : ---

### TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 5 April 2018

### TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

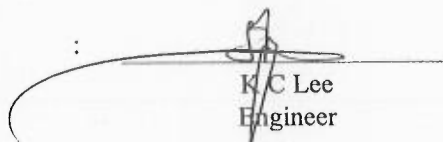
The results do not exceed manufacturer's specification.

The results are detailed in the subsequent page(s).

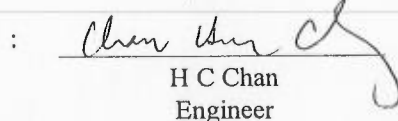
The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By  
測試

  
K C Lee  
Engineer

Certified By  
核證

  
H C Chan  
Engineer

Date of Issue  
簽發日期

10 April 2018

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輝創工程有限公司

Sun Creation Engineering Limited

Calibration & Testing Laboratory

# Certificate of Calibration

## 校正證書

Certificate No. : C181757

證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
2. Self-calibration was performed before the test.
3. The results presented are the mean of 3 measurements at each calibration point.
4. Test equipment :

Equipment ID

CL280

CL281

Description

40 MHz Arbitrary Waveform Generator

Multifunction Acoustic Calibrator

Certificate No.

C180024

PA160023

5. Test procedure : MA101N.

6. Results :

### 6.1 Sound Pressure Level

#### 6.1.1 Reference Sound Pressure Level

| UUT Setting |                |                     |                | Applied Value |             | UUT          | IEC 61672 Class 1 |
|-------------|----------------|---------------------|----------------|---------------|-------------|--------------|-------------------|
| Range (dB)  | Mode           | Frequency Weighting | Time Weighting | Level (dB)    | Freq. (kHz) | Reading (dB) | Spec. (dB)        |
| 30 - 120    | L <sub>A</sub> | A                   | Fast           | 94.00         | 1           | 93.6         | ± 1.1             |

#### 6.1.2 Linearity

| UUT Setting |                |                     |                | Applied Value |             | UUT          |
|-------------|----------------|---------------------|----------------|---------------|-------------|--------------|
| Range (dB)  | Mode           | Frequency Weighting | Time Weighting | Level (dB)    | Freq. (kHz) | Reading (dB) |
| 30 - 120    | L <sub>A</sub> | A                   | Fast           | 94.00         | 1           | 93.6 (Ref.)  |
|             |                |                     |                | 104.00        |             | 103.6        |
|             |                |                     |                | 114.00        |             | 113.6        |

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

### 6.2 Time Weighting

| UUT Setting |                |                     |                | Applied Value |             | UUT          | IEC 61672 Class 1 |
|-------------|----------------|---------------------|----------------|---------------|-------------|--------------|-------------------|
| Range (dB)  | Mode           | Frequency Weighting | Time Weighting | Level (dB)    | Freq. (kHz) | Reading (dB) | Spec. (dB)        |
| 30 - 120    | L <sub>A</sub> | A                   | Fast           | 94.00         | 1           | 93.6         | Ref.              |
|             |                |                     | Slow           |               |             | 93.6         | ± 0.3             |

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# Certificate of Calibration 校正證書

Certificate No. : C181757  
證書編號

## 6.3 Frequency Weighting

### 6.3.1 A-Weighting

| UUT Setting |                |                     |                | Applied Value |          | UUT          | IEC 61672 Class 1  |
|-------------|----------------|---------------------|----------------|---------------|----------|--------------|--------------------|
| Range (dB)  | Mode           | Frequency Weighting | Time Weighting | Level (dB)    | Freq.    | Reading (dB) | Spec. (dB)         |
| 30 - 120    | L <sub>A</sub> | A                   | Fast           | 94.00         | 63 Hz    | 67.2         | -26.2 ± 1.5        |
|             |                |                     |                |               | 125 Hz   | 77.3         | -16.1 ± 1.5        |
|             |                |                     |                |               | 250 Hz   | 84.8         | -8.6 ± 1.4         |
|             |                |                     |                |               | 500 Hz   | 90.3         | -3.2 ± 1.4         |
|             |                |                     |                |               | 1 kHz    | 93.6         | Ref.               |
|             |                |                     |                |               | 2 kHz    | 94.9         | +1.2 ± 1.6         |
|             |                |                     |                |               | 4 kHz    | 94.7         | +1.0 ± 1.6         |
|             |                |                     |                |               | 8 kHz    | 92.6         | -1.1 (+2.1 ; -3.1) |
|             |                |                     |                |               | 12.5 kHz | 89.7         | -4.3 (+3.0 ; -6.0) |

### 6.3.2 C-Weighting

| UUT Setting |                |                     |                | Applied Value |          | UUT          | IEC 61672 Class 1  |
|-------------|----------------|---------------------|----------------|---------------|----------|--------------|--------------------|
| Range (dB)  | Mode           | Frequency Weighting | Time Weighting | Level (dB)    | Freq.    | Reading (dB) | Spec. (dB)         |
| 30 - 120    | L <sub>C</sub> | C                   | Fast           | 94.00         | 63 Hz    | 92.7         | -0.8 ± 1.5         |
|             |                |                     |                |               | 125 Hz   | 93.4         | -0.2 ± 1.5         |
|             |                |                     |                |               | 250 Hz   | 93.6         | 0.0 ± 1.4          |
|             |                |                     |                |               | 500 Hz   | 93.6         | 0.0 ± 1.4          |
|             |                |                     |                |               | 1 kHz    | 93.6         | Ref.               |
|             |                |                     |                |               | 2 kHz    | 93.5         | -0.2 ± 1.6         |
|             |                |                     |                |               | 4 kHz    | 92.9         | -0.8 ± 1.6         |
|             |                |                     |                |               | 8 kHz    | 90.7         | -3.0 (+2.1 ; -3.1) |
|             |                |                     |                |               | 12.5 kHz | 87.9         | -6.2 (+3.0 ; -6.0) |

Remarks : - UUT Microphone Model No. : UC-53A & S/N : 316111

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value : 94 dB : 63 Hz - 125 Hz : ± 0.35 dB  
250 Hz - 500 Hz : ± 0.30 dB  
1 kHz : ± 0.20 dB  
2 kHz - 4 kHz : ± 0.35 dB  
8 kHz : ± 0.45 dB  
12.5 kHz : ± 0.70 dB  
104 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)  
114 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

#### Note :

Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

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Sun Creation Engineering Limited

Calibration & Testing Laboratory

# Certificate of Calibration

## 校正證書

Certificate No. : C181756

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC18-0613)

Date of Receipt / 收件日期 : 20 March 2018

Description / 儀器名稱 : Sound Calibrator

Manufacturer / 製造商 : Rion

Model No. / 型號 : NC-74

Serial No. / 編號 : 34984065

Supplied By / 委託者 : Gammon Construction Limited

28/F., Devon House, Taikoo Place, 979 King's Road, Hong Kong

### TEST CONDITIONS / 測試條件

Temperature / 溫度 :  $(23 \pm 2)^{\circ}\text{C}$

Relative Humidity / 相對濕度 :  $(50 \pm 25)\%$

Line Voltage / 電壓 : ---

### TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 5 April 2018

### TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

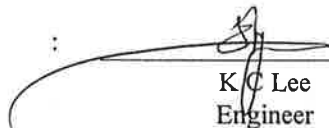
The results do not exceed manufacturer's specification.

The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By  
測試

  
K.C. Lee  
Engineer

Certified By  
核證

  
H.C. Chan  
Engineer

Date of Issue  
簽發日期

10 April 2018

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Sun Creation Engineering Limited

Calibration & Testing Laboratory

# Certificate of Calibration

## 校正證書

Certificate No. : C181756

證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.
2. The results presented are the mean of 3 measurements at each calibration point.
3. Test equipment :

| Equipment ID | Description                       | Certificate No. |
|--------------|-----------------------------------|-----------------|
| CL130        | Universal Counter                 | C173864         |
| CL281        | Multifunction Acoustic Calibrator | PA160023        |
| TST150A      | Measuring Amplifier               | C181288         |

4. Test procedure : MA100N.

5. Results :

### 5.1 Sound Level Accuracy

| UUT<br>Nominal Value | Measured Value<br>(dB) | Mfr's Spec.<br>(dB) | Uncertainty of Measured Value<br>(dB) |
|----------------------|------------------------|---------------------|---------------------------------------|
| 94 dB, 1 kHz         | 94.0                   | $\pm 0.3$           | $\pm 0.2$                             |

### 5.2 Frequency Accuracy

| UUT Nominal Value<br>(kHz) | Measured Value<br>(kHz) | Mfr's<br>Spec.  | Uncertainty of Measured Value<br>(Hz) |
|----------------------------|-------------------------|-----------------|---------------------------------------|
| 1                          | 1.000                   | 1 kHz $\pm 1\%$ | $\pm 1$                               |

Remark : The uncertainties are for a confidence probability of not less than 95 %.

Note :

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輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration

## 校正證書

Certificate No. : C172620

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC17-1051)

Date of Receipt / 收件日期 : 10 May 2017

Description / 儀器名稱 : Sound Level Meter

Manufacturer / 製造商 : Rion

Model No. / 型號 : NL-52

Serial No. / 編號 : 00564841

Supplied By / 委託者 : Gammon E&M Limited

(E&M Svc) 28/F., Devon House, Taikoo Place, 979 King's Road,  
Quarry Bay, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 :  $(23 \pm 2)^{\circ}\text{C}$

Relative Humidity / 相對濕度 :  $(55 \pm 20)\%$

Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 16 May 2017

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

The results do not exceed manufacturer's specification.

The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Fluke Everett Service Center, USA
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany

Tested By  
測試

  
H T Wong  
Technical Officer

Certified By  
核證

  
K C Lee  
Engineer

Date of Issue  
簽發日期

17 May 2017

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.  
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

Sun Creation Engineering Limited - Calibration & Testing Laboratory  
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 - 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

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Website/網址: www.suncreation.com

Page 1 of 4



# Certificate of Calibration

## 校正證書

Certificate No. : C172620  
證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- Self-calibration was performed before the test.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

| Equipment ID | Description                         | Certificate No. |
|--------------|-------------------------------------|-----------------|
| CL280        | 40 MHz Arbitrary Waveform Generator | C170048         |
| CL281        | Multifunction Acoustic Calibrator   | PA160023        |

- Test procedure : MA101N.

- Results :

### 6.1 Sound Pressure Level

#### 6.1.1 Reference Sound Pressure Level

| UUT Setting |                |                     |                | Applied Value |             | UUT          | IEC 61672          |
|-------------|----------------|---------------------|----------------|---------------|-------------|--------------|--------------------|
| Range (dB)  | Function       | Frequency Weighting | Time Weighting | Level (dB)    | Freq. (kHz) | Reading (dB) | Class 1 Spec. (dB) |
| 30 - 130    | L <sub>A</sub> | A                   | Fast           | 94.00         | 1           | 94.0         | ± 1.1              |

#### 6.1.2 Linearity

| UUT Setting |                |                     |                | Applied Value |             | UUT          |
|-------------|----------------|---------------------|----------------|---------------|-------------|--------------|
| Range (dB)  | Function       | Frequency Weighting | Time Weighting | Level (dB)    | Freq. (kHz) | Reading (dB) |
| 30 - 130    | L <sub>A</sub> | A                   | Fast           | 94.00         | 1           | 94.0 (Ref.)  |
|             |                |                     |                | 104.00        |             | 104.1        |
|             |                |                     |                | 114.00        |             | 114.1        |

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

### 6.2 Time Weighting

| UUT Setting |                |                     |                | Applied Value |             | UUT          | IEC 61672          |
|-------------|----------------|---------------------|----------------|---------------|-------------|--------------|--------------------|
| Range (dB)  | Function       | Frequency Weighting | Time Weighting | Level (dB)    | Freq. (kHz) | Reading (dB) | Class 1 Spec. (dB) |
| 30 - 130    | L <sub>A</sub> | A                   | Fast           | 94.00         | 1           | 94.0         | Ref.               |
|             |                |                     | Slow           |               |             | 94.0         | ± 0.3              |

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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# Certificate of Calibration

## 校正證書

Certificate No. : C172620

證書編號

### 6.3 Frequency Weighting

#### 6.3.1 A-Weighting

| UUT Setting |                |                     |                | Applied Value |          | UUT Reading (dB) | IEC 61672 Class 1 Spec. (dB) |
|-------------|----------------|---------------------|----------------|---------------|----------|------------------|------------------------------|
| Range (dB)  | Function       | Frequency Weighting | Time Weighting | Level (dB)    | Freq.    |                  |                              |
| 30 - 130    | L <sub>A</sub> | A                   | Fast           | 94.00         | 63 Hz    | 67.7             | -26.2 ± 1.5                  |
|             |                |                     |                |               | 125 Hz   | 77.8             | -16.1 ± 1.5                  |
|             |                |                     |                |               | 250 Hz   | 85.3             | -8.6 ± 1.4                   |
|             |                |                     |                |               | 500 Hz   | 90.8             | -3.2 ± 1.4                   |
|             |                |                     |                |               | 1 kHz    | 94.0             | Ref.                         |
|             |                |                     |                |               | 2 kHz    | 95.2             | +1.2 ± 1.6                   |
|             |                |                     |                |               | 4 kHz    | 95.0             | +1.0 ± 1.6                   |
|             |                |                     |                |               | 8 kHz    | 93.0             | -1.1 (+2.1 ; -3.1)           |
|             |                |                     |                |               | 12.5 kHz | 89.6             | -4.3 (+3.0 ; -6.0)           |

#### 6.3.2 C-Weighting

| UUT Setting |                |                     |                | Applied Value |          | UUT Reading (dB) | IEC 61672 Class 1 Spec. (dB) |
|-------------|----------------|---------------------|----------------|---------------|----------|------------------|------------------------------|
| Range (dB)  | Function       | Frequency Weighting | Time Weighting | Level (dB)    | Freq.    |                  |                              |
| 30 - 130    | L <sub>C</sub> | C                   | Fast           | 94.00         | 63 Hz    | 93.1             | -0.8 ± 1.5                   |
|             |                |                     |                |               | 125 Hz   | 93.8             | -0.2 ± 1.5                   |
|             |                |                     |                |               | 250 Hz   | 94.0             | 0.0 ± 1.4                    |
|             |                |                     |                |               | 500 Hz   | 94.0             | 0.0 ± 1.4                    |
|             |                |                     |                |               | 1 kHz    | 94.0             | Ref.                         |
|             |                |                     |                |               | 2 kHz    | 93.9             | -0.2 ± 1.6                   |
|             |                |                     |                |               | 4 kHz    | 93.2             | -0.8 ± 1.6                   |
|             |                |                     |                |               | 8 kHz    | 91.1             | -3.0 (+2.1 ; -3.1)           |
|             |                |                     |                |               | 12.5 kHz | 87.6             | -6.2 (+3.0 ; -6.0)           |

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.  
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。



輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration

## 校正證書

Certificate No. : C172620

證書編號

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 09479

- Mfr's Spec. : IEC 61672 Class I

- Uncertainties of Applied Value :

|        |                 |                              |
|--------|-----------------|------------------------------|
| 94 dB  | 63 Hz - 125 Hz  | : $\pm 0.35$ dB              |
|        | 250 Hz - 500 Hz | : $\pm 0.30$ dB              |
|        | 1 kHz           | : $\pm 0.20$ dB              |
|        | 2 kHz - 4 kHz   | : $\pm 0.35$ dB              |
|        | 8 kHz           | : $\pm 0.45$ dB              |
|        | 12.5 kHz        | : $\pm 0.70$ dB              |
| 104 dB | 1 kHz           | : $\pm 0.10$ dB (Ref. 94 dB) |
| 114 dB | 1 kHz           | : $\pm 0.10$ dB (Ref. 94 dB) |

- The uncertainties are for a confidence probability of not less than 95 %.

Note :

Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

**Appendix A2b – Calibration Certificates (Noise Measurement to Confirm Any Characteristics of Tonality, Impulsiveness and Intermittency at NSRs)**



# 綜合試驗有限公司

SOILS & MATERIALS ENGINEERING CO., LTD.

香港黃竹坑道37號利達中心12樓  
12/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.  
E-mail: smec@cigismec.com Website: www.cigismec.com

Tel: (852) 2873 6860

Fax: (852) 2555 7533



## CERTIFICATE OF CALIBRATION

Certificate No.: 16CA0914 02-01

Page 1 of 2

### Item tested

|                       |                            |            |        |
|-----------------------|----------------------------|------------|--------|
| Description:          | Sound Level Meter (Type 1) | Microphone | Preamp |
| Manufacturer:         | B & K                      | B & K      | B & K  |
| Type/Model No.:       | 2250                       | 4189       | ZC0032 |
| Serial/Equipment No.: | 2551242                    | 2985292    | 23235  |
| Adaptors used:        | -                          | -          | -      |

### Item submitted by

Customer Name: MTR Corporation  
Address of Customer: 8/F, Fo Tan Railway House, Fo Tan, N.T. Hong Kong  
Request No.: -  
Date of receipt: 14-Sep-2016

Date of test: 19-Sep-2016

### Reference equipment used in the calibration

|                                 |          |            |              |               |
|---------------------------------|----------|------------|--------------|---------------|
| Description:                    | Model:   | Serial No. | Expiry Date: | Traceable to: |
| Multi function sound calibrator | B&K 4226 | 2288444    | 18-Jun-2017  | CIGISMEC      |
| Signal generator                | DS 360   | 33873      | 18-Apr-2017  | CEPREI        |
| Signal generator                | DS 360   | 61227      | 18-Apr-2017  | CEPREI        |

### Ambient conditions

Temperature:  $21 \pm 1$  °C  
Relative humidity:  $55 \pm 10$  %  
Air pressure:  $1000 \pm 5$  hPa

### Test specifications

- 1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
- 2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of  $\pm 20\%$ .
- 3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsiveness of the Sound Level Meter.

### Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory:

Huang Jian Min/Feng Jun Qi

Date: 19-Sep-2016

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.



綜合試驗有限公司  
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Fax: (852) 2555 7533



## CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 16CA0914 02-01

Page 2 of 2

### 1, Electrical Tests

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

| Test:                   | Subtest:                                         | Status: | Expanded Uncertainty (dB) | Coverage Factor |
|-------------------------|--------------------------------------------------|---------|---------------------------|-----------------|
| Self-generated noise    | A                                                | Pass    | 0.3                       |                 |
|                         | C                                                | Pass    | 0.8                       |                 |
|                         | Lin                                              | Pass    | 1.6                       |                 |
| Linearity range for Leq | At reference range, Step 5 dB at 4 kHz           | Pass    | 0.3                       |                 |
|                         | Reference SPL on all other ranges                | Pass    | 0.3                       |                 |
|                         | 2 dB below upper limit of each range             | Pass    | 0.3                       |                 |
|                         | 2 dB above lower limit of each range             | Pass    | 0.3                       |                 |
|                         | At reference range, Step 5 dB at 4 kHz           | Pass    | 0.3                       |                 |
| Linearity range for SPL | A                                                | Pass    | 0.3                       |                 |
|                         | C                                                | Pass    | 0.3                       |                 |
|                         | Lin                                              | Pass    | 0.3                       |                 |
| Frequency weightings    | Single Burst Fast                                | Pass    | 0.3                       |                 |
|                         | Single Burst Slow                                | Pass    | 0.3                       |                 |
|                         | Single 100µs rectangular pulse                   | Pass    | 0.3                       |                 |
| Peak response           | Crest factor of 3                                | Pass    | 0.3                       |                 |
| R.M.S. accuracy         | Single burst 5 ms at 2000 Hz                     | Pass    | 0.3                       |                 |
| Time weighting I        | Repeated at frequency of 100 Hz                  | Pass    | 0.3                       |                 |
|                         | 1 ms burst duty factor 1/10 <sup>3</sup> at 4kHz | Pass    | 0.3                       |                 |
| Time averaging          | 1 ms burst duty factor 1/10 <sup>4</sup> at 4kHz | Pass    | 0.3                       |                 |
|                         | Single burst 10 ms at 4 kHz                      | Pass    | 0.4                       |                 |
| Pulse range             | Single burst 10 ms at 4 kHz                      | Pass    | 0.4                       |                 |
| Sound exposure level    | SPL                                              | Pass    | 0.3                       |                 |
| Overload indication     | Leq                                              | Pass    | 0.4                       |                 |

### 2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

| Test:             | Subtest                | Status | Expanded Uncertainty (dB) | Coverage Factor |
|-------------------|------------------------|--------|---------------------------|-----------------|
| Acoustic response | Weighting A at 125 Hz  | Pass   | 0.3                       |                 |
|                   | Weighting A at 8000 Hz | Pass   | 0.5                       |                 |

### 3, Response to associated sound calibrator

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

Calibrated by:

Date: 19-Sep-2016

Fung Chi Yip

- End -

Checked by:

Date: 19-Sep-2016

Lam Tze Wai

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.



# 綜合試驗有限公司

SOILS & MATERIALS ENGINEERING CO., LTD.

香港黃竹坑道37號利達中心12樓  
12/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.  
E-mail: smec@cigismec.com Website: www.cigismec.com

Tel: (852) 2873 6860

Fax: (852) 2555 7533



## CERTIFICATE OF CALIBRATION

Certificate No.: 16CA1025 02-03

Page 1 of 2

### Item tested

|                       |                            |            |              |
|-----------------------|----------------------------|------------|--------------|
| Description:          | Sound Level Meter (Type 1) | Microphone | Preamplifier |
| Manufacturer:         | B & K                      | B & K      | B & K        |
| Type/Model No.:       | 2250                       | 4189       | ZC0032       |
| Serial/Equipment No.: | 2551244                    | 2550229    | 5051         |
| Adaptors used:        | -                          | -          | -            |

### Item submitted by

Customer Name: MTR Corporation  
Address of Customer: 8/F, Fo Tan Railway House, Fo Tan, N.T. Hong Kong  
Request No.: -  
Date of receipt: 25-Oct-2016

Date of test: 26-Oct-2016

### Reference equipment used in the calibration

| Description:                    | Model:   | Serial No. | Expiry Date: | Traceable to: |
|---------------------------------|----------|------------|--------------|---------------|
| Multi function sound calibrator | B&K 4226 | 2288444    | 18-Jun-2017  | CIGISMEC      |
| Signal generator                | DS 360   | 33873      | 18-Apr-2017  | CEPREI        |
| Signal generator                | DS 360   | 61227      | 18-Apr-2017  | CEPREI        |

### Ambient conditions

Temperature:  $22 \pm 1$  °C  
Relative humidity:  $55 \pm 10$  %  
Air pressure:  $1005 \pm 5$  hPa

### Test specifications

- 1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
- 2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of  $\pm 20\%$ .
- 3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsiveness of the Sound Level Meter.

### Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory:

Huang Jian Min/Feng Jun Qi

Date: 27-Oct-2016

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.



# 綜合試驗有限公司

SOILS & MATERIALS ENGINEERING CO., LTD.

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E-mail: smec@cigismec.com Website: www.cigismec.com

Tel: (852) 2873 6860

Fax: (852) 2555 7533



## CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 16CA1025 02-03

Page 2 of 2

### 1, Electrical Tests

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

| Test:                   | Subtest:                                         | Status: | Expanded Uncertainty (dB) | Coverage Factor |
|-------------------------|--------------------------------------------------|---------|---------------------------|-----------------|
| Self-generated noise    | A                                                | Pass    | 0.3                       |                 |
|                         | C                                                | Pass    | 0.8                       |                 |
|                         | Lin                                              | Pass    | 1.6                       |                 |
| Linearity range for Leq | At reference range, Step 5 dB at 4 kHz           | Pass    | 0.3                       |                 |
|                         | Reference SPL on all other ranges                | Pass    | 0.3                       |                 |
|                         | 2 dB below upper limit of each range             | Pass    | 0.3                       |                 |
|                         | 2 dB above lower limit of each range             | Pass    | 0.3                       |                 |
| Linearity range for SPL | At reference range, Step 5 dB at 4 kHz           | Pass    | 0.3                       |                 |
| Frequency weightings    | A                                                | Pass    | 0.3                       |                 |
|                         | C                                                | Pass    | 0.3                       |                 |
|                         | Lin                                              | Pass    | 0.3                       |                 |
| Time weightings         | Single Burst Fast                                | Pass    | 0.3                       |                 |
|                         | Single Burst Slow                                | Pass    | 0.3                       |                 |
| Peak response           | Single 100µs rectangular pulse                   | Pass    | 0.3                       |                 |
| R.M.S. accuracy         | Crest factor of 3                                | Pass    | 0.3                       |                 |
| Time weighting 1        | Single burst 5 ms at 2000 Hz                     | Pass    | 0.3                       |                 |
|                         | Repeated at frequency of 100 Hz                  | Pass    | 0.3                       |                 |
| Time averaging          | 1 ms burst duty factor 1/10 <sup>3</sup> at 4kHz | Pass    | 0.3                       |                 |
|                         | 1 ms burst duty factor 1/10 <sup>4</sup> at 4kHz | Pass    | 0.3                       |                 |
| Pulse range             | Single burst 10 ms at 4 kHz                      | Pass    | 0.4                       |                 |
| Sound exposure level    | Single burst 10 ms at 4 kHz                      | Pass    | 0.4                       |                 |
| Overload indication     | SPL                                              | Pass    | 0.3                       |                 |
|                         | Leq                                              | Pass    | 0.4                       |                 |

### 2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

| Test:             | Subtest                | Status | Expanded Uncertainty (dB) | Coverage Factor |
|-------------------|------------------------|--------|---------------------------|-----------------|
| Acoustic response | Weighting A at 125 Hz  | Pass   | 0.3                       |                 |
|                   | Weighting A at 8000 Hz | Pass   | 0.5                       |                 |

### 3, Response to associated sound calibrator

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

Calibrated by:

Date:

Fung Chi Yip  
26-Oct-2016

- End -

Checked by:

Date:

Lam Tze Wai  
27-Oct-2016

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.



## CERTIFICATE OF CALIBRATION

Certificate No.: 17CA0902 02-02

Page 1 of 2

### Item tested

|                       |                            |            |        |
|-----------------------|----------------------------|------------|--------|
| Description:          | Sound Level Meter (Type 1) | Microphone | Preamp |
| Manufacturer:         | B & K                      | B & K      | B & K  |
| Type/Model No.:       | 2250                       | 4950       | ZC0032 |
| Serial/Equipment No.: | 2718890                    | 2827088    | 24967  |
| Adaptors used:        | -                          | -          | -      |

### Item submitted by

Customer Name: Anewr Consulting Limited  
Address of Customer: Unit 517, 5/F Tower A, Regent Centre, 63 Wo Yip Hop Road, Kwai Chung  
Request No.: -  
Date of receipt: 02-Sep-2017

Date of test: 09-Sep-2017

### Reference equipment used in the calibration

| Description:                    | Model:   | Serial No. | Expiry Date: | Traceable to: |
|---------------------------------|----------|------------|--------------|---------------|
| Multi function sound calibrator | B&K 4226 | 2288444    | 08-Sep-2018  | CIGISMEC      |
| Signal generator                | DS 360   | 33873      | 25-Apr-2018  | CEPREI        |
| Signal generator                | DS 360   | 61227      | 01-Apr-2018  | CEPREI        |

### Ambient conditions

Temperature:  $21 \pm 1$  °C  
Relative humidity:  $50 \pm 10$  %  
Air pressure:  $1010 \pm 5$  hPa

### Test specifications

- 1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
- 2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of  $\pm 20\%$ .
- 3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsiveness of the Sound Level Meter.

### Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory:

  
Huang Jian-Min/Feng Jun Qi

Date: 09-Sep-2017

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

**CERTIFICATE OF CALIBRATION**

(Continuation Page)

Certificate No.:

17CA0902 02-02

Page 2 of 2

**1, Electrical Tests**

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

| Test:                   | Subtest:                                         | Status: | Expanded Uncertainty (dB) | Coverage Factor |
|-------------------------|--------------------------------------------------|---------|---------------------------|-----------------|
| Self-generated noise    | A                                                | Pass    | 0.3                       |                 |
|                         | C                                                | Pass    | 0.8                       |                 |
|                         | Lin                                              | Pass    | 1.6                       |                 |
| Linearity range for Leq | At reference range, Step 5 dB at 4 kHz           | Pass    | 0.3                       |                 |
|                         | Reference SPL on all other ranges                | Pass    | 0.3                       |                 |
|                         | 2 dB below upper limit of each range             | Pass    | 0.3                       |                 |
|                         | 2 dB above lower limit of each range             | Pass    | 0.3                       |                 |
| Linearity range for SPL | At reference range, Step 5 dB at 4 kHz           | Pass    | 0.3                       |                 |
| Frequency weightings    | A                                                | Pass    | 0.3                       |                 |
|                         | C                                                | Pass    | 0.3                       |                 |
|                         | Lin                                              | Pass    | 0.3                       |                 |
| Time weightings         | Single Burst Fast                                | Pass    | 0.3                       |                 |
|                         | Single Burst Slow                                | Pass    | 0.3                       |                 |
| Peak response           | Single 100µs rectangular pulse                   | Pass    | 0.3                       |                 |
| R.M.S. accuracy         | Crest factor of 3                                | Pass    | 0.3                       |                 |
| Time weighting I        | Single burst 5 ms at 2000 Hz                     | Pass    | 0.3                       |                 |
|                         | Repeated at frequency of 100 Hz                  | Pass    | 0.3                       |                 |
| Time averaging          | 1 ms burst duty factor 1/10 <sup>3</sup> at 4kHz | Pass    | 0.3                       |                 |
|                         | 1 ms burst duty factor 1/10 <sup>4</sup> at 4kHz | Pass    | 0.3                       |                 |
| Pulse range             | Single burst 10 ms at 4 kHz                      | Pass    | 0.4                       |                 |
| Sound exposure level    | Single burst 10 ms at 4 kHz                      | Pass    | 0.4                       |                 |
| Overload indication     | SPL                                              | Pass    | 0.3                       |                 |
|                         | Leq                                              | Pass    | 0.4                       |                 |

**2, Acoustic tests**

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

| Test:             | Subtest                | Status | Expanded Uncertainty (dB) | Coverage Factor |
|-------------------|------------------------|--------|---------------------------|-----------------|
| Acoustic response | Weighting A at 125 Hz  | Pass   | 0.3                       |                 |
|                   | Weighting A at 8000 Hz | Pass   | 0.5                       |                 |

**3, Response to associated sound calibrator**

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

Calibrated by:

Lai Sheng Jie

Date: 09-Sep-2017

- End -

Checked by:

Fung Chi Yip

Date: 09-Sep-2017

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.



## CERTIFICATE OF CALIBRATION

Certificate No.: 16CA1025 02-01 Page 1 of 2

### Item tested

|                       |                            |            |        |
|-----------------------|----------------------------|------------|--------|
| Description:          | Sound Level Meter (Type 1) | Microphone | Preamp |
| Manufacturer:         | B & K                      | B & K      | B & K  |
| Type/Model No.:       | 2250-L                     | 4189       | ZC0032 |
| Serial/Equipment No.: | 2741137                    | 2680937    | 14982  |
| Adaptors used:        | -                          | -          | -      |

### Item submitted by

Customer Name: MTR Corporation  
Address of Customer: 8/F., Fo Tan Railway House, Fo Tan, N.T., Hong Kong  
Request No.: -  
Date of receipt: 25-Oct-2016

Date of test: 26-Oct-2016

### Reference equipment used in the calibration

| Description:                    | Model:   | Serial No. | Expiry Date: | Traceable to: |
|---------------------------------|----------|------------|--------------|---------------|
| Multi function sound calibrator | B&K 4226 | 2288444    | 18-Jun-2017  | CIGISMEC      |
| Signal generator                | DS 360   | 33873      | 18-Apr-2017  | CEPREI        |
| Signal generator                | DS 360   | 61227      | 18-Apr-2017  | CEPREI        |

### Ambient conditions

Temperature:  $22 \pm 1$  °C  
Relative humidity:  $55 \pm 10$  %  
Air pressure:  $1005 \pm 5$  hPa

### Test specifications

- 1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
- 2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of  $\pm 20\%$ .
- 3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsiveness of the Sound Level Meter.

### Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory:

  
Huang Jian Min/Feng Jun Qi

Date: 27-Oct-2016

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.



# 綜合試驗有限公司

SOILS & MATERIALS ENGINEERING CO., LTD.

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12/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.  
E-mail: smec@cigismec.com Website: www.cigismec.com

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Fax: (852) 2555 7533



## CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 16CA1025 02-01

Page 2 of 2

### 1, Electrical Tests

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

| Test:                   | Subtest:                                         | Status: | Expanded Uncertainty (dB) | Coverage Factor |
|-------------------------|--------------------------------------------------|---------|---------------------------|-----------------|
| Self-generated noise    | A                                                | Pass    | 0.3                       |                 |
|                         | C                                                | Pass    | 0.8                       |                 |
|                         | Lin                                              | Pass    | 1.6                       |                 |
| Linearity range for Leq | At reference range, Step 5 dB at 4 kHz           | Pass    | 0.3                       |                 |
|                         | Reference SPL on all other ranges                | Pass    | 0.3                       |                 |
|                         | 2 dB below upper limit of each range             | Pass    | 0.3                       |                 |
|                         | 2 dB above lower limit of each range             | Pass    | 0.3                       |                 |
| Linearity range for SPL | At reference range, Step 5 dB at 4 kHz           | Pass    | 0.3                       |                 |
|                         |                                                  |         |                           |                 |
| Frequency weightings    | A                                                | Pass    | 0.3                       |                 |
|                         | C                                                | Pass    | 0.3                       |                 |
|                         | Lin                                              | Pass    | 0.3                       |                 |
| Time weightings         | Single Burst Fast                                | Pass    | 0.3                       |                 |
|                         | Single Burst Slow                                | Pass    | 0.3                       |                 |
| Peak response           | Single 100µs rectangular pulse                   | Pass    | 0.3                       |                 |
| R.M.S. accuracy         | Crest factor of 3                                | Pass    | 0.3                       |                 |
| Time weighting I        | Single burst 5 ms at 2000 Hz                     | Pass    | 0.3                       |                 |
|                         | Repeated at frequency of 100 Hz                  | Pass    | 0.3                       |                 |
| Time averaging          | 1 ms burst duty factor 1/10 <sup>3</sup> at 4kHz | Pass    | 0.3                       |                 |
|                         | 1 ms burst duty factor 1/10 <sup>4</sup> at 4kHz | Pass    | 0.3                       |                 |
| Pulse range             | Single burst 10 ms at 4 kHz                      | Pass    | 0.4                       |                 |
| Sound exposure level    | Single burst 10 ms at 4 kHz                      | Pass    | 0.4                       |                 |
| Overload indication     | SPL                                              | Pass    | 0.3                       |                 |
|                         | Leq                                              | Pass    | 0.4                       |                 |

### 2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

| Test:             | Subtest                | Status | Expanded Uncertainty (dB) | Coverage Factor |
|-------------------|------------------------|--------|---------------------------|-----------------|
| Acoustic response | Weighting A at 125 Hz  | Pass   | 0.3                       |                 |
|                   | Weighting A at 8000 Hz | Pass   | 0.5                       |                 |

### 3, Response to associated sound calibrator

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

Calibrated by:

Date:

Fung Chi Yip  
26-Oct-2016

- End -

Checked by:

Date:

Lam Tze Wai  
27-Oct-2016

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.



# Certificate of Calibration 校正證書

Certificate No. : C173769  
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC17-1522)

Date of Receipt / 收件日期 : 30 June 2017

Description / 儀器名稱 : Sound Level Meter  
Manufacturer / 製造商 : Brüel & Kjær  
Model No. / 型號 : 2250-L  
Serial No. / 編號 : 2701830  
Supplied By / 委託者 : ANewR Consulting Limited  
Unit 517, 5/F., Tower A, Regent Centre,  
63 Wo Yi Hop Road, Kwai Chung, N.T. Hong Kong

## TEST CONDITIONS / 測試條件

Temperature / 溫度 :  $(23 \pm 2)^{\circ}\text{C}$   
Line Voltage / 電壓 : ---

Relative Humidity / 相對濕度 :  $(55 \pm 20)\%$

## TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 11 July 2017

## TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.  
The results do not exceed manufacturer's specification.  
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By  
測試

  
K C Lee  
Engineer

Certified By  
核證

  
H C Chan  
Engineer

Date of Issue  
簽發日期

12 July 2017

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.  
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

# Certificate of Calibration

## 校正證書

Certificate No. : C173769  
證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- Self-calibration using laboratory acoustic calibrator was performed before the test 6.1.1.2 to 6.3.2.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

| Equipment ID | Description                         | Certificate No. |
|--------------|-------------------------------------|-----------------|
| CL280        | 40 MHz Arbitrary Waveform Generator | C170048         |
| CL281        | Multifunction Acoustic Calibrator   | PA160023        |

- Test procedure : MA101N.

- Results :

### 6.1 Sound Pressure Level

#### 6.1.1 Reference Sound Pressure Level

##### 6.1.1.1 Before Self-calibration

| UUT Setting |           | Applied Value |             | UUT Reading |
|-------------|-----------|---------------|-------------|-------------|
| Range (dB)  | Main      | Level (dB)    | Freq. (kHz) | (dB)        |
| 20 - 140    | LAF (SPL) | 94.00         | 1           | 94.1        |

##### 6.1.1.2 After Self-calibration

| UUT Setting |           | Applied Value |             | UUT Reading | IEC 61672 Class 1 |
|-------------|-----------|---------------|-------------|-------------|-------------------|
| Range (dB)  | Main      | Level (dB)    | Freq. (kHz) | (dB)        | Spec. (dB)        |
| 20 - 140    | LAF (SPL) | 94.00         | 1           | 94.0        | ± 1.1             |

##### 6.1.2 Linearity

| UUT Setting |           | Applied Value |             | UUT Reading |
|-------------|-----------|---------------|-------------|-------------|
| Range (dB)  | Main      | Level (dB)    | Freq. (kHz) | (dB)        |
| 20 - 140    | LAF (SPL) | 94.00         | 1           | 94.0 (Ref.) |
|             |           | 104.00        |             | 104.0       |
|             |           | 114.00        |             | 114.0       |

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

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Sun Creation Engineering Limited – Calibration & Testing Laboratory

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 – 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

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E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

# Certificate of Calibration

## 校正證書

Certificate No. : C173769  
證書編號

### 6.2 Time Weighting

| UUT Setting |           | Applied Value |             | UUT Reading<br>(dB) | IEC 61672 Class 1<br>Spec. (dB) |
|-------------|-----------|---------------|-------------|---------------------|---------------------------------|
| Range (dB)  | Main      | Level (dB)    | Freq. (kHz) |                     |                                 |
| 20 - 140    | LAF (SPL) | 94.00         | 1           | 94.0                | Ref.                            |
|             | LAS (SPL) |               |             | 94.0                | $\pm 0.3$                       |

### 6.3 Frequency Weighting

#### 6.3.1 A-Weighting

| UUT Setting |           | Applied Value |          | UUT Reading<br>(dB) | IEC 61672 Class 1 Spec.<br>(dB) |
|-------------|-----------|---------------|----------|---------------------|---------------------------------|
| Range (dB)  | Main      | Level (dB)    | Freq.    |                     |                                 |
| 20 - 140    | LAF (SPL) | 94.00         | 63 Hz    | 67.8                | $-26.2 \pm 1.5$                 |
|             |           |               | 125 Hz   | 77.8                | $-16.1 \pm 1.5$                 |
|             |           |               | 250 Hz   | 85.3                | $-8.6 \pm 1.4$                  |
|             |           |               | 500 Hz   | 90.8                | $-3.2 \pm 1.4$                  |
|             |           |               | 1 kHz    | 94.0                | Ref.                            |
|             |           |               | 2 kHz    | 95.2                | $+1.2 \pm 1.6$                  |
|             |           |               | 4 kHz    | 94.9                | $+1.0 \pm 1.6$                  |
|             |           |               | 8 kHz    | 92.5                | $-1.1(+2.1 ; -3.1)$             |
|             |           |               | 12.5 kHz | 89.5                | $-4.3(+3.0 ; -6.0)$             |

#### 6.3.2 C-Weighting

| UUT Setting |           | Applied Value |          | UUT Reading<br>(dB) | IEC 61672 Class 1 Spec.<br>(dB) |
|-------------|-----------|---------------|----------|---------------------|---------------------------------|
| Range (dB)  | Main      | Level (dB)    | Freq.    |                     |                                 |
| 20 - 140    | LCF (SPL) | 94.00         | 63 Hz    | 93.2                | $-0.8 \pm 1.5$                  |
|             |           |               | 125 Hz   | 93.8                | $-0.2 \pm 1.5$                  |
|             |           |               | 250 Hz   | 94.0                | $0.0 \pm 1.4$                   |
|             |           |               | 500 Hz   | 94.0                | $0.0 \pm 1.4$                   |
|             |           |               | 1 kHz    | 94.0                | Ref.                            |
|             |           |               | 2 kHz    | 93.8                | $-0.2 \pm 1.6$                  |
|             |           |               | 4 kHz    | 93.1                | $-0.8 \pm 1.6$                  |
|             |           |               | 8 kHz    | 90.7                | $-3.0(+2.1 ; -3.1)$             |
|             |           |               | 12.5 kHz | 87.5                | $-6.2(+3.0 ; -6.0)$             |

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Sun Creation Engineering Limited – Calibration & Testing Laboratory

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輝創工程有限公司 – 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

# Certificate of Calibration

## 校正證書

Certificate No. : C173769  
證書編號

- Remarks : - UUT Microphone Model No. : 4950 & S/N : 2678779
- Mfr's Spec. : IEC 61672 Class 1
  - Uncertainties of Applied Value : 94 dB : 63 Hz - 125 Hz :  $\pm 0.35$  dB  
250 Hz - 500 Hz :  $\pm 0.30$  dB  
1 kHz :  $\pm 0.20$  dB  
2 kHz - 4 kHz :  $\pm 0.35$  dB  
8 kHz :  $\pm 0.45$  dB  
12.5 kHz :  $\pm 0.70$  dB  
104 dB : 1 kHz :  $\pm 0.10$  dB (Ref. 94 dB)  
114 dB : 1 kHz :  $\pm 0.10$  dB (Ref. 94 dB)
  - The uncertainties are for a confidence probability of not less than 95 %.

Note :  
Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。



## CERTIFICATE OF CALIBRATION

Certificate No.: 17CA0615 01-01

Page 1 of 2

### Item tested

|                       |                            |            |        |
|-----------------------|----------------------------|------------|--------|
| Description:          | Sound Level Meter (Type 1) | Microphone | Preamp |
| Manufacturer:         | B & K                      | B & K      | B & K  |
| Type/Model No.:       | 2250-L                     | 4950       | ZC0032 |
| Serial/Equipment No.: | 2718884                    | 2698644    | 13482  |
| Adaptors used:        | -                          | -          | -      |

### Item submitted by

Customer Name: Anewr Consulting Limited  
Address of Customer: Unit 517, 5/F Tower A, Regent Centre, 63 Wo Yip Hop Road, Kwai Chung  
Request No.: -  
Date of receipt: 15-Jun-2017

Date of test: 26-Jun-2017

### Reference equipment used in the calibration

| Description:                    | Model:   | Serial No. | Expiry Date: | Traceable to: |
|---------------------------------|----------|------------|--------------|---------------|
| Multi function sound calibrator | B&K 4226 | 2288444    | 17-Jun-2018  | CIGISMEC      |
| Signal generator                | DS 360   | 33873      | 25-Apr-2018  | CEPREI        |
| Signal generator                | DS 360   | 61227      | 01-Apr-2018  | CEPREI        |

### Ambient conditions

Temperature:  $23 \pm 1$  °C  
Relative humidity:  $50 \pm 10$  %  
Air pressure:  $1010 \pm 5$  hPa

### Test specifications

- 1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
- 2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of  $\pm 20\%$ .
- 3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure response of the Sound Level Meter.

### Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory:

  
Huang Jian Min/Feng Jun Qi

Date: 27-Jun-2017

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

**CERTIFICATE OF CALIBRATION**

(Continuation Page)

Certificate No.:

17CA0615 01-01

Page 2 of 2

**1, Electrical Tests**

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

| Test:                   | Subtest:                                         | Status: | Expanded Uncertainty (dB) | Coverage Factor |
|-------------------------|--------------------------------------------------|---------|---------------------------|-----------------|
| Self-generated noise    | A                                                | Pass    | 0.3                       |                 |
|                         | C                                                | Pass    | 0.8                       |                 |
|                         | Lin                                              | Pass    | 1.6                       |                 |
| Linearity range for Leq | At reference range, Step 5 dB at 4 kHz           | Pass    | 0.3                       |                 |
|                         | Reference SPL on all other ranges                | Pass    | 0.3                       |                 |
|                         | 2 dB below upper limit of each range             | Pass    | 0.3                       |                 |
|                         | 2 dB above lower limit of each range             | Pass    | 0.3                       |                 |
| Linearity range for SPL | At reference range, Step 5 dB at 4 kHz           | Pass    | 0.3                       |                 |
| Frequency weightings    | A                                                | Pass    | 0.3                       |                 |
|                         | C                                                | Pass    | 0.3                       |                 |
|                         | Lin                                              | Pass    | 0.3                       |                 |
| Time weightings         | Single Burst Fast                                | Pass    | 0.3                       |                 |
|                         | Single Burst Slow                                | Pass    | 0.3                       |                 |
| Peak response           | Single 100µs rectangular pulse                   | Pass    | 0.3                       |                 |
| R.M.S. accuracy         | Crest factor of 3                                | Pass    | 0.3                       |                 |
| Time weighting I        | Single burst 5 ms at 2000 Hz                     | Pass    | 0.3                       |                 |
|                         | Repeated at frequency of 100 Hz                  | Pass    | 0.3                       |                 |
| Time averaging          | 1 ms burst duty factor 1/10 <sup>3</sup> at 4kHz | Pass    | 0.3                       |                 |
|                         | 1 ms burst duty factor 1/10 <sup>4</sup> at 4kHz | Pass    | 0.3                       |                 |
| Pulse range             | Single burst 10 ms at 4 kHz                      | Pass    | 0.4                       |                 |
| Sound exposure level    | Single burst 10 ms at 4 kHz                      | Pass    | 0.4                       |                 |
| Overload indication     | SPL                                              | Pass    | 0.3                       |                 |
|                         | Leq                                              | Pass    | 0.4                       |                 |

**2, Acoustic tests**

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

| Test:             | Subtest                | Status | Expanded Uncertainty (dB) | Coverage Factor |
|-------------------|------------------------|--------|---------------------------|-----------------|
| Acoustic response | Weighting A at 125 Hz  | Pass   | 0.3                       |                 |
|                   | Weighting A at 8000 Hz | Pass   | 0.5                       |                 |

**3, Response to associated sound calibrator**

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by:

  
Lai Sheng Jie

Date: 26-Jun-2017

Checked by:

  
Fung Chi Yip

Date: 27-Jun-2017

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.



## CERTIFICATE OF CALIBRATION

Certificate No.: 17CA0114 02-02

Page 1 of 2

### Item tested

|                       |                            |            |        |
|-----------------------|----------------------------|------------|--------|
| Description:          | Sound Level Meter (Type 1) | Microphone | Preamp |
| Manufacturer:         | B & K                      | B & K      | B & K  |
| Type/Model No.:       | 2250-L                     | 4950       | ZC0032 |
| Serial/Equipment No.: | 2701819                    | 2678777    | 12538  |
| Adaptors used:        | -                          | -          | -      |

### Item submitted by

|                      |                                                                      |
|----------------------|----------------------------------------------------------------------|
| Customer Name:       | Anewr Consulting Limited                                             |
| Address of Customer: | Unit 517, 5/F Tower A, Regent Centre, 63 Wo Yip Hop Road, Kwai Chung |
| Request No.:         | -                                                                    |
| Date of receipt:     | 14-Jan-2017                                                          |

Date of test: 18-Jan-2017

### Reference equipment used in the calibration

| Description:                    | Model:   | Serial No. | Expiry Date: | Traceable to: |
|---------------------------------|----------|------------|--------------|---------------|
| Multi function sound calibrator | B&K 4226 | 2288444    | 18-Jun-2017  | CIGISMEC      |
| Signal generator                | DS 360   | 33873      | 18-Apr-2017  | CEPREI        |
| Signal generator                | DS 360   | 61227      | 18-Apr-2017  | CEPREI        |

### Ambient conditions

|                    |              |
|--------------------|--------------|
| Temperature:       | 21 ± 1 °C    |
| Relative humidity: | 60 ± 10 %    |
| Air pressure:      | 1005 ± 5 hPa |

### Test specifications

- 1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
- 2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%.
- 3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responses of the Sound Level Meter.

### Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

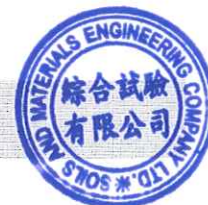
Actual Measurement data are documented on worksheets.

Approved Signatory:

Huang Jian Min/Feng Jun Qi

Date: 19-Jan-2017

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

**CERTIFICATE OF CALIBRATION**

(Continuation Page)

Certificate No.:

17CA0114 02-02

Page 2 of 2

**1, Electrical Tests**

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

| Test:                   | Subtest:                                         | Status: | Expanded Uncertainty (dB) | Coverage Factor |
|-------------------------|--------------------------------------------------|---------|---------------------------|-----------------|
| Self-generated noise    | A                                                | Pass    | 0.3                       |                 |
|                         | C                                                | Pass    | 0.8                       |                 |
|                         | Lin                                              | Pass    | 1.6                       |                 |
| Linearity range for Leq | At reference range, Step 5 dB at 4 kHz           | Pass    | 0.3                       |                 |
|                         | Reference SPL on all other ranges                | Pass    | 0.3                       |                 |
|                         | 2 dB below upper limit of each range             | Pass    | 0.3                       |                 |
|                         | 2 dB above lower limit of each range             | Pass    | 0.3                       |                 |
|                         | At reference range, Step 5 dB at 4 kHz           | Pass    | 0.3                       |                 |
| Linearity range for SPL | A                                                | Pass    | 0.3                       |                 |
|                         | C                                                | Pass    | 0.3                       |                 |
|                         | Lin                                              | Pass    | 0.3                       |                 |
| Frequency weightings    | Single Burst Fast                                | Pass    | 0.3                       |                 |
|                         | Single Burst Slow                                | Pass    | 0.3                       |                 |
|                         | Single 100µs rectangular pulse                   | Pass    | 0.3                       |                 |
| Time weightings         | Crest factor of 3                                | Pass    | 0.3                       |                 |
|                         | Single burst 5 ms at 2000 Hz                     | Pass    | 0.3                       |                 |
|                         | Repeated at frequency of 100 Hz                  | Pass    | 0.3                       |                 |
| Peak response           | 1 ms burst duty factor 1/10 <sup>3</sup> at 4kHz | Pass    | 0.3                       |                 |
|                         | 1 ms burst duty factor 1/10 <sup>4</sup> at 4kHz | Pass    | 0.3                       |                 |
|                         | Single burst 10 ms at 4 kHz                      | Pass    | 0.4                       |                 |
| R.M.S. accuracy         | Single burst 10 ms at 4 kHz                      | Pass    | 0.4                       |                 |
|                         | SPL                                              | Pass    | 0.3                       |                 |
|                         | Leq                                              | Pass    | 0.4                       |                 |
| Time weighting I        |                                                  |         |                           |                 |
|                         |                                                  |         |                           |                 |
|                         |                                                  |         |                           |                 |
| Time averaging          |                                                  |         |                           |                 |
|                         |                                                  |         |                           |                 |
|                         |                                                  |         |                           |                 |
| Pulse range             |                                                  |         |                           |                 |
|                         |                                                  |         |                           |                 |
|                         |                                                  |         |                           |                 |
| Sound exposure level    |                                                  |         |                           |                 |
|                         |                                                  |         |                           |                 |
|                         |                                                  |         |                           |                 |
| Overload indication     |                                                  |         |                           |                 |
|                         |                                                  |         |                           |                 |
|                         |                                                  |         |                           |                 |

**2, Acoustic tests**

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

| Test:             | Subtest                | Status | Expanded Uncertainty (dB) | Coverage Factor |
|-------------------|------------------------|--------|---------------------------|-----------------|
| Acoustic response | Weighting A at 125 Hz  | Pass   | 0.3                       |                 |
|                   | Weighting A at 8000 Hz | Pass   | 0.5                       |                 |

**3, Response to associated sound calibrator**

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

Calibrated by:

Date:

Fung Chi Yip  
18-Jan-2017

Checked by:

Date:

Lam Tze Wai  
19-Jan-2017

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

# Manufacturer Calibration Certificate

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The following instrument has been tested and calibrated to the manufacturer specifications.  
The calibration is traceable in accordance with ISO/IEC 17025 covering all instrument functions.

- Device Type: **M2230 Measurement Microphone**  
consisting of  
MA220                      Serial Number:      6240  
Capsule                   Serial Number:      9498

- Certificate Issued:      **10 January 2017**

- Certificate Number:    **42745-6240-M2230**

- Results:                    **PASSED**  
(for detailed report see next page)

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Tested by:                    M.Frick

Signature:

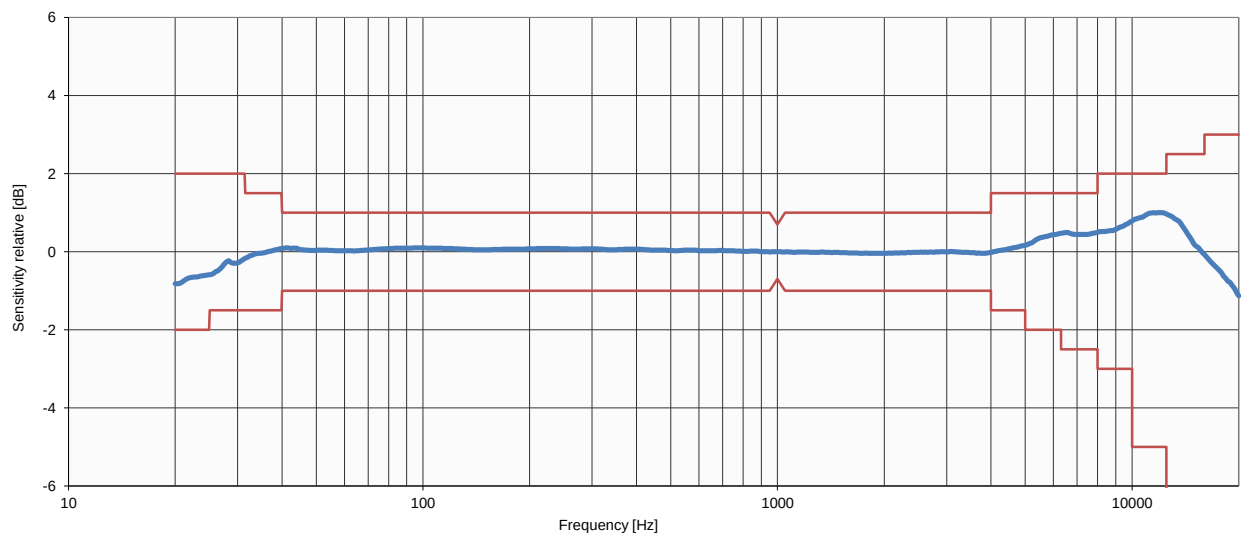
Stamp:

A handwritten signature in black ink is written over a rectangular stamp. The stamp contains the following text: 'NTi Audio AG', 'Im alten Riet 102', 'LI 9494 Schaan', and 'www.nti-audio.com'.

Date: 10 January 2017  
 Calibration of: M2230 Measurement Microphone  
 MA220 Serial Number: 6240  
 Capsule Serial Number: 9498

- Detailed Calibration Test Results:

Frequency response: **Class 1 acc. IEC 61672**



|                                 |                   |                                         |
|---------------------------------|-------------------|-----------------------------------------|
|                                 | actual            | calibration<br>uncertainty <sup>1</sup> |
| Sensitivity @ 1 kHz, 114 dB SPL | <b>43.3 mV/Pa</b> | ±2.85%                                  |

- Test Conditions:
 

|                    |           |           |
|--------------------|-----------|-----------|
| Temperature:       | 27.2 °C   | ±0.5 °C   |
| Relative Humidity: | 39.5 %    | ±2%       |
| Air Pressure:      | 95.94 kPa | ±0.25 kPa |

- Calibration Equipment Used:

- Norsonic Sound Calibrator, Type 1251, S/No. 30930  
 Last Calibration: 05.12.2016, Next Calibration: 05.12.2018  
 Calibrated by Metas, Switzerland
- NTi Audio FX100, S/No. 11094  
 Last Calibration: 16.08.2016, Next Calibration: 16.08.2017  
 Calibrated by NTi Audio meeting product specifications
- MTG MV203, S/No. 0630 / Mic Capsule, MK221 S/No. 16502  
 Last Calibration: 30.11.2015, Next Calibration: 30.11.2017  
 Calibrated by MTG, Germany

<sup>1</sup> The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with the regulations of the GUM.



## CERTIFICATE OF CALIBRATION

Certificate No.: 18CA0524 04-04

Page: 1 of 2

### Item tested

Description: Acoustical Calibrator (Class 1)  
Manufacturer: B & K  
Type/Model No.: 4231  
Serial/Equipment No.: 1858983  
Adaptors used: -

### Item submitted by

Customer: MTR Corporation Ltd.  
Address of Customer: -  
Request No.: -  
Date of receipt: 24-May-2018

Date of test: 25-May-2018

### Reference equipment used in the calibration

| Description:            | Model:   | Serial No. | Expiry Date: | Traceable to: |
|-------------------------|----------|------------|--------------|---------------|
| Lab standard microphone | B&K 4180 | 2412857    | 20-Apr-2019  | SCL           |
| Preamplifier            | B&K 2673 | 2743150    | 27-Apr-2019  | CEPREI        |
| Measuring amplifier     | B&K 2610 | 2346941    | 08-May-2019  | CEPREI        |
| Signal generator        | DS 360   | 33873      | 24-Apr-2019  | CEPREI        |
| Digital multi-meter     | 34401A   | US36087050 | 23-Apr-2019  | CEPREI        |
| Audio analyzer          | 8903B    | GB41300350 | 23-Apr-2019  | CEPREI        |
| Universal counter       | 53132A   | MY40003662 | 24-Apr-2019  | CEPREI        |

### Ambient conditions

Temperature:  $21 \pm 1$  °C  
Relative humidity:  $50 \pm 10$  %  
Air pressure:  $1005 \pm 5$  hPa

### Test specifications

- The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
- The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

### Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on page 2 of this certificate.

Approved Signatory:

  
Feng Jun Qi

Date: 28-May-2018

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

**CERTIFICATE OF CALIBRATION**

(Continuation Page)

Certificate No.: 18CA0524 04-04

Page: 2 of 2

**1, Measured Sound Pressure Level**

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties.

| Frequency<br>Shown<br>Hz | Output Sound Pressure<br>Level Setting<br>dB | Measured Output<br>Sound Pressure Level<br>dB | (Output level in dB re 20 $\mu$ Pa)     |
|--------------------------|----------------------------------------------|-----------------------------------------------|-----------------------------------------|
|                          |                                              |                                               | Estimated Expanded<br>Uncertainty<br>dB |
| 1000                     | 94.00                                        | 93.86                                         | 0.10                                    |

**2, Sound Pressure Level Stability - Short Term Fluctuations**

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

**At 1000 Hz** **STF = 0.010 dB**

Estimated expanded uncertainty 0.005 dB

**3, Actual Output Frequency**

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

**At 1000 Hz** **Actual Frequency = 999.84 Hz**

Estimated expanded uncertainty 0.1 Hz Coverage factor k = 2.2

**4, Total Noise and Distortion**

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

**At 1000 Hz** **TND = 0.5 %**

Estimated expanded uncertainty 0.7 %

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by:

Date:

Fung Chi Yip  
25-May-2018

Checked by:

Date:

Shek Kwong Tat  
28-May-2018

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.



## CERTIFICATE OF CALIBRATION

Certificate No.: 18CA0524 04-03

Page: 1 of 2

### Item tested

Description: Acoustical Calibrator (Class 1)  
Manufacturer: B & K  
Type/Model No.: 4231  
Serial/Equipment No.: 2725557  
Adaptors used: -

### Item submitted by

Customer: MTR Corporation Ltd.  
Address of Customer: -  
Request No.: -  
Date of receipt: 24-May-2018

Date of test: 25-May-2018

### Reference equipment used in the calibration

| Description:            | Model:   | Serial No. | Expiry Date: | Traceable to: |
|-------------------------|----------|------------|--------------|---------------|
| Lab standard microphone | B&K 4180 | 2412857    | 20-Apr-2019  | SCL           |
| Preamplifier            | B&K 2673 | 2743150    | 27-Apr-2019  | CEPREI        |
| Measuring amplifier     | B&K 2610 | 2346941    | 08-May-2019  | CEPREI        |
| Signal generator        | DS 360   | 33873      | 24-Apr-2019  | CEPREI        |
| Digital multi-meter     | 34401A   | US36087050 | 23-Apr-2019  | CEPREI        |
| Audio analyzer          | 8903B    | GB41300350 | 23-Apr-2019  | CEPREI        |
| Universal counter       | 53132A   | MY40003662 | 24-Apr-2019  | CEPREI        |

### Ambient conditions

Temperature:  $21 \pm 1$  °C  
Relative humidity:  $50 \pm 10$  %  
Air pressure:  $1005 \pm 5$  hPa

### Test specifications

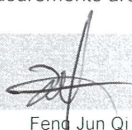
- The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
- The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

### Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on page 2 of this certificate.

Approved Signatory:

  
Feng Jun Qi

Date: 28-May-2018

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.



## CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 18CA0524 04-03

Page: 2 of 2

### 1, Measured Sound Pressure Level

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties.

| Frequency<br>Shown<br>Hz | Output Sound Pressure<br>Level Setting<br>dB | Measured Output<br>Sound Pressure Level<br>dB | (Output level in dB re 20 $\mu$ Pa)     |
|--------------------------|----------------------------------------------|-----------------------------------------------|-----------------------------------------|
|                          |                                              |                                               | Estimated Expanded<br>Uncertainty<br>dB |
| 1000                     | 94.00                                        | 93.94                                         | 0.10                                    |

### 2, Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz STF = 0.015 dB

Estimated expanded uncertainty 0.005 dB

### 3, Actual Output Frequency

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz Actual Frequency = 1000.0 Hz

Estimated expanded uncertainty 0.1 Hz Coverage factor k = 2.2

### 4, Total Noise and Distortion

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

At 1000 Hz TND = 0.5 %

Estimated expanded uncertainty 0.7 %

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by:

Fung Chi Yip

Date: 25-May-2018

Checked by:

Shek Kwong Tat

Date: 28-May-2018

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

## **Appendix A3 – Fixed Plant Noise Summary**

Appendix A3     Result Summary Table

| Source ID | Louvre ID                 | Plant / Louvre | Method <sup>(1)</sup> | Louvre Size |             | Measurement Distance(m) | Measurement Box Area (S) | Measured Noise Level L <sub>Aeq</sub> [dB(A)] | Average Background LAeq [dB(A)] | Difference LAeq [dB(A)] <sup>(2)</sup> | Background Corrected Measured LAeq [dB(A)] | Area Corr. | Calculated SWL |
|-----------|---------------------------|----------------|-----------------------|-------------|-------------|-------------------------|--------------------------|-----------------------------------------------|---------------------------------|----------------------------------------|--------------------------------------------|------------|----------------|
|           |                           |                |                       | Width (mm)  | Height (mm) |                         |                          |                                               |                                 |                                        |                                            |            |                |
| WKP       | WKP-U1-E6PN-03A Section 1 | Louvre         | 3                     | 28200       | 4600        | 3                       | 631.3                    | 56.2                                          | 52.5                            | 3.7                                    | 53.8                                       | 28.0       | 82             |
|           | WKP-U1-E6PN-03A Section 2 | Louvre         | 3                     | 21950       | 6500        | 3                       | 592.1                    | 55.0                                          | 52.5                            | 2.5                                    | 52.0                                       | 27.7       | 80             |
|           | WKP-U1-E6PN-06A           | Louvre         | 3                     | 5600        | 10920       | 0.25                    | 78.4                     | 52.9                                          | 51.6                            | 1.3                                    | 49.9                                       | 18.9       | 69             |
|           | WKP-U1-E6PN-04A           | Louvre         | 3                     | 18900       | 9285        | 1                       | 300.2                    | 60.6                                          | 57.3                            | 3.3                                    | 57.9                                       | 24.8       | 83             |
|           | WKP-E6PVS-02              | Louvre         | 3                     | 3000        | 5400        | 0.5                     | 36.0                     | 53.7                                          | 54.5                            | -0.8                                   | 50.7                                       | 15.6       | 66             |
|           | WKP-U1-E6PN-09            | Louvre         | 3                     | 1600        | 5000        | 0.5                     | 24.2                     | 63.0                                          | 61.4                            | 1.6                                    | 60.0                                       | 13.8       | 74             |
| EAA       | WKT-VS3N-1                | Louvre         | 3                     | 51365       | 4430        | 1                       | 462.7                    | 56.0                                          | 52.7                            | 3.3                                    | 53.3                                       | 26.7       | 80             |
| VS3       | WKT-VS3-1                 | Louvre         | 3                     | 3000        | 1500        | 1                       | 34.5                     | 55.0                                          | 54.4                            | 0.6                                    | 52.0                                       | 15.4       | 67             |
|           | WKT-VS3-2                 | Louvre         | 3                     | 1000        | 3000        | 1                       | 31.0                     | 55.0                                          | 55.5                            | -0.5                                   | 52.0                                       | 14.9       | 67             |
|           | WKT-VS3-3                 | Louvre         | 3                     | 4570        | 3400        | 1                       | 59.4                     | 57.0                                          | 53.7                            | 3.3                                    | 54.3                                       | 17.7       | 72             |
|           | WKT-VS3-4                 | Louvre         | 3                     | 5540        | 23780       | 1                       | 261.0                    | 51.0                                          | 50.2                            | 0.8                                    | 48.0                                       | 24.2       | 72             |
|           | WKT-VS3-5                 | Louvre         | 3                     | 24350       | 2500        | 1                       | 125.6                    | 51.0                                          | 49.7                            | 1.3                                    | 48.0                                       | 21.0       | 69             |
|           | WKT-VS3-6A                | Louvre         | 3                     | 2360        | 2500        | 1                       | 37.3                     | 53.0                                          | 51.5                            | 1.5                                    | 50.0                                       | 15.7       | 66             |
|           | WKT-VS3-6B                | Louvre         | 3                     | 2784        | 2500        | 1                       | 40.1                     | 54.0                                          | 51.4                            | 2.6                                    | 51.0                                       | 16.0       | 67             |
|           | WKT-VS3-7                 | Louvre         | 3                     | 685         | 2500        | 1                       | 26.5                     | 54.0                                          | 51.6                            | 2.4                                    | 51.0                                       | 14.2       | 65             |
|           | WKT-VS3-8                 | Louvre         | 3                     | 3330        | 2500        | 1                       | 43.6                     | 53.0                                          | 51.7                            | 1.3                                    | 50.0                                       | 16.4       | 66             |
| VS2E      | WKT-VS2E-1                | Louvre         | 3                     | 12000       | 6000        | 1                       | 156.0                    | 53.0                                          | 52.9                            | 0.1                                    | 50.0                                       | 21.9       | 72             |
|           | WKT-VS2E-2                | Louvre         | 3                     | 6244        | 5965        | 1                       | 98.1                     | 52.0                                          | 51.7                            | 0.3                                    | 49.0                                       | 19.9       | 69             |
|           | WKT-VS2E-3                | Louvre         | 3                     | 5139        | 6028        | 1                       | 87.6                     | 53.0                                          | 50.8                            | 2.2                                    | 50.0                                       | 19.4       | 69             |
| VS4       | WKT-VS4-1                 | Louvre         | 3                     | 28535       | 2185        | 1                       | 134.2                    | 60.0                                          | 56.7                            | 3.3                                    | 57.3                                       | 21.3       | 79             |
|           | WKT-VS4-3                 | Louvre         | 3                     | 11020       | 4505        | 1                       | 123.7                    | 55.0                                          | 54.4                            | 0.6                                    | 52.0                                       | 20.9       | 73             |
|           | WKT-VS4-4                 | Louvre         | 3                     | 38730       | 2485        | 1                       | 190.2                    | 54.0                                          | 59.1                            | -5.1                                   | 51.0                                       | 22.8       | 74             |
| VS5       | WKT-VS5-1                 | Louvre         | 3                     | 17988       | 2617        | 1                       | 99.5                     | 53.0                                          | 52.9                            | 0.1                                    | 50.0                                       | 20.0       | 70             |
|           | WKT-VS5-2                 | Louvre         | 3                     | 25373       | 3880        | 1                       | 227.5                    | 69.0                                          | 55.8                            | 13.2                                   | 68.8                                       | 23.6       | 92             |
|           | WKT-VS5-4                 | Louvre         | 3                     | 9383        | 4500        | 1                       | 115.0                    | 61.0                                          | 59.8                            | 1.2                                    | 58.0                                       | 20.6       | 79             |
| VS2W      | WKT-VS2W-1                | Louvre         | 3                     | 10600       | 4892        | 1                       | 98.6                     | 58.0                                          | 55.6                            | 2.4                                    | 55.0                                       | 19.9       | 75             |
|           | WKT-VS2W-2A               | Louvre         | 3                     | 4700        | 1200        | 1                       | 41.2                     | 55.0                                          | 54.7                            | 0.3                                    | 52.0                                       | 16.1       | 68             |
|           | WKT-VS2W-2B               | Louvre         | 3                     | 4700        | 1200        | 1                       | 41.2                     | 57.0                                          | 55.4                            | 1.6                                    | 54.0                                       | 16.1       | 70             |
|           | WKT-VS2W-2C               | Louvre         | 3                     | 3800        | 2200        | 1                       | 44.4                     | 57.0                                          | 54.3                            | 2.7                                    | 54.0                                       | 16.5       | 70             |
|           | WKT-VS2W-3                | Louvre         | 3                     | 9602        | 4358        | 1                       | 109.7                    | 59.0                                          | 56.6                            | 2.4                                    | 56.0                                       | 20.4       | 76             |
| VS1       | WKT-VS1-1                 | Louvre         | 3                     | 8550        | 3707        | 1                       | 90.8                     | 50.0                                          | 48.5                            | 1.5                                    | 47.0                                       | 19.6       | 67             |
|           | WKT-VS1-2                 | Louvre         | 3                     | 4400        | 34100       | 1                       | 316.0                    | 50.0                                          | 49.5                            | 0.5                                    | 47.0                                       | 25.0       | 72             |
|           | WKT-VS1-3                 | Louvre         | 3                     | 10500       | 7925        | 1                       | 168.9                    | 53.0                                          | 50.3                            | 2.7                                    | 50.0                                       | 22.3       | 72             |
|           | WKT-VS1-4                 | Louvre         | 3                     | 19183       | 7925        | 1                       | 228.1                    | 54.0                                          | 54.0                            | 0.0                                    | 51.0                                       | 23.6       | 75             |
| VS6       | WKT-VS6-1                 | Louvre         | 3                     | 5500        | 11100       | 2                       | 241.9                    | 56.0                                          | 52.2                            | 3.8                                    | 53.7                                       | 23.8       | 77             |
|           | WKT-VS6-2A                | Louvre         | 3                     | 1100        | 2100        | 1                       | 27.1                     | 49.0                                          | 47.3                            | 1.7                                    | 46.0                                       | 14.3       | 60             |
|           | WKT-VS6-2B                | Louvre         | 3                     | 1100        | 3800        |                         | 35.8                     | 49.0                                          | 47.9                            | 1.1                                    | 46.0                                       | 15.5       | 62             |
|           | WKT-VS6-3A                | Louvre         | 3                     | 3370        | 3575        |                         | 51.8                     | 48.0                                          | 49.0                            | -1.0                                   | 45.0                                       | 17.1       | 62             |
|           | WKT-VS6-3B                | Louvre         | 3                     | 3370        | 2775        |                         | 45.9                     | 52.0                                          | 52.0                            | 0.0                                    | 49.0                                       | 16.6       | 66             |
|           | WKT-VS6-4                 | Louvre         | 3                     | 1800        | 8360        |                         | 58.1                     | 59.0                                          | 53.5                            | 5.5                                    | 57.6                                       | 17.6       | 75             |
|           | WKT-VS6-5A                | Louvre         | 3                     | 3350        | 1615        |                         | 37.3                     | 61.0                                          | 51.4                            | 9.6                                    | 60.5                                       | 15.7       | 76             |
|           | WKT-VS6-5B                | Louvre         | 3                     | 2000        | 5495        |                         | 53.0                     | 60.0                                          | 54.4                            | 5.6                                    | 58.6                                       | 17.2       | 76             |
|           | WKT-VS6-6A                | Louvre         | 3                     | 400         | 1250        |                         | 12.3                     | 57.0                                          | 55.9                            | 1.1                                    | 54.0                                       | 10.9       | 65             |
|           | WKT-VS6-6B                | Louvre         | 3                     | 400         | 1250        |                         | 12.3                     | 60.0                                          | 52.7                            | 7.3                                    | 59.1                                       | 10.9       | 70             |
|           | WKT-VS6-7A                | Louvre         | 3                     | 8050        | 8725        |                         | 149.3                    | 50.0                                          | 48.9                            | 1.1                                    | 47.0                                       | 21.7       | 69             |
|           | WKT-VS6-7B                | Louvre         | 3                     | 5300        | 1850        |                         | 33.8                     | 51.0                                          | 48.9                            | 2.1                                    | 48.0                                       | 15.3       | 63             |

Appendix A3     Result Summary Table

| Source ID | Louvre ID                 | Plant / Louvre | Method <sup>(1)</sup> | Louvre Size |             | Measurement Distance(m) | Measurement Box Area (S) | Measured Noise Level L <sub>Aeq</sub> [dB(A)] | Average Background LAeq [dB(A)] | Difference LAeq [dB(A)] <sup>(2)</sup> | Background Corrected Measured LAeq [dB(A)] | Area Corr. | Calculated SWL |
|-----------|---------------------------|----------------|-----------------------|-------------|-------------|-------------------------|--------------------------|-----------------------------------------------|---------------------------------|----------------------------------------|--------------------------------------------|------------|----------------|
|           |                           |                |                       | Width (mm)  | Height (mm) |                         |                          |                                               |                                 |                                        |                                            |            |                |
| PVS6      | WKT-PVS6-1                | Louvre         | 3                     | 500         | 1000        | 1                       | 18.5                     | 53.0                                          | 51.7                            | 1.3                                    | 50.0                                       | 12.7       | 63             |
|           | WKT-PVS6-2                | Louvre         | 3                     | 350         | 1200        |                         | 18.6                     | 57.0                                          | 51.2                            | 5.8                                    | 55.7                                       | 12.7       | 68             |
|           | WKT-PVS6-3A               | Louvre         | 3                     | 400         | 1970        |                         | 22.3                     | 58.0                                          | 54.0                            | 4.0                                    | 55.8                                       | 13.5       | 69             |
|           | WKT-PVS6-3B               | Louvre         | 3                     | 1600        | 6550        |                         | 55.1                     | 58.0                                          | 54.3                            | 3.7                                    | 55.6                                       | 17.4       | 73             |
|           | WKT-PVS6-4                | Louvre         | 3                     | 5350        | 2650        |                         | 41.5                     | 57.0                                          | 49.0                            | 8.0                                    | 56.3                                       | 16.2       | 72             |
| VS6-4     | WKT-G-G15VS-01A           | Louvre         | 3                     | 2725        | 7450        | 2                       | 149.7                    | 56.3                                          | 52.9                            | 3.4                                    | 53.6                                       | 21.8       | 75             |
|           | WKT-G-G15VS-01B           | Louvre         | 3                     | 2940        | 7450        | 2                       | 153.0                    | 56.1                                          | 51.5                            | 4.6                                    | 54.3                                       | 21.8       | 76             |
|           | WKT-G-G15VS-01C           | Louvre         | 3                     | 600         | 7450        | 2                       | 116.9                    | 55.1                                          | 50.6                            | 4.5                                    | 53.2                                       | 20.7       | 74             |
|           | WKT-G-G15VS-03A Section 1 | Louvre         | 3                     | 3075        | 10000       | 1                       | 95.1                     | 55.5                                          | 52.5                            | 3.0                                    | 52.5                                       | 19.8       | 72             |
|           | WKT-G-G15VS-03A Section 2 | Louvre         | 3                     | 2250        | 10000       | 1                       | 83.5                     | 55.2                                          | 50.0                            | 5.2                                    | 53.6                                       | 19.2       | 73             |
| VS7       | WKT-G-D14VS-03A           | Louvre         | 3                     | 6150        | 15600       | 3                       | 464.9                    | 56.8                                          | 53.5                            | 3.3                                    | 54.1                                       | 26.7       | 81             |
|           | WKT-G-D14VS-04A           | Louvre         | 3                     | 5350        | 17700       | 1                       | 198.9                    | 56.6                                          | 51.9                            | 4.7                                    | 54.8                                       | 23.0       | 78             |
|           | WKT-VS7-1A                | Louvre         | 3                     | 6800        | 15045       | 2                       | 325.1                    | 54.0                                          | 50.1                            | 3.9                                    | 51.7                                       | 25.1       | 77             |
|           | WKT-VS7-1B                | Louvre         | 3                     | 2500        | 15045       | 2                       | 226.0                    | 53.0                                          | 50.7                            | 2.3                                    | 50.0                                       | 23.5       | 74             |
|           | WKT-VS7-2                 | Louvre         | 3                     | 2350        | 15425       | 1                       | 119.3                    | 51.0                                          | 50.1                            | 0.9                                    | 48.0                                       | 20.8       | 69             |
|           | WKT-VS7-3                 | Louvre         | 3                     | 10000       | 18250       |                         | 307.5                    | 58.0                                          | 54.7                            | 3.3                                    | 55.3                                       | 24.9       | 80             |
| PTI       | L-01                      | Louvre         | 3                     | 8000        | 2250        | 2                       | 148.0                    | 60.8                                          | 56.0                            | 4.8                                    | 59.1                                       | 21.7       | 83             |
|           |                           |                |                       | 8000        | 2250        | 2                       | 148.0                    | 59.0                                          | 56.0                            | 3.0                                    | 56.0                                       | 21.7       |                |
|           | L-02                      | Louvre         | 3                     | 8000        | 2250        | 2                       | 148.0                    | 59.6                                          | 55.4                            | 4.2                                    | 57.6                                       | 21.7       | 79             |
|           | L-03                      | Louvre         | 3                     | 8000        | 2250        | 2                       | 148.0                    | 60.7                                          | 55.4                            | 5.3                                    | 59.3                                       | 21.7       | 81             |
|           | L-03a                     | Louvre         | 3                     | 9000        | 2000        | 2                       | 154.0                    | 59.9                                          | 56.0                            | 3.9                                    | 57.7                                       | 21.9       | 80             |
|           | L-06                      | Louvre         | 2                     | 1000        | 1000        | 2                       | N/A                      | 62.7                                          | 57.6                            | 5.1                                    | 61.1                                       | N/A        | 75             |
|           | L-07                      | Louvre         | 2                     | 1000        | 1000        | 2                       | N/A                      | 57.7                                          | 53.9                            | 3.8                                    | 55.4                                       | N/A        | 69             |
|           | L-08                      | Louvre         | 2                     | 1000        | 1000        | 2                       | N/A                      | 59.2                                          | 53.9                            | 5.3                                    | 57.7                                       | N/A        | 72             |
|           | L-08a                     | Louvre         | 2                     | 1000        | 1000        | 2                       | N/A                      | 57.4                                          | 53.9                            | 3.5                                    | 54.8                                       | N/A        | 69             |
|           | L-10                      | Louvre         | 3                     | 6000        | 2250        | 2                       | 127.5                    | 65.9                                          | 58.8                            | 7.1                                    | 65.0                                       | 21.1       | 86             |
|           | L-11                      | Louvre         | 3                     | 6000        | 2250        | 2                       | 127.5                    | 64.5                                          | 58.8                            | 5.7                                    | 63.1                                       | 21.1       | 84             |
|           | L-12                      | Louvre         | 3                     | 6000        | 2250        | 2                       | 127.5                    | 64.4                                          | 58.8                            | 5.6                                    | 63.0                                       | 21.1       | 84             |
|           | L-13                      | Louvre         | 3                     | 6000        | 2250        | 2                       | 127.5                    | 62.8                                          | 56.8                            | 6.0                                    | 61.5                                       | 21.1       | 90             |
|           |                           |                |                       | 6000        | 2250        | 2                       | 127.5                    | 62.4                                          | 56.8                            | 5.6                                    | 61.0                                       | 21.1       |                |
|           |                           |                |                       | 6000        | 2250        | 2                       | 127.5                    | 64.5                                          | 56.8                            | 7.7                                    | 63.7                                       | 21.1       |                |
|           |                           |                |                       | 6000        | 2250        | 2                       | 127.5                    | 62.3                                          | 56.8                            | 5.5                                    | 60.9                                       | 21.1       |                |
|           |                           |                |                       | 6000        | 2250        | 2                       | 127.5                    | 61.3                                          | 56.8                            | 4.5                                    | 59.4                                       | 21.1       |                |
|           | L-14                      | Louvre         | 3                     | 7350        | 2250        | 2                       | 141.3                    | 66.6                                          | 56.8                            | 9.8                                    | 66.1                                       | 21.5       | 88             |
|           | L-15a                     | Louvre         | 3                     | 6600        | 2250        | 2                       | 133.7                    | 65.7                                          | 56.8                            | 8.9                                    | 65.1                                       | 21.3       | 86             |
|           | L-15b                     | Louvre         | 3                     | 6600        | 2250        | 2                       | 133.7                    | 62.3                                          | 56.8                            | 5.5                                    | 60.9                                       | 21.3       | 82             |
|           | L-21                      | Louvre         | 3                     | 8500        | 2000        | 2                       | 149.0                    | 56.5                                          | 53.4                            | 3.1                                    | 53.6                                       | 21.7       | 75             |
|           | L-22                      | Louvre         | 3                     | 8500        | 2000        | 2                       | 149.0                    | 56.9                                          | 53.4                            | 3.5                                    | 54.3                                       | 21.7       | 76             |
|           | L-23                      | Louvre         | 3                     | 8500        | 2000        | 2                       | 149.0                    | 59.2                                          | 56.0                            | 3.2                                    | 56.4                                       | 21.7       | 78             |
|           | L-24                      | Louvre         | 3                     | 8500        | 2000        | 2                       | 149.0                    | 59.4                                          | 56.0                            | 3.4                                    | 56.7                                       | 21.7       | 78             |
|           | L-28                      | Louvre         | 3                     | 7000        | 2000        | 2                       | 134.0                    | 54.2                                          | 51.2                            | 3.0                                    | 51.2                                       | 21.3       | 72             |
|           | L-29                      | Louvre         | 3                     | 7000        | 2000        | 2                       | 134.0                    | 60.7                                          | 57.7                            | 3.0                                    | 57.7                                       | 21.3       | 79             |
|           | L-30                      | Louvre         | 3                     | 7000        | 2000        | 2                       | 134.0                    | 57.1                                          | 54.0                            | 3.1                                    | 54.2                                       | 21.3       | 75             |
|           | L-31                      | Louvre         | 3                     | 7000        | 2000        | 2                       | 134.0                    | 63.3                                          | 57.7                            | 5.6                                    | 61.9                                       | 21.3       | 83             |

(1) 2: Far-field measurement; 3: Near-field measurement.

(2) For near field measurement, if the difference between measures noise level (MNL) and the average background noise level is 3dB(A) or less then 3dB(A), a -3dB(A) will be applie to the MNL as the background corrected measured noise level. If the difference is greater than 3dB(A), the formula  $10 \cdot \text{LOG}_{10}(10^{(MNL/10)} - 10^{(BGN/10)})$  will be applied. For far field measurement, the SWL is calculated by the following equation:  $SWL = SPL + 20\log D + 8 + K1A$ , where D is the separation between the louvre and the microphone, in meter; K1A is the background noise correction factor as described in ISO 3746:2010

(3) P2 louvre, which was identified in the ERR for "Design Changes in Mon Kok West Ventilation Buildings, West Kowloon Terminus and Its Associated Building Elements" in 2013, does not connected to any mechanical plant and therefore it was not included in the assessment.

Appendix A3  
Fixed Plant Noise Impact Assessment

| NSR No.                  | Description                            | ID                               | Louvre ID (contractor)   | Distance, m <sup>(1)</sup> | SWL, dB(A) | Correction for line of sight <sup>(2)</sup> , dB(A) | SPL, dB(A) | Total SPL, dB(A) | Daytime Noise Criteria, dB(A) |
|--------------------------|----------------------------------------|----------------------------------|--------------------------|----------------------------|------------|-----------------------------------------------------|------------|------------------|-------------------------------|
| Daytime and Evening Time |                                        |                                  |                          |                            |            |                                                     |            |                  |                               |
| WK3                      | 46-48 Man King Building (South facade) | WKP                              | WKP-U1-E6PN-03ASection 1 | 108                        | 82         | 0                                                   | 36         |                  |                               |
|                          |                                        |                                  | WKP-U1-E6PN-03ASection 2 | 106                        | 80         | 0                                                   | 35         |                  |                               |
|                          |                                        |                                  | WKP-U1-E6PN-06A          | 122                        | 69         | 10                                                  | 12         |                  |                               |
|                          |                                        |                                  | WKP-U1-E6PN-04A          | 125                        | 83         | 10                                                  | 26         |                  |                               |
|                          |                                        |                                  | WKP-E6PVS-02             | 106                        | 66         | 0                                                   | 21         |                  |                               |
|                          |                                        |                                  | WKP-U1-E6PN-09           | 122                        | 74         | 10                                                  | 17         |                  |                               |
|                          |                                        | EAA<br>VS 3                      | WKT-VS3N-1               | 77                         | 80         | 10                                                  | 27         |                  |                               |
|                          |                                        |                                  | WKT-VS3-1                | 127                        | 67         | 0                                                   | 20         |                  |                               |
|                          |                                        |                                  | WKT-VS3-2                | 128                        | 67         | 0                                                   | 20         |                  |                               |
|                          |                                        |                                  | WKT-VS3-3                | 124                        | 72         | 0                                                   | 25         |                  |                               |
|                          |                                        |                                  | WKT-VS3-4                | 126                        | 72         | 0                                                   | 25         |                  |                               |
|                          |                                        |                                  | WKT-VS3-5                | 129                        | 69         | 0                                                   | 22         |                  |                               |
|                          |                                        |                                  | WKT-VS3-6A               | 129                        | 66         | 0                                                   | 19         |                  |                               |
|                          |                                        |                                  | WKT-VS3-6B               | 129                        | 67         | 0                                                   | 20         |                  |                               |
|                          |                                        |                                  | WKT-VS3-7                | 124                        | 65         | 0                                                   | 18         |                  |                               |
|                          |                                        |                                  | WKT-VS3-8                | 124                        | 66         | 0                                                   | 19         |                  |                               |
|                          |                                        | VS 2 EAST                        | WKT-VS2E-1               | 233                        | 72         | 0                                                   | 20         |                  |                               |
|                          |                                        |                                  | WKT-VS2E-2               | 246                        | 69         | 0                                                   | 16         |                  |                               |
|                          |                                        |                                  | WKT-VS2E-3               | 256                        | 69         | 0                                                   | 16         |                  |                               |
|                          |                                        | VS 4 <sup>(3)</sup><br>VS 2 WEST | WKT-VS4-3                | 283                        | 73         | 0                                                   | 19         |                  |                               |
|                          |                                        |                                  | WKT-VS2W-1               | 247                        | 75         | 0                                                   | 22         |                  |                               |
|                          |                                        |                                  | WKT-VS2W-2A              | 247                        | 68         | 0                                                   | 15         |                  |                               |
|                          |                                        | PTI                              | WKT-VS2W-2B              | 247                        | 70         | 0                                                   | 17         |                  |                               |
|                          |                                        |                                  | WKT-VS2W-2C              | 257                        | 70         | 0                                                   | 17         |                  |                               |
|                          |                                        |                                  | WKT-VS2W-3               | 271                        | 76         | 0                                                   | 22         |                  |                               |
|                          |                                        |                                  | L-01                     | 63                         | 83         | 0                                                   | 42         |                  |                               |
|                          |                                        |                                  | L-02                     | 68                         | 79         | 0                                                   | 37         |                  |                               |
|                          |                                        |                                  | L-03                     | 76                         | 81         | 5                                                   | 33         |                  |                               |
|                          |                                        |                                  | L-03a                    | 117                        | 80         | 5                                                   | 29         |                  |                               |
|                          |                                        |                                  | L-06                     | 297                        | 75         | 10                                                  | 11         |                  |                               |
|                          |                                        |                                  | L-07                     | 289                        | 69         | 10                                                  | 5          |                  |                               |
|                          |                                        |                                  | L-08                     | 283                        | 72         | 10                                                  | 8          |                  |                               |
|                          |                                        |                                  | L-08a                    | 277                        | 69         | 10                                                  | 5          |                  |                               |
|                          |                                        |                                  | L-10                     | 167                        | 86         | 10                                                  | 27         |                  |                               |
|                          |                                        |                                  | L-11                     | 167                        | 84         | 10                                                  | 25         |                  |                               |
|                          |                                        |                                  | L-12                     | 159                        | 84         | 10                                                  | 25         |                  |                               |
|                          |                                        |                                  | L-13                     | 134                        | 90         | 10                                                  | 32         |                  |                               |
|                          |                                        |                                  | L-14                     | 108                        | 88         | 10                                                  | 32         |                  |                               |
|                          |                                        |                                  | L-15a                    | 100                        | 86         | 10                                                  | 31         |                  |                               |
|                          |                                        |                                  | L-15b                    | 93                         | 82         | 10                                                  | 28         |                  |                               |
|                          |                                        |                                  | L-21                     | 185                        | 75         | 5                                                   | 20         |                  |                               |
|                          |                                        |                                  | L-22                     | 166                        | 76         | 5                                                   | 22         |                  |                               |
|                          |                                        |                                  | L-23                     | 153                        | 78         | 5                                                   | 24         |                  |                               |
|                          |                                        |                                  | L-24                     | 140                        | 78         | 5                                                   | 25         |                  |                               |
|                          |                                        |                                  | L-28                     | 295                        | 72         | 10                                                  | 8          |                  |                               |
|                          |                                        |                                  | L-29                     | 178                        | 79         | 10                                                  | 19         |                  |                               |
|                          |                                        |                                  | L-30                     | 171                        | 75         | 10                                                  | 15         |                  |                               |
|                          |                                        |                                  | L-31                     | 272                        | 83         | 10                                                  | 19         | 46               | 60                            |

| NSR No.    | Description                            | ID                               | Louvre ID (contractor)   | Distance, m <sup>(1)</sup> | SWL, dB(A) | Correction for line of sight <sup>(2) (3)</sup> , dB(A) | SPL, dB(A) | Total SPL, dB(A) | Night-time Noise Criteria, dB(A) |
|------------|----------------------------------------|----------------------------------|--------------------------|----------------------------|------------|---------------------------------------------------------|------------|------------------|----------------------------------|
| Night-time |                                        |                                  |                          |                            |            |                                                         |            |                  |                                  |
| WK3        | 46-48 Man King Building (South facade) | WKP                              | WKP-U1-E6PN-03ASection 1 | 108                        | 82         | 0                                                       | 36         |                  |                                  |
|            |                                        |                                  | WKP-U1-E6PN-03ASection 2 | 106                        | 80         | 0                                                       | 35         |                  |                                  |
|            |                                        |                                  | WKP-U1-E6PN-06A          | 122                        | 69         | 10                                                      | 12         |                  |                                  |
|            |                                        |                                  | WKP-U1-E6PN-04A          | 125                        | 83         | 10                                                      | 26         |                  |                                  |
|            |                                        |                                  | WKP-E6PVS-02             | 106                        | 66         | 0                                                       | 21         |                  |                                  |
|            |                                        |                                  | WKP-U1-E6PN-09           | 122                        | 74         | 10                                                      | 17         |                  |                                  |
|            |                                        | EAA<br>VS 3                      | WKT-VS3N-1               | 77                         | 80         | 10                                                      | 27         |                  |                                  |
|            |                                        |                                  | WKT-VS3-1                | 127                        | 67         | 0                                                       | 20         |                  |                                  |
|            |                                        |                                  | WKT-VS3-2                | 128                        | 67         | 0                                                       | 20         |                  |                                  |
|            |                                        |                                  | WKT-VS3-3                | 124                        | 72         | 0                                                       | 25         |                  |                                  |
|            |                                        |                                  | WKT-VS3-4                | 126                        | 72         | 0                                                       | 25         |                  |                                  |
|            |                                        |                                  | WKT-VS3-5                | 129                        | 69         | 0                                                       | 22         |                  |                                  |
|            |                                        |                                  | WKT-VS3-6A               | 129                        | 66         | 0                                                       | 19         |                  |                                  |
|            |                                        |                                  | WKT-VS3-6B               | 129                        | 67         | 0                                                       | 20         |                  |                                  |
|            |                                        |                                  | WKT-VS3-7                | 124                        | 65         | 0                                                       | 18         |                  |                                  |
|            |                                        |                                  | WKT-VS3-8                | 124                        | 66         | 0                                                       | 19         |                  |                                  |
|            |                                        | VS 2 EAST                        | WKT-VS2E-1               | 233                        | 72         | 0                                                       | 20         |                  |                                  |
|            |                                        |                                  | WKT-VS2E-2               | 246                        | 69         | 0                                                       | 16         |                  |                                  |
|            |                                        |                                  | WKT-VS2E-3               | 256                        | 69         | 0                                                       | 16         |                  |                                  |
|            |                                        | VS 4 <sup>(3)</sup><br>VS 2 WEST | WKT-VS4-3                | 283                        | 73         | 0                                                       | 19         |                  |                                  |
|            |                                        |                                  | WKT-VS2W-1               | 247                        | 75         | 0                                                       | 22         |                  |                                  |
|            |                                        |                                  | WKT-VS2W-2A              | 247                        | 68         | 0                                                       | 15         |                  |                                  |
|            |                                        | PTI                              | WKT-VS2W-2B              | 247                        | 70         | 0                                                       | 17         |                  |                                  |
|            |                                        |                                  | WKT-VS2W-2C              | 257                        | 70         | 0                                                       | 17         |                  |                                  |
|            |                                        |                                  | WKT-VS2W-3               | 271                        | 76         | 0                                                       | 22         |                  |                                  |
|            |                                        |                                  | L-01                     | 63                         | 83         | 0                                                       | 42         |                  |                                  |
|            |                                        |                                  | L-02                     | 68                         | 79         | 0                                                       | 37         |                  |                                  |
|            |                                        |                                  | L-03                     | 76                         | 81         | 5                                                       | 33         |                  |                                  |
|            |                                        |                                  | L-03a                    | 117                        | 80         | 5                                                       | 29         |                  |                                  |
|            |                                        |                                  | L-06                     | 297                        | 75         | 10                                                      | 11         |                  |                                  |
|            |                                        |                                  | L-07                     | 289                        | 69         | 10                                                      | 5          |                  |                                  |
|            |                                        |                                  | L-08                     | 283                        | 72         | 10                                                      | 8          |                  |                                  |
|            |                                        |                                  | L-08a                    | 277                        | 69         | 10                                                      | 5          |                  |                                  |
|            |                                        |                                  | L-10                     | 167                        | 86         | 10                                                      | 27         |                  |                                  |
|            |                                        |                                  | L-11                     | 167                        | 84         | 10                                                      | 25         |                  |                                  |
|            |                                        |                                  | L-12                     | 159                        | 84         | 10                                                      | 25         |                  |                                  |
|            |                                        |                                  | L-13                     | 134                        | 90         | 10                                                      | 32         |                  |                                  |
|            |                                        |                                  | L-14                     | 108                        | 88         | 10                                                      | 32         |                  |                                  |
|            |                                        |                                  | L-15a                    | 100                        | 86         | 10                                                      | 31         |                  |                                  |
|            |                                        |                                  | L-15b                    | 93                         | 82         | 10                                                      | 28         |                  |                                  |
|            |                                        |                                  | L-21                     | 185                        | 75         | 5                                                       | 20         |                  |                                  |
|            |                                        |                                  | L-22                     | 166                        | 76         | 5                                                       | 22         |                  |                                  |
|            |                                        |                                  | L-23                     | 153                        | 78         | 5                                                       | 24         |                  |                                  |
|            |                                        |                                  | L-24                     | 140                        | 78         | 5                                                       | 25         |                  |                                  |
|            |                                        |                                  | L-28                     | 295                        | 72         | 10                                                      | 8          |                  |                                  |
|            |                                        |                                  | L-29                     | 178                        | 79         | 10                                                      | 19         |                  |                                  |
|            |                                        |                                  | L-30                     | 171                        | 75         | 10                                                      | 15         |                  |                                  |
|            |                                        |                                  | L-31                     | 272                        | 83         | 10                                                      | 19         | 46               | 50                               |

Remark:  
1) Fixed plant noise sources at a distance of over 300m from a noise sensitive receiver are considered to have an insignificant noise impact and are therefore not assessed.  
2) A negative correction of 10 dB(A) has been adopted to the direction facing of the ventilation shaft totally screened by buildings and negative correction of 5 dB(A) for NSR do not have direct line of sight to the louvre.  
3) WKT-VS4-1 and WKT-VS4-4 are located at more than 300m from NSR WK3, and therefore they are not included in the assessment.

Appendix A3  
Fixed Plant Noise Impact Assessment

| NSR No.                  | Description                           | ID          | Louvre ID (contractor)   | Distance, m <sup>(1)</sup> | SWL, dB(A) | Correction for line of sight <sup>(2)</sup> , dB(A) | SPL, dB(A) | Total SPL, dB(A) | Daytime Noise Criteria, dB(A) |
|--------------------------|---------------------------------------|-------------|--------------------------|----------------------------|------------|-----------------------------------------------------|------------|------------------|-------------------------------|
| Daytime and Evening Time |                                       |             |                          |                            |            |                                                     |            |                  |                               |
| WK3a                     | 46-48 Man King Building (West facade) | WKP         | WKP-U1-E6PN-03ASection 1 | 107                        | 82         | 0                                                   | 36         |                  |                               |
|                          |                                       |             | WKP-U1-E6PN-03ASection 2 | 100                        | 80         | 0                                                   | 35         |                  |                               |
|                          |                                       |             | WKP-U1-E6PN-06A          | 118                        | 69         | 10                                                  | 13         |                  |                               |
|                          |                                       |             | WKP-U1-E6PN-04A          | 124                        | 83         | 10                                                  | 26         |                  |                               |
|                          |                                       |             | WKP-E6PVS-02             | 102                        | 66         | 0                                                   | 21         |                  |                               |
|                          |                                       |             | WKP-U1-E6PN-09           | 116                        | 74         | 10                                                  | 18         |                  |                               |
|                          |                                       | EAA<br>VS 3 | WKT-VS3N-1               | 78                         | 80         | 10                                                  | 27         |                  |                               |
|                          |                                       |             | WKT-VS3-1                | 139                        | 67         | 0                                                   | 19         |                  |                               |
|                          |                                       |             | WKT-VS3-2                | 141                        | 67         | 0                                                   | 19         |                  |                               |
|                          |                                       |             | WKT-VS3-3                | 136                        | 72         | 0                                                   | 24         |                  |                               |
|                          |                                       |             | WKT-VS3-4                | 139                        | 72         | 0                                                   | 24         |                  |                               |
|                          |                                       |             | WKT-VS3-5                | 140                        | 69         | 0                                                   | 21         |                  |                               |
|                          |                                       |             | WKT-VS3-6A               | 140                        | 66         | 0                                                   | 18         |                  |                               |
|                          |                                       |             | WKT-VS3-6B               | 140                        | 67         | 0                                                   | 19         |                  |                               |
|                          |                                       |             | WKT-VS3-7                | 137                        | 65         | 0                                                   | 17         |                  |                               |
|                          |                                       |             | WKT-VS3-8                | 137                        | 66         | 0                                                   | 18         |                  |                               |
|                          |                                       | VS 2 EAST   | WKT-VS2E-1               | 251                        | 72         | 0                                                   | 19         |                  |                               |
|                          |                                       |             | WKT-VS2E-2               | 264                        | 69         | 0                                                   | 16         |                  |                               |
|                          |                                       |             | WKT-VS2E-3               | 274                        | 69         | 0                                                   | 15         |                  |                               |
|                          |                                       | VS 2 WEST   | WKT-VS2W-1               | 257                        | 75         | 0                                                   | 22         |                  |                               |
|                          |                                       |             | WKT-VS2W-2A              | 257                        | 68         | 0                                                   | 15         |                  |                               |
|                          |                                       |             | WKT-VS2W-2B              | 257                        | 70         | 0                                                   | 17         |                  |                               |
|                          |                                       | PTI         | WKT-VS2W-2C              | 267                        | 70         | 0                                                   | 16         |                  |                               |
|                          |                                       |             | WKT-VS2W-3               | 282                        | 76         | 0                                                   | 22         |                  |                               |
|                          |                                       |             | L-01                     | 58                         | 83         | 0                                                   | 43         |                  |                               |
|                          |                                       |             | L-02                     | 58                         | 79         | 0                                                   | 39         |                  |                               |
|                          |                                       |             | L-03                     | 62                         | 81         | 0                                                   | 40         |                  |                               |
|                          |                                       |             | L-03a                    | 98                         | 80         | 0                                                   | 35         |                  |                               |
|                          |                                       |             | L-06                     | 278                        | 75         | 10                                                  | 11         |                  |                               |
|                          |                                       |             | L-07                     | 270                        | 69         | 10                                                  | 5          |                  |                               |
|                          |                                       |             | L-08                     | 265                        | 72         | 10                                                  | 9          |                  |                               |
|                          |                                       |             | L-08a                    | 259                        | 69         | 10                                                  | 6          |                  |                               |
|                          |                                       |             | L-10                     | 150                        | 86         | 10                                                  | 27         |                  |                               |
|                          |                                       |             | L-11                     | 150                        | 84         | 10                                                  | 25         |                  |                               |
|                          |                                       |             | L-12                     | 143                        | 84         | 10                                                  | 26         |                  |                               |
|                          |                                       |             | L-13                     | 122                        | 90         | 10                                                  | 33         |                  |                               |
|                          |                                       |             | L-14                     | 111                        | 88         | 10                                                  | 32         |                  |                               |
|                          |                                       |             | L-15a                    | 104                        | 86         | 10                                                  | 31         |                  |                               |
|                          |                                       |             | L-15b                    | 99                         | 82         | 10                                                  | 27         |                  |                               |
|                          |                                       |             | L-21                     | 166                        | 75         | 0                                                   | 26         |                  |                               |
|                          |                                       |             | L-22                     | 147                        | 76         | 0                                                   | 28         |                  |                               |
|                          |                                       |             | L-23                     | 134                        | 78         | 0                                                   | 30         |                  |                               |
|                          |                                       |             | L-24                     | 122                        | 78         | 0                                                   | 31         |                  |                               |
|                          |                                       |             | L-28                     | 277                        | 72         | 10                                                  | 8          |                  |                               |
|                          |                                       |             | L-29                     | 161                        | 79         | 10                                                  | 20         |                  |                               |
|                          |                                       |             | L-30                     | 154                        | 75         | 10                                                  | 16         |                  |                               |
|                          |                                       |             | L-31                     | 253                        | 83         | 10                                                  | 20         | 48               | 60                            |

| NSR No.    | Description                           | ID          | Louvre ID (contractor)   | Distance, m <sup>(1)</sup> | SWL, dB(A) | Correction for line of sight <sup>(2)</sup> , dB(A) | SPL, dB(A) | Total SPL, dB(A) | Night-time Noise Criteria, dB(A) |
|------------|---------------------------------------|-------------|--------------------------|----------------------------|------------|-----------------------------------------------------|------------|------------------|----------------------------------|
| Night-time |                                       |             |                          |                            |            |                                                     |            |                  |                                  |
| WK3a       | 46-48 Man King Building (West facade) | WKP         | WKP-U1-E6PN-03ASection 1 | 107                        | 82         | 0                                                   | 36         |                  |                                  |
|            |                                       |             | WKP-U1-E6PN-03ASection 2 | 100                        | 80         | 0                                                   | 35         |                  |                                  |
|            |                                       |             | WKP-U1-E6PN-06A          | 118                        | 69         | 10                                                  | 13         |                  |                                  |
|            |                                       |             | WKP-U1-E6PN-04A          | 124                        | 83         | 10                                                  | 26         |                  |                                  |
|            |                                       |             | WKP-E6PVS-02             | 102                        | 66         | 0                                                   | 21         |                  |                                  |
|            |                                       |             | WKP-U1-E6PN-09           | 116                        | 74         | 10                                                  | 18         |                  |                                  |
|            |                                       | EAA<br>VS 3 | WKT-VS3N-1               | 78                         | 80         | 10                                                  | 27         |                  |                                  |
|            |                                       |             | WKT-VS3-1                | 139                        | 67         | 0                                                   | 19         |                  |                                  |
|            |                                       |             | WKT-VS3-2                | 141                        | 67         | 0                                                   | 19         |                  |                                  |
|            |                                       |             | WKT-VS3-3                | 136                        | 72         | 0                                                   | 24         |                  |                                  |
|            |                                       |             | WKT-VS3-4                | 139                        | 72         | 0                                                   | 24         |                  |                                  |
|            |                                       |             | WKT-VS3-5                | 140                        | 69         | 0                                                   | 21         |                  |                                  |
|            |                                       |             | WKT-VS3-6A               | 140                        | 66         | 0                                                   | 18         |                  |                                  |
|            |                                       |             | WKT-VS3-6B               | 140                        | 67         | 0                                                   | 19         |                  |                                  |
|            |                                       |             | WKT-VS3-7                | 137                        | 65         | 0                                                   | 17         |                  |                                  |
|            |                                       |             | WKT-VS3-8                | 137                        | 66         | 0                                                   | 18         |                  |                                  |
|            |                                       | VS 2 EAST   | WKT-VS2E-1               | 251                        | 72         | 0                                                   | 19         |                  |                                  |
|            |                                       |             | WKT-VS2E-2               | 264                        | 69         | 0                                                   | 16         |                  |                                  |
|            |                                       |             | WKT-VS2E-3               | 274                        | 69         | 0                                                   | 15         |                  |                                  |
|            |                                       | VS 2 WEST   | WKT-VS2W-1               | 257                        | 75         | 0                                                   | 22         |                  |                                  |
|            |                                       |             | WKT-VS2W-2A              | 257                        | 68         | 0                                                   | 15         |                  |                                  |
|            |                                       |             | WKT-VS2W-2B              | 257                        | 70         | 0                                                   | 17         |                  |                                  |
|            |                                       | PTI         | WKT-VS2W-2C              | 267                        | 70         | 0                                                   | 16         |                  |                                  |
|            |                                       |             | WKT-VS2W-3               | 282                        | 76         | 0                                                   | 22         |                  |                                  |
|            |                                       |             | L-01                     | 58                         | 83         | 0                                                   | 43         |                  |                                  |
|            |                                       |             | L-02                     | 58                         | 79         | 0                                                   | 39         |                  |                                  |
|            |                                       |             | L-03                     | 62                         | 81         | 0                                                   | 40         |                  |                                  |
|            |                                       |             | L-03a                    | 98                         | 80         | 0                                                   | 35         |                  |                                  |
|            |                                       |             | L-06                     | 278                        | 75         | 10                                                  | 11         |                  |                                  |
|            |                                       |             | L-07                     | 270                        | 69         | 10                                                  | 5          |                  |                                  |
|            |                                       |             | L-08                     | 265                        | 72         | 10                                                  | 9          |                  |                                  |
|            |                                       |             | L-08a                    | 259                        | 69         | 10                                                  | 6          |                  |                                  |
|            |                                       |             | L-10                     | 150                        | 86         | 10                                                  | 27         |                  |                                  |
|            |                                       |             | L-11                     | 150                        | 84         | 10                                                  | 25         |                  |                                  |
|            |                                       |             | L-12                     | 143                        | 84         | 10                                                  | 26         |                  |                                  |
|            |                                       |             | L-13                     | 122                        | 90         | 10                                                  | 33         |                  |                                  |
|            |                                       |             | L-14                     | 111                        | 88         | 10                                                  | 32         |                  |                                  |
|            |                                       |             | L-15a                    | 104                        | 86         | 10                                                  | 31         |                  |                                  |
|            |                                       |             | L-15b                    | 99                         | 82         | 10                                                  | 27         |                  |                                  |
|            |                                       |             | L-21                     | 166                        | 75         | 0                                                   | 26         |                  |                                  |
|            |                                       |             | L-22                     | 147                        | 76         | 0                                                   | 28         |                  |                                  |
|            |                                       |             | L-23                     | 134                        | 78         | 0                                                   | 30         |                  |                                  |
|            |                                       |             | L-24                     | 122                        | 78         | 0                                                   | 31         |                  |                                  |
|            |                                       |             | L-28                     | 277                        | 72         | 10                                                  | 8          |                  |                                  |
|            |                                       |             | L-29                     | 161                        | 79         | 10                                                  | 20         |                  |                                  |
|            |                                       |             | L-30                     | 154                        | 75         | 10                                                  | 16         |                  |                                  |
|            |                                       |             | L-31                     | 253                        | 83         | 10                                                  | 20         | 48               | 50                               |

Remark:  
1) Fixed plant noise sources at a distance of over 300m from a noise sensitive receiver are considered to have an insignificant noise impact and are therefore not assessed.  
2) A negative correction of 10 dB(A) has been adopted to the direction facing of the ventilation shaft totally screened by buildings and negative correction of 5 dB(A) for NSR do not have direct line of sight to the louvre.

Appendix A3  
Fixed Plant Noise Impact Assessment

| NSR No.                  | Description                     | ID                               | Louvre ID (contractor)   | Distance, m <sup>(1)</sup> | SWL, dB(A) | Correction for line of sight <sup>(2)</sup> , dB(A) | SPL, dB(A) | Total SPL, dB(A) | Daytime Noise Criteria, dB(A) |
|--------------------------|---------------------------------|----------------------------------|--------------------------|----------------------------|------------|-----------------------------------------------------|------------|------------------|-------------------------------|
| Daytime and Evening Time |                                 |                                  |                          |                            |            |                                                     |            |                  |                               |
| WK4                      | Tower 6, Sorrento (East façade) | WKP                              | WKP-U1-E6PN-03ASection 1 | 122                        | 82         | 10                                                  | 25         |                  |                               |
|                          |                                 |                                  | WKP-U1-E6PN-03ASection 2 | 144                        | 80         | 10                                                  | 22         |                  |                               |
|                          |                                 |                                  | WKP-U1-E6PN-06A          | 127                        | 69         | 0                                                   | 22         |                  |                               |
|                          |                                 |                                  | WKP-U1-E6PN-04A          | 108                        | 83         | 0                                                   | 37         |                  |                               |
|                          |                                 |                                  | WKP-E6PVS-02             | 135                        | 66         | 10                                                  | 8          |                  |                               |
|                          |                                 |                                  | WKP-U1-E6PN-09           | 135                        | 74         | 0                                                   | 26         |                  |                               |
|                          |                                 | EAA<br>VS 3                      | WKT-VS3N-1               | 147                        | 80         | 0                                                   | 32         |                  |                               |
|                          |                                 |                                  | WKT-VS3-1                | 119                        | 67         | 0                                                   | 20         |                  |                               |
|                          |                                 |                                  | WKT-VS3-2                | 129                        | 67         | 0                                                   | 20         |                  |                               |
|                          |                                 |                                  | WKT-VS3-3                | 131                        | 72         | 0                                                   | 25         |                  |                               |
|                          |                                 |                                  | WKT-VS3-4                | 131                        | 72         | 0                                                   | 25         |                  |                               |
|                          |                                 |                                  | WKT-VS3-5                | 110                        | 69         | 10                                                  | 13         |                  |                               |
|                          |                                 |                                  | WKT-VS3-6A               | 110                        | 66         | 10                                                  | 10         |                  |                               |
|                          |                                 |                                  | WKT-VS3-6B               | 110                        | 67         | 10                                                  | 11         |                  |                               |
|                          |                                 |                                  | WKT-VS3-7                | 133                        | 65         | 10                                                  | 8          |                  |                               |
|                          |                                 |                                  | WKT-VS3-8                | 133                        | 66         | 10                                                  | 9          |                  |                               |
|                          |                                 | VS 2 EAST                        | WKT-VS2E-1               | 235                        | 72         | 0                                                   | 20         |                  |                               |
|                          |                                 |                                  | WKT-VS2E-2               | 246                        | 69         | 0                                                   | 16         |                  |                               |
|                          |                                 |                                  | WKT-VS2E-3               | 255                        | 69         | 0                                                   | 16         |                  |                               |
|                          |                                 |                                  | WKT-VS4-3                | 291                        | 73         | 0                                                   | 19         |                  |                               |
|                          |                                 | VS 4 <sup>(3)</sup><br>VS 2 WEST | WKT-VS2W-1               | 85                         | 75         | 0                                                   | 31         |                  |                               |
|                          |                                 |                                  | WKT-VS2W-2A              | 85                         | 68         | 5                                                   | 19         |                  |                               |
|                          |                                 |                                  | WKT-VS2W-2B              | 85                         | 70         | 5                                                   | 21         |                  |                               |
|                          |                                 |                                  | WKT-VS2W-2C              | 99                         | 70         | 5                                                   | 20         |                  |                               |
|                          |                                 | VS 1 <sup>(3)</sup>              | WKT-VS2W-3               | 113                        | 76         | 5                                                   | 25         |                  |                               |
|                          |                                 |                                  | WKT-VS1-1                | 293                        | 67         | 0                                                   | 13         |                  |                               |
|                          |                                 |                                  | WKT-VS1-3                | 281                        | 72         | 5                                                   | 13         |                  |                               |
|                          |                                 |                                  | WKT-VS1-4                | 293                        | 75         | 5                                                   | 16         |                  |                               |
|                          |                                 | PTI <sup>(3)</sup>               | L-01                     | 171                        | 83         | 10                                                  | 23         |                  |                               |
|                          |                                 |                                  | L-02                     | 183                        | 79         | 10                                                  | 19         |                  |                               |
|                          |                                 |                                  | L-03                     | 195                        | 81         | 10                                                  | 20         |                  |                               |
|                          |                                 |                                  | L-03a                    | 242                        | 80         | 10                                                  | 17         |                  |                               |
|                          |                                 |                                  | L-06                     | 363                        | 75         | 0                                                   | 0          |                  |                               |
|                          |                                 |                                  | L-07                     | 354                        | 69         | 0                                                   | 0          |                  |                               |
|                          |                                 |                                  | L-08                     | 348                        | 72         | 0                                                   | 0          |                  |                               |
|                          |                                 |                                  | L-08a                    | 342                        | 69         | 0                                                   | 0          |                  |                               |
|                          |                                 |                                  | L-10                     | 230                        | 86         | 0                                                   | 34         |                  |                               |
|                          |                                 |                                  | L-11                     | 230                        | 84         | 0                                                   | 32         |                  |                               |
|                          |                                 |                                  | L-12                     | 220                        | 84         | 0                                                   | 32         |                  |                               |
|                          |                                 |                                  | L-13                     | 181                        | 90         | 0                                                   | 40         |                  |                               |
|                          |                                 |                                  | L-14                     | 113                        | 88         | 0                                                   | 42         |                  |                               |
|                          |                                 |                                  | L-15a                    | 120                        | 86         | 0                                                   | 39         |                  |                               |
|                          |                                 |                                  | L-15b                    | 127                        | 82         | 0                                                   | 35         |                  |                               |
|                          |                                 |                                  | L-22                     | 287                        | 76         | 10                                                  | 12         |                  |                               |
|                          |                                 |                                  | L-23                     | 277                        | 78         | 10                                                  | 14         |                  |                               |
|                          |                                 |                                  | L-24                     | 266                        | 78         | 10                                                  | 14         |                  |                               |
|                          |                                 |                                  | L-29                     | 244                        | 79         | 0                                                   | 26         |                  |                               |
|                          |                                 |                                  | L-30                     | 235                        | 75         | 0                                                   | 23         | 47               | 60                            |

| NSR No.    | Description                     | ID                               | Louvre ID (contractor)   | Distance, m <sup>(1)</sup> | SWL, dB(A) | Correction for line of sight <sup>(2)</sup> , dB(A) | SPL, dB(A) | Total SPL, dB(A) | Night-time Noise Criteria, dB(A) |
|------------|---------------------------------|----------------------------------|--------------------------|----------------------------|------------|-----------------------------------------------------|------------|------------------|----------------------------------|
| Night-time |                                 |                                  |                          |                            |            |                                                     |            |                  |                                  |
| WK4        | Tower 6, Sorrento (East façade) | WKP                              | WKP-U1-E6PN-03ASection 1 | 122                        | 82         | 10                                                  | 25         |                  |                                  |
|            |                                 |                                  | WKP-U1-E6PN-03ASection 2 | 144                        | 80         | 10                                                  | 22         |                  |                                  |
|            |                                 |                                  | WKP-U1-E6PN-06A          | 127                        | 69         | 0                                                   | 22         |                  |                                  |
|            |                                 |                                  | WKP-U1-E6PN-04A          | 108                        | 83         | 0                                                   | 37         |                  |                                  |
|            |                                 |                                  | WKP-E6PVS-02             | 135                        | 66         | 10                                                  | 8          |                  |                                  |
|            |                                 |                                  | WKP-U1-E6PN-09           | 135                        | 74         | 0                                                   | 26         |                  |                                  |
|            |                                 | EAA<br>VS 3                      | WKT-VS3N-1               | 147                        | 80         | 0                                                   | 32         |                  |                                  |
|            |                                 |                                  | WKT-VS3-1                | 119                        | 67         | 0                                                   | 20         |                  |                                  |
|            |                                 |                                  | WKT-VS3-2                | 129                        | 67         | 0                                                   | 20         |                  |                                  |
|            |                                 |                                  | WKT-VS3-3                | 131                        | 72         | 0                                                   | 25         |                  |                                  |
|            |                                 |                                  | WKT-VS3-4                | 131                        | 72         | 0                                                   | 25         |                  |                                  |
|            |                                 |                                  | WKT-VS3-5                | 110                        | 69         | 10                                                  | 13         |                  |                                  |
|            |                                 |                                  | WKT-VS3-6A               | 110                        | 66         | 10                                                  | 10         |                  |                                  |
|            |                                 |                                  | WKT-VS3-6B               | 110                        | 67         | 10                                                  | 11         |                  |                                  |
|            |                                 |                                  | WKT-VS3-7                | 133                        | 65         | 10                                                  | 8          |                  |                                  |
|            |                                 |                                  | WKT-VS3-8                | 133                        | 66         | 10                                                  | 9          |                  |                                  |
|            |                                 | VS 2 EAST                        | WKT-VS2E-1               | 235                        | 72         | 0                                                   | 20         |                  |                                  |
|            |                                 |                                  | WKT-VS2E-2               | 246                        | 69         | 0                                                   | 16         |                  |                                  |
|            |                                 |                                  | WKT-VS2E-3               | 255                        | 69         | 0                                                   | 16         |                  |                                  |
|            |                                 |                                  | WKT-VS4-3                | 291                        | 73         | 0                                                   | 19         |                  |                                  |
|            |                                 | VS 4 <sup>(3)</sup><br>VS 2 WEST | WKT-VS2W-1               | 85                         | 75         | 0                                                   | 31         |                  |                                  |
|            |                                 |                                  | WKT-VS2W-2A              | 85                         | 68         | 5                                                   | 19         |                  |                                  |
|            |                                 |                                  | WKT-VS2W-2B              | 85                         | 70         | 5                                                   | 21         |                  |                                  |
|            |                                 |                                  | WKT-VS2W-2C              | 99                         | 70         | 5                                                   | 20         |                  |                                  |
|            |                                 | VS 1 <sup>(3)</sup>              | WKT-VS2W-3               | 113                        | 76         | 5                                                   | 25         |                  |                                  |
|            |                                 |                                  | WKT-VS1-1                | 293                        | 67         | 0                                                   | 13         |                  |                                  |
|            |                                 |                                  | WKT-VS1-3                | 281                        | 72         | 5                                                   | 13         |                  |                                  |
|            |                                 |                                  | WKT-VS1-4                | 293                        | 75         | 5                                                   | 16         |                  |                                  |
|            |                                 | PTI <sup>(3)</sup>               | L-01                     | 171                        | 83         | 10                                                  | 23         |                  |                                  |
|            |                                 |                                  | L-02                     | 183                        | 79         | 10                                                  | 19         |                  |                                  |
|            |                                 |                                  | L-03                     | 195                        | 81         | 10                                                  | 20         |                  |                                  |
|            |                                 |                                  | L-03a                    | 242                        | 80         | 10                                                  | 17         |                  |                                  |
|            |                                 |                                  | L-06                     | 363                        | 75         | 0                                                   | 0          |                  |                                  |
|            |                                 |                                  | L-07                     | 354                        | 69         | 0                                                   | 0          |                  |                                  |
|            |                                 |                                  | L-08                     | 348                        | 72         | 0                                                   | 0          |                  |                                  |
|            |                                 |                                  | L-08a                    | 342                        | 69         | 0                                                   | 0          |                  |                                  |
|            |                                 |                                  | L-10                     | 230                        | 86         | 0                                                   | 34         |                  |                                  |
|            |                                 |                                  | L-11                     | 230                        | 84         | 0                                                   | 32         |                  |                                  |
|            |                                 |                                  | L-12                     | 220                        | 84         | 0                                                   | 32         |                  |                                  |
|            |                                 |                                  | L-13                     | 181                        | 90         | 0                                                   | 40         |                  |                                  |
|            |                                 |                                  | L-14                     | 113                        | 88         | 0                                                   | 42         |                  |                                  |
|            |                                 |                                  | L-15a                    | 120                        | 86         | 0                                                   | 39         |                  |                                  |
|            |                                 |                                  | L-15b                    | 127                        | 82         | 0                                                   | 35         |                  |                                  |
|            |                                 |                                  | L-22                     | 287                        | 76         | 10                                                  | 12         |                  |                                  |
|            |                                 |                                  | L-23                     | 277                        | 78         | 10                                                  | 14         |                  |                                  |
|            |                                 |                                  | L-24                     | 266                        | 78         | 10                                                  | 14         |                  |                                  |
|            |                                 |                                  | L-29                     | 244                        | 79         | 0                                                   | 26         |                  |                                  |
|            |                                 |                                  | L-30                     | 235                        | 75         | 0                                                   | 23         | 47               | 50                               |

Remark:

1) Fixed plant noise sources at a distance of over 300m from a noise sensitive receiver are considered to have an insignificant noise impact and are therefore not assessed.

2) A negative correction of 10 dB(A) has been adopted to the direction facing of the ventilation shaft totally screened by buildings and negative correction of 5 dB(A) for NSR do not have direct line of sight to the louvre.

3) WKT-VS4-1 WKT-VS4-4, WKT-VS1-2 and PTI L-31 are located at more than 300m from NSR WK4, and therefore they are not included in the assessment.

Appendix A3  
Fixed Plant Noise Impact Assessment

| NSR No.                  | Description                | ID    | Louvre ID (contractor)    | Distance, m <sup>(1)</sup> | SWL, dB(A) | Correction for line of sight <sup>(2)</sup> , dB(A) | SPL, dB(A) | Total SPL, dB(A) | Daytime Noise Criteria, dB(A) |
|--------------------------|----------------------------|-------|---------------------------|----------------------------|------------|-----------------------------------------------------|------------|------------------|-------------------------------|
| Daytime and Evening Time |                            |       |                           |                            |            |                                                     |            |                  |                               |
| WK 7a                    | Tsim Sha Tsui Fire Station | VS 5  | WKT-VS5-1                 | 270                        | 70         | 10                                                  | 6          | 41               | 65                            |
|                          |                            |       | WKT-VS5-2                 | 266                        | 92         | 0                                                   | 39         |                  |                               |
|                          |                            |       | WKT-VS5-4                 | 238                        | 79         | 0                                                   | 26         |                  |                               |
|                          |                            | VS 6  | WKT-VS6-1                 | 239                        | 77         | 0                                                   | 24         |                  |                               |
|                          |                            |       | WKT-VS6-2A                | 234                        | 60         | 0                                                   | 8          |                  |                               |
|                          |                            |       | WKT-VS6-2B                | 234                        | 62         | 0                                                   | 10         |                  |                               |
|                          |                            |       | WKT-VS6-3A                | 241                        | 62         | 10                                                  | 0          |                  |                               |
|                          |                            |       | WKT-VS6-3B                | 241                        | 66         | 10                                                  | 3          |                  |                               |
|                          |                            |       | WKT-VS6-4                 | 241                        | 75         | 10                                                  | 12         |                  |                               |
|                          |                            |       | WKT-VS6-5A                | 241                        | 76         | 10                                                  | 13         |                  |                               |
|                          |                            |       | WKT-VS6-5B                | 241                        | 76         | 10                                                  | 13         |                  |                               |
|                          |                            |       | WKT-VS6-6A                | 241                        | 65         | 10                                                  | 2          |                  |                               |
|                          |                            |       | WKT-VS6-6B                | 241                        | 70         | 10                                                  | 7          |                  |                               |
|                          |                            |       | WKT-VS6-7A                | 246                        | 69         | 10                                                  | 6          |                  |                               |
|                          |                            |       | WKT-VS6-7B                | 246                        | 63         | 10                                                  | 0          |                  |                               |
|                          |                            | PVS6  | WKT-PVS6-1                | 235                        | 63         | 10                                                  | 1          |                  |                               |
|                          |                            |       | WKT-PVS6-2                | 236                        | 68         | 0                                                   | 16         |                  |                               |
|                          |                            |       | WKT-PVS6-3A               | 236                        | 69         | 0                                                   | 17         |                  |                               |
|                          |                            |       | WKT-PVS6-3B               | 236                        | 73         | 0                                                   | 21         |                  |                               |
|                          |                            | VS6-4 | WKT-PVS6-4                | 242                        | 72         | 10                                                  | 9          |                  |                               |
|                          |                            |       | WKT-G-G15VS-01A           | 247                        | 75         | 10                                                  | 12         |                  |                               |
|                          |                            |       | WKT-G-G15VS-01B           | 249                        | 76         | 10                                                  | 13         |                  |                               |
|                          |                            |       | WKT-G-G15VS-01C           | 248                        | 74         | 5                                                   | 16         |                  |                               |
|                          |                            | VS 7  | WKT-G-G15VS-03ASection 1  | 235                        | 72         | 0                                                   | 20         |                  |                               |
|                          |                            |       | WKT-G-G15VS-03A Section 2 | 236                        | 73         | 0                                                   | 21         |                  |                               |
|                          |                            |       | WKT-G-D14VS-03A           | 130                        | 81         | 0                                                   | 34         |                  |                               |
|                          |                            |       | WKT-G-D14VS-04A           | 135                        | 78         | 0                                                   | 30         |                  |                               |
|                          |                            |       | WKT-VS7-1A                | 145                        | 77         | 10                                                  | 19         |                  |                               |
|                          |                            |       | WKT-VS7-1B                | 142                        | 74         | 0                                                   | 26         |                  |                               |
|                          |                            |       | WKT-VS7-2                 | 142                        | 69         | 10                                                  | 11         |                  |                               |
|                          |                            |       | WKT-VS7-3                 | 142                        | 80         | 10                                                  | 22         |                  |                               |

| NSR No.    | Description                | ID    | Louvre ID (contractor)    | Distance, m <sup>(1)</sup> | SWL, dB(A) | Correction for line of sight <sup>(2)</sup> , dB(A) | SPL, dB(A) | Total SPL, dB(A) | Night-time Noise Criteria, dB(A) |
|------------|----------------------------|-------|---------------------------|----------------------------|------------|-----------------------------------------------------|------------|------------------|----------------------------------|
| Night-time |                            |       |                           |                            |            |                                                     |            |                  |                                  |
| WK 7a      | Tsim Sha Tsui Fire Station | VS 5  | WKT-VS5-1                 | 270                        | 70         | 10                                                  | 6          | 41               | 55                               |
|            |                            |       | WKT-VS5-2                 | 266                        | 92         | 0                                                   | 39         |                  |                                  |
|            |                            |       | WKT-VS5-4                 | 238                        | 79         | 0                                                   | 26         |                  |                                  |
|            |                            | VS 6  | WKT-VS6-1                 | 239                        | 77         | 0                                                   | 24         |                  |                                  |
|            |                            |       | WKT-VS6-2A                | 234                        | 60         | 0                                                   | 8          |                  |                                  |
|            |                            |       | WKT-VS6-2B                | 234                        | 62         | 0                                                   | 10         |                  |                                  |
|            |                            |       | WKT-VS6-3A                | 241                        | 62         | 10                                                  | 0          |                  |                                  |
|            |                            |       | WKT-VS6-3B                | 241                        | 66         | 10                                                  | 3          |                  |                                  |
|            |                            |       | WKT-VS6-4                 | 241                        | 75         | 10                                                  | 12         |                  |                                  |
|            |                            |       | WKT-VS6-5A                | 241                        | 76         | 10                                                  | 13         |                  |                                  |
|            |                            |       | WKT-VS6-5B                | 241                        | 76         | 10                                                  | 13         |                  |                                  |
|            |                            |       | WKT-VS6-6A                | 241                        | 65         | 10                                                  | 2          |                  |                                  |
|            |                            |       | WKT-VS6-6B                | 241                        | 70         | 10                                                  | 7          |                  |                                  |
|            |                            |       | WKT-VS6-7A                | 246                        | 69         | 10                                                  | 6          |                  |                                  |
|            |                            |       | WKT-VS6-7B                | 246                        | 63         | 10                                                  | 0          |                  |                                  |
|            |                            | PVS6  | WKT-PVS6-1                | 235                        | 63         | 10                                                  | 1          |                  |                                  |
|            |                            |       | WKT-PVS6-2                | 236                        | 68         | 0                                                   | 16         |                  |                                  |
|            |                            |       | WKT-PVS6-3A               | 236                        | 69         | 0                                                   | 17         |                  |                                  |
|            |                            |       | WKT-PVS6-3B               | 236                        | 73         | 0                                                   | 21         |                  |                                  |
|            |                            | VS6-4 | WKT-PVS6-4                | 242                        | 72         | 10                                                  | 9          |                  |                                  |
|            |                            |       | WKT-G-G15VS-01A           | 247                        | 75         | 10                                                  | 12         |                  |                                  |
|            |                            |       | WKT-G-G15VS-01B           | 249                        | 76         | 10                                                  | 13         |                  |                                  |
|            |                            |       | WKT-G-G15VS-01C           | 248                        | 74         | 5                                                   | 16         |                  |                                  |
|            |                            | VS 7  | WKT-G-G15VS-03ASection 1  | 235                        | 72         | 0                                                   | 20         |                  |                                  |
|            |                            |       | WKT-G-G15VS-03A Section 2 | 236                        | 73         | 0                                                   | 21         |                  |                                  |
|            |                            |       | WKT-G-D14VS-03A           | 130                        | 81         | 0                                                   | 34         |                  |                                  |
|            |                            |       | WKT-G-D14VS-04A           | 135                        | 78         | 0                                                   | 30         |                  |                                  |
|            |                            |       | WKT-VS7-1A                | 145                        | 77         | 10                                                  | 19         |                  |                                  |
|            |                            |       | WKT-VS7-1B                | 142                        | 74         | 0                                                   | 26         |                  |                                  |
|            |                            |       | WKT-VS7-2                 | 142                        | 69         | 10                                                  | 11         |                  |                                  |
|            |                            |       | WKT-VS7-3                 | 142                        | 80         | 10                                                  | 22         |                  |                                  |

Remark:

1) Fixed plant noise sources at a distance of over 300m from a noise sensitive receiver are considered to have an insignificant noise impact and are therefore not assessed.

2) A negative correction of 10 dB(A) has been adopted to the direction facing of the ventilation shaft totally screened by buildings and negative correction of 5 dB(A) for NSR do not have direct line of sight to the louvre.

Appendix A3  
Fixed Plant Noise Impact Assessment

| NSR No.                  | Description             | ID        | Louvre ID (contractor)   | Distance, m <sup>(1)</sup> | SWL, dB(A) | Correction for line of sight <sup>(2)</sup> , dB(A) | SPL, dB(A) | Total SPL, dB(A) | Daytime Noise Criteria, dB(A) |
|--------------------------|-------------------------|-----------|--------------------------|----------------------------|------------|-----------------------------------------------------|------------|------------------|-------------------------------|
| Daytime and Evening Time |                         |           |                          |                            |            |                                                     |            |                  |                               |
| WK8a                     | Tower 6, The Waterfront | WKP       | WKP-U1-E6PN-03ASection 1 | 205                        | 82         | 10                                                  | 21         |                  |                               |
|                          |                         |           | WKP-U1-E6PN-03ASection 2 | 232                        | 80         | 10                                                  | 18         |                  |                               |
|                          |                         | EAA       | WKP-U1-E6PN-06A          | 216                        | 69         | 0                                                   | 17         |                  |                               |
|                          |                         |           | WKP-U1-E6PN-04A          | 195                        | 83         | 0                                                   | 32         |                  |                               |
|                          |                         |           | WKP-E6PVS-02             | 220                        | 66         | 10                                                  | 4          |                  |                               |
|                          |                         |           | WKP-U1-E6PN-09           | 225                        | 74         | 0                                                   | 22         |                  |                               |
|                          |                         |           | WKT-VS3N-1               | 223                        | 80         | 0                                                   | 28         |                  |                               |
|                          |                         |           | WKT-VS3-1                | 159                        | 67         | 0                                                   | 18         |                  |                               |
|                          |                         |           | WKT-VS3-2                | 163                        | 67         | 0                                                   | 18         |                  |                               |
|                          |                         |           | WKT-VS3-3                | 166                        | 72         | 0                                                   | 23         |                  |                               |
|                          |                         |           | WKT-VS3-4                | 165                        | 72         | 0                                                   | 23         |                  |                               |
|                          |                         |           | WKT-VS3-5                | 155                        | 69         | 10                                                  | 10         |                  |                               |
|                          |                         | VS 3      | WKT-VS3-6A               | 155                        | 66         | 10                                                  | 7          |                  |                               |
|                          |                         |           | WKT-VS3-6B               | 155                        | 67         | 10                                                  | 8          |                  |                               |
|                          |                         |           | WKT-VS3-7                | 168                        | 65         | 10                                                  | 6          |                  |                               |
|                          |                         |           | WKT-VS3-8                | 168                        | 66         | 10                                                  | 7          |                  |                               |
|                          |                         |           | WKT-VS2E-1               | 204                        | 72         | 0                                                   | 21         |                  |                               |
|                          |                         |           | WKT-VS2E-2               | 211                        | 69         | 0                                                   | 18         |                  |                               |
|                          |                         |           | WKT-VS2E-3               | 217                        | 69         | 0                                                   | 17         |                  |                               |
|                          |                         |           | WKT-VS4-1                | 272                        | 79         | 0                                                   | 25         |                  |                               |
|                          |                         |           | WKT-VS4-3                | 250                        | 73         | 0                                                   | 20         |                  |                               |
|                          |                         |           | WKT-VS4-4                | 270                        | 74         | 0                                                   | 20         |                  |                               |
|                          |                         | VS 2 WEST | WKT-VS2W-1               | 39                         | 75         | 0                                                   | 38         |                  |                               |
|                          |                         |           | WKT-VS2W-2A              | 39                         | 68         | 0                                                   | 31         |                  |                               |
|                          |                         |           | WKT-VS2W-2B              | 39                         | 70         | 0                                                   | 33         |                  |                               |
|                          |                         |           | WKT-VS2W-2C              | 36                         | 70         | 0                                                   | 34         |                  |                               |
|                          |                         |           | WKT-VS2W-3               | 35                         | 76         | 0                                                   | 40         |                  |                               |
|                          |                         | VS 1      | WKT-VS1-1                | 201                        | 67         | 0                                                   | 16         |                  |                               |
|                          |                         |           | WKT-VS1-2                | 221                        | 72         | 0                                                   | 20         |                  |                               |
|                          |                         |           | WKT-VS1-3                | 189                        | 72         | 0                                                   | 21         |                  |                               |
|                          |                         |           | WKT-VS1-4                | 200                        | 75         | 0                                                   | 24         |                  |                               |
|                          |                         |           | WKT-VS1-4                | 200                        | 75         | 0                                                   | 24         |                  |                               |
|                          |                         | PTI       | L-01                     | 249                        | 83         | 10                                                  | 20         |                  |                               |
|                          |                         |           | L-02                     | 263                        | 79         | 10                                                  | 16         |                  |                               |
|                          |                         |           | L-03                     | 279                        | 81         | 10                                                  | 17         |                  |                               |
|                          |                         |           | L-13                     | 275                        | 90         | 0                                                   | 36         |                  |                               |
|                          |                         |           | L-14                     | 188                        | 88         | 0                                                   | 37         |                  |                               |
|                          |                         |           | L-15a                    | 192                        | 86         | 0                                                   | 35         |                  |                               |
|                          |                         |           | L-15b                    | 195                        | 82         | 0                                                   | 31         | 46               | 60                            |

| NSR No.    | Description             | ID        | Louvre ID (contractor)   | Distance, m <sup>(1)</sup> | SWL, dB(A) | Correction for line of sight <sup>(2)</sup> , dB(A) | SPL, dB(A) | Total SPL, dB(A) | Night-time Noise Criteria, dB(A) |
|------------|-------------------------|-----------|--------------------------|----------------------------|------------|-----------------------------------------------------|------------|------------------|----------------------------------|
| Night-time |                         |           |                          |                            |            |                                                     |            |                  |                                  |
| WK8a       | Tower 6, The Waterfront | WKP       | WKP-U1-E6PN-03ASection 1 | 205                        | 82         | 10                                                  | 21         |                  |                                  |
|            |                         |           | WKP-U1-E6PN-03ASection 2 | 232                        | 80         | 10                                                  | 18         |                  |                                  |
|            |                         | EAA       | WKP-U1-E6PN-06A          | 216                        | 69         | 0                                                   | 17         |                  |                                  |
|            |                         |           | WKP-U1-E6PN-04A          | 195                        | 83         | 0                                                   | 32         |                  |                                  |
|            |                         |           | WKP-E6PVS-02             | 220                        | 66         | 10                                                  | 4          |                  |                                  |
|            |                         |           | WKP-U1-E6PN-09           | 225                        | 74         | 0                                                   | 22         |                  |                                  |
|            |                         |           | WKT-VS3N-1               | 223                        | 80         | 0                                                   | 28         |                  |                                  |
|            |                         |           | WKT-VS3-1                | 159                        | 67         | 0                                                   | 18         |                  |                                  |
|            |                         |           | WKT-VS3-2                | 163                        | 67         | 0                                                   | 18         |                  |                                  |
|            |                         |           | WKT-VS3-3                | 166                        | 72         | 0                                                   | 23         |                  |                                  |
|            |                         |           | WKT-VS3-4                | 165                        | 72         | 0                                                   | 23         |                  |                                  |
|            |                         |           | WKT-VS3-5                | 155                        | 69         | 10                                                  | 10         |                  |                                  |
|            |                         | VS 3      | WKT-VS3-6A               | 155                        | 66         | 10                                                  | 7          |                  |                                  |
|            |                         |           | WKT-VS3-6B               | 155                        | 67         | 10                                                  | 8          |                  |                                  |
|            |                         |           | WKT-VS3-7                | 168                        | 65         | 10                                                  | 6          |                  |                                  |
|            |                         |           | WKT-VS3-8                | 168                        | 66         | 10                                                  | 7          |                  |                                  |
|            |                         |           | WKT-VS2E-1               | 204                        | 72         | 0                                                   | 21         |                  |                                  |
|            |                         |           | WKT-VS2E-2               | 211                        | 69         | 0                                                   | 18         |                  |                                  |
|            |                         |           | WKT-VS2E-3               | 217                        | 69         | 0                                                   | 17         |                  |                                  |
|            |                         |           | WKT-VS4-1                | 272                        | 79         | 0                                                   | 25         |                  |                                  |
|            |                         |           | WKT-VS4-3                | 250                        | 73         | 0                                                   | 20         |                  |                                  |
|            |                         |           | WKT-VS4-4                | 270                        | 74         | 0                                                   | 20         |                  |                                  |
|            |                         | VS 2 WEST | WKT-VS2W-1               | 39                         | 75         | 0                                                   | 38         |                  |                                  |
|            |                         |           | WKT-VS2W-2A              | 39                         | 68         | 0                                                   | 31         |                  |                                  |
|            |                         |           | WKT-VS2W-2B              | 39                         | 70         | 0                                                   | 33         |                  |                                  |
|            |                         |           | WKT-VS2W-2C              | 36                         | 70         | 0                                                   | 34         |                  |                                  |
|            |                         |           | WKT-VS2W-3               | 35                         | 76         | 0                                                   | 40         |                  |                                  |
|            |                         | VS 1      | WKT-VS1-1                | 201                        | 67         | 0                                                   | 16         |                  |                                  |
|            |                         |           | WKT-VS1-2                | 221                        | 72         | 0                                                   | 20         |                  |                                  |
|            |                         |           | WKT-VS1-3                | 189                        | 72         | 0                                                   | 21         |                  |                                  |
|            |                         |           | WKT-VS1-4                | 200                        | 75         | 0                                                   | 24         |                  |                                  |
|            |                         |           | WKT-VS1-4                | 200                        | 75         | 0                                                   | 24         |                  |                                  |
|            |                         | PTI       | L-01                     | 249                        | 83         | 10                                                  | 20         |                  |                                  |
|            |                         |           | L-02                     | 263                        | 79         | 10                                                  | 16         |                  |                                  |
|            |                         |           | L-03                     | 279                        | 81         | 10                                                  | 17         |                  |                                  |
|            |                         |           | L-13                     | 275                        | 90         | 0                                                   | 36         |                  |                                  |
|            |                         |           | L-14                     | 188                        | 88         | 0                                                   | 37         |                  |                                  |
|            |                         |           | L-15a                    | 192                        | 86         | 0                                                   | 35         |                  |                                  |
|            |                         |           | L-15b                    | 195                        | 82         | 0                                                   | 31         | 46               | 50                               |

Remark:  
1) Fixed plant noise sources at a distance of over 300m from a noise sensitive receiver are considered to have an insignificant noise impact and are therefore not assessed.  
2) A negative correction of 10 dB(A) has been adopted to the direction facing of the ventilation shaft totally screened by buildings and negative correction of 5 dB(A) for NSR do not have direct line of sight to the louvre.

Appendix A3  
Fixed Plant Noise Impact Assessment

| NSR No.                  | Description                                                 | ID          | Louvre ID (contractor)   | Distance, m <sup>(1)</sup> | SWL, dB(A) | Correction for line of sight <sup>(2)</sup> , dB(A) | SPL, dB(A) | Total SPL, dB(A) | Daytime Noise Criteria, dB(A) |
|--------------------------|-------------------------------------------------------------|-------------|--------------------------|----------------------------|------------|-----------------------------------------------------|------------|------------------|-------------------------------|
| Daytime and Evening Time |                                                             |             |                          |                            |            |                                                     |            |                  |                               |
| WK11a                    | Tower 3, The Austin (formerly named as Planned Development) | WKP         | WKP-U1-E6PN-03ASection 1 | 272                        | 82         | 0                                                   | 28         |                  |                               |
|                          |                                                             |             | WKP-U1-E6PN-03ASection 2 | 292                        | 80         | 0                                                   | 26         |                  |                               |
|                          |                                                             |             | WKP-U1-E6PN-06A          | 297                        | 69         | 10                                                  | 5          |                  |                               |
|                          |                                                             |             | WKP-U1-E6PN-04A          | 282                        | 83         | 10                                                  | 19         |                  |                               |
|                          |                                                             | EAA<br>VS 3 | WKP-E6PVS-02             | 283                        | 66         | 0                                                   | 12         |                  |                               |
|                          |                                                             |             | WKT-VS3N-1               | 252                        | 80         | 10                                                  | 17         |                  |                               |
|                          |                                                             |             | WKT-VS3-1                | 195                        | 67         | 0                                                   | 16         |                  |                               |
|                          |                                                             |             | WKT-VS3-2                | 183                        | 67         | 0                                                   | 17         |                  |                               |
|                          |                                                             |             | WKT-VS3-3                | 184                        | 72         | 0                                                   | 22         |                  |                               |
|                          |                                                             |             | WKT-VS3-4                | 181                        | 72         | 0                                                   | 22         |                  |                               |
|                          |                                                             |             | WKT-VS3-5                | 206                        | 69         | 10                                                  | 8          |                  |                               |
|                          |                                                             |             | WKT-VS3-6A               | 206                        | 66         | 10                                                  | 5          |                  |                               |
|                          |                                                             |             | WKT-VS3-6B               | 206                        | 67         | 10                                                  | 6          |                  |                               |
|                          |                                                             | VS 2 EAST   | WKT-VS3-7                | 181                        | 65         | 0                                                   | 15         |                  |                               |
|                          |                                                             |             | WKT-VS3-8                | 181                        | 66         | 0                                                   | 16         |                  |                               |
|                          |                                                             |             | WKT-VS2E-1               | 93                         | 72         | 0                                                   | 28         |                  |                               |
|                          |                                                             |             | WKT-VS2E-2               | 93                         | 69         | 0                                                   | 25         |                  |                               |
|                          |                                                             | VS 4        | WKT-VS2E-3               | 94                         | 69         | 0                                                   | 24         |                  |                               |
|                          |                                                             |             | WKT-VS4-1                | 112                        | 79         | 0                                                   | 33         |                  |                               |
|                          |                                                             |             | WKT-VS4-3                | 91                         | 73         | 0                                                   | 29         |                  |                               |
|                          |                                                             | VS 5        | WKT-VS4-4                | 117                        | 74         | 0                                                   | 28         |                  |                               |
|                          |                                                             |             | WKT-VS5-1                | 172                        | 70         | 0                                                   | 20         |                  |                               |
|                          |                                                             |             | WKT-VS5-2                | 179                        | 92         | 0                                                   | 42         |                  |                               |
|                          |                                                             | VS 2 WEST   | WKT-VS5-4                | 207                        | 79         | 0                                                   | 28         |                  |                               |
|                          |                                                             |             | WKT-VS2W-1               | 257                        | 75         | 0                                                   | 22         |                  |                               |
|                          |                                                             |             | WKT-VS2W-2A              | 257                        | 68         | 0                                                   | 15         |                  |                               |
|                          |                                                             |             | WKT-VS2W-2B              | 257                        | 70         | 0                                                   | 17         |                  |                               |
|                          |                                                             |             | WKT-VS2W-2C              | 255                        | 70         | 0                                                   | 17         |                  |                               |
|                          |                                                             | VS 1        | WKT-VS2W-3               | 258                        | 76         | 0                                                   | 23         |                  |                               |
|                          |                                                             |             | WKT-VS1-1                | 288                        | 67         | 0                                                   | 13         |                  |                               |
|                          |                                                             |             | WKT-VS1-2                | 273                        | 72         | 0                                                   | 18         |                  |                               |
|                          |                                                             |             | WKT-VS1-3                | 279                        | 72         | 10                                                  | 8          |                  |                               |
|                          |                                                             | PTI         | WKT-VS1-4                | 291                        | 75         | 10                                                  | 11         |                  |                               |
|                          |                                                             |             | L-01                     | 262                        | 83         | 0                                                   | 30         |                  |                               |
|                          |                                                             |             | L-02                     | 277                        | 79         | 0                                                   | 25         |                  |                               |
|                          |                                                             |             | L-03                     | 292                        | 81         | 0                                                   | 27         |                  |                               |
|                          |                                                             |             | L-14                     | 251                        | 88         | 0                                                   | 35         |                  |                               |
|                          |                                                             |             | L-15a                    | 242                        | 86         | 0                                                   | 33         |                  |                               |
|                          |                                                             |             | L-15b                    | 234                        | 82         | 0                                                   | 30         | 45               | 60                            |

| NSR No.    | Description                                                 | ID          | Louvre ID (contractor)   | Distance, m <sup>(1)</sup> | SWL, dB(A) | Correction for line of sight <sup>(2)</sup> , dB(A) | SPL, dB(A) | Total SPL, dB(A) | Night-time Noise Criteria, dB(A) |
|------------|-------------------------------------------------------------|-------------|--------------------------|----------------------------|------------|-----------------------------------------------------|------------|------------------|----------------------------------|
| Night-time |                                                             |             |                          |                            |            |                                                     |            |                  |                                  |
| WK11a      | Tower 3, The Austin (formerly named as Planned Development) | WKP         | WKP-U1-E6PN-03ASection 1 | 272                        | 82         | 0                                                   | 28         |                  |                                  |
|            |                                                             |             | WKP-U1-E6PN-03ASection 2 | 292                        | 80         | 0                                                   | 26         |                  |                                  |
|            |                                                             |             | WKP-U1-E6PN-06A          | 297                        | 69         | 10                                                  | 5          |                  |                                  |
|            |                                                             |             | WKP-U1-E6PN-04A          | 282                        | 83         | 10                                                  | 19         |                  |                                  |
|            |                                                             | EAA<br>VS 3 | WKP-E6PVS-02             | 283                        | 66         | 0                                                   | 12         |                  |                                  |
|            |                                                             |             | WKT-VS3N-1               | 252                        | 80         | 10                                                  | 17         |                  |                                  |
|            |                                                             |             | WKT-VS3-1                | 195                        | 67         | 0                                                   | 16         |                  |                                  |
|            |                                                             |             | WKT-VS3-2                | 183                        | 67         | 0                                                   | 17         |                  |                                  |
|            |                                                             |             | WKT-VS3-3                | 184                        | 72         | 0                                                   | 22         |                  |                                  |
|            |                                                             |             | WKT-VS3-4                | 181                        | 72         | 0                                                   | 22         |                  |                                  |
|            |                                                             |             | WKT-VS3-5                | 206                        | 69         | 10                                                  | 8          |                  |                                  |
|            |                                                             |             | WKT-VS3-6A               | 206                        | 66         | 10                                                  | 5          |                  |                                  |
|            |                                                             |             | WKT-VS3-6B               | 206                        | 67         | 10                                                  | 6          |                  |                                  |
|            |                                                             | VS 2 EAST   | WKT-VS3-7                | 181                        | 65         | 0                                                   | 15         |                  |                                  |
|            |                                                             |             | WKT-VS3-8                | 181                        | 66         | 0                                                   | 16         |                  |                                  |
|            |                                                             |             | WKT-VS2E-1               | 93                         | 72         | 0                                                   | 28         |                  |                                  |
|            |                                                             |             | WKT-VS2E-2               | 93                         | 69         | 0                                                   | 25         |                  |                                  |
|            |                                                             | VS 4        | WKT-VS2E-3               | 94                         | 69         | 0                                                   | 24         |                  |                                  |
|            |                                                             |             | WKT-VS4-1                | 112                        | 79         | 0                                                   | 33         |                  |                                  |
|            |                                                             |             | WKT-VS4-3                | 91                         | 73         | 0                                                   | 29         |                  |                                  |
|            |                                                             | VS 5        | WKT-VS4-4                | 117                        | 74         | 0                                                   | 28         |                  |                                  |
|            |                                                             |             | WKT-VS5-1                | 172                        | 70         | 0                                                   | 20         |                  |                                  |
|            |                                                             |             | WKT-VS5-2                | 179                        | 92         | 0                                                   | 42         |                  |                                  |
|            |                                                             | VS 2 WEST   | WKT-VS5-4                | 207                        | 79         | 0                                                   | 28         |                  |                                  |
|            |                                                             |             | WKT-VS2W-1               | 257                        | 75         | 0                                                   | 22         |                  |                                  |
|            |                                                             |             | WKT-VS2W-2A              | 257                        | 68         | 0                                                   | 15         |                  |                                  |
|            |                                                             |             | WKT-VS2W-2B              | 257                        | 70         | 0                                                   | 17         |                  |                                  |
|            |                                                             |             | WKT-VS2W-2C              | 255                        | 70         | 0                                                   | 17         |                  |                                  |
|            |                                                             | VS 1        | WKT-VS2W-3               | 258                        | 76         | 0                                                   | 23         |                  |                                  |
|            |                                                             |             | WKT-VS1-1                | 288                        | 67         | 0                                                   | 13         |                  |                                  |
|            |                                                             |             | WKT-VS1-2                | 273                        | 72         | 0                                                   | 18         |                  |                                  |
|            |                                                             |             | WKT-VS1-3                | 279                        | 72         | 10                                                  | 8          |                  |                                  |
|            |                                                             | PTI         | WKT-VS1-4                | 291                        | 75         | 10                                                  | 11         |                  |                                  |
|            |                                                             |             | L-01                     | 262                        | 83         | 0                                                   | 30         |                  |                                  |
|            |                                                             |             | L-02                     | 277                        | 79         | 0                                                   | 25         |                  |                                  |
|            |                                                             |             | L-03                     | 292                        | 81         | 0                                                   | 27         |                  |                                  |
|            |                                                             |             | L-14                     | 251                        | 88         | 0                                                   | 35         |                  |                                  |
|            |                                                             |             | L-15a                    | 242                        | 86         | 0                                                   | 33         |                  |                                  |
|            |                                                             |             | L-15b                    | 234                        | 82         | 0                                                   | 30         | 45               | 50                               |

Remark:  
1) Fixed plant noise sources at a distance of over 300m from a noise sensitive receiver are considered to have an insignificant noise impact and are therefore not assessed.  
2) A negative correction of 10 dB(A) has been adopted to the direction facing of the ventilation shaft totally screened by buildings and negative correction of 5 dB(A) for NSR do not have direct line of sight to the louvre.

Appendix A3  
Fixed Plant Noise Impact Assessment

| NSR No.                  | Description                                                   | ID        | Louvre ID (contractor) | Distance, m <sup>(1)</sup> | SWL, dB(A) | Correction for line of sight <sup>(2)</sup> , dB(A) | SPL, dB(A) | Total SPL, dB(A) | Daytime Noise Criteria, dB(A) |
|--------------------------|---------------------------------------------------------------|-----------|------------------------|----------------------------|------------|-----------------------------------------------------|------------|------------------|-------------------------------|
| Daytime and Evening Time |                                                               |           |                        |                            |            |                                                     |            |                  |                               |
| WK12a                    | Tower 5, Grand Austin (formerly named as Planned Development) | VS 3      | WKT-VS3-1              | 292                        | 67         | 0                                                   | 13         |                  |                               |
|                          |                                                               |           | WKT-VS3-2              | 281                        | 67         | 0                                                   | 13         |                  |                               |
|                          |                                                               |           | WKT-VS3-3              | 282                        | 72         | 0                                                   | 18         |                  |                               |
|                          |                                                               |           | WKT-VS3-4              | 279                        | 72         | 0                                                   | 18         |                  |                               |
|                          |                                                               | VS 2 EAST | WKT-VS3-7              | 280                        | 65         | 0                                                   | 11         |                  |                               |
|                          |                                                               |           | WKT-VS3-8              | 280                        | 66         | 0                                                   | 12         |                  |                               |
|                          |                                                               |           | WKT-VS2E-1             | 152                        | 72         | 0                                                   | 23         |                  |                               |
|                          |                                                               |           | WKT-VS2E-2             | 141                        | 69         | 0                                                   | 21         |                  |                               |
|                          |                                                               | VS 4      | WKT-VS2E-3             | 134                        | 69         | 0                                                   | 21         |                  |                               |
|                          |                                                               |           | WKT-VS4-1              | 85                         | 79         | 0                                                   | 35         |                  |                               |
|                          |                                                               |           | WKT-VS4-3              | 100                        | 73         | 0                                                   | 28         |                  |                               |
|                          |                                                               | VS 5      | WKT-VS4-4              | 88                         | 74         | 0                                                   | 30         |                  |                               |
|                          |                                                               |           | WKT-VS5-1              | 99                         | 70         | 0                                                   | 25         |                  |                               |
|                          |                                                               |           | WKT-VS5-2              | 107                        | 92         | 0                                                   | 46         |                  |                               |
|                          |                                                               | VS 1      | WKT-VS5-4              | 126                        | 79         | 0                                                   | 32         |                  |                               |
|                          |                                                               |           | WKT-VS1-1              | 277                        | 67         | 0                                                   | 13         |                  |                               |
|                          |                                                               |           | WKT-VS1-2              | 253                        | 72         | 0                                                   | 19         |                  |                               |
|                          |                                                               |           | WKT-VS1-3              | 272                        | 72         | 10                                                  | 8          |                  |                               |
|                          |                                                               | VS 7      | WKT-VS1-4              | 281                        | 75         | 10                                                  | 11         |                  |                               |
|                          |                                                               |           | WKT-G-D14VS-03A        | 259                        | 81         | 0                                                   | 28         |                  |                               |
|                          |                                                               |           | WKT-G-D14VS-04A        | 265                        | 78         | 10                                                  | 15         |                  |                               |
|                          |                                                               |           | WKT-VS7-1A             | 265                        | 77         | 10                                                  | 14         |                  |                               |
|                          |                                                               |           | WKT-VS7-1B             | 268                        | 74         | 10                                                  | 10         |                  |                               |
|                          |                                                               |           | WKT-VS7-2              | 254                        | 69         | 0                                                   | 16         |                  |                               |
|                          |                                                               |           | WKT-VS7-3              | 254                        | 80         | 0                                                   | 27         | 47               | 60                            |

| NSR No.    | Description                                                   | ID        | Louvre ID (contractor) | Distance, m <sup>(1)</sup> | SWL, dB(A) | Correction for line of sight <sup>(2)</sup> , dB(A) | SPL, dB(A) | Total SPL, dB(A) | Night-time Noise Criteria, dB(A) |
|------------|---------------------------------------------------------------|-----------|------------------------|----------------------------|------------|-----------------------------------------------------|------------|------------------|----------------------------------|
| Night-time |                                                               |           |                        |                            |            |                                                     |            |                  |                                  |
| WK12a      | Tower 5, Grand Austin (formerly named as Planned Development) | VS 3      | WKT-VS3-1              | 292                        | 67         | 0                                                   | 13         |                  |                                  |
|            |                                                               |           | WKT-VS3-2              | 281                        | 67         | 0                                                   | 13         |                  |                                  |
|            |                                                               |           | WKT-VS3-3              | 282                        | 72         | 0                                                   | 18         |                  |                                  |
|            |                                                               |           | WKT-VS3-4              | 279                        | 72         | 0                                                   | 18         |                  |                                  |
|            |                                                               | VS 2 EAST | WKT-VS3-7              | 280                        | 65         | 0                                                   | 11         |                  |                                  |
|            |                                                               |           | WKT-VS3-8              | 280                        | 66         | 0                                                   | 12         |                  |                                  |
|            |                                                               |           | WKT-VS2E-1             | 152                        | 72         | 0                                                   | 23         |                  |                                  |
|            |                                                               |           | WKT-VS2E-2             | 141                        | 69         | 0                                                   | 21         |                  |                                  |
|            |                                                               | VS 4      | WKT-VS2E-3             | 134                        | 69         | 0                                                   | 21         |                  |                                  |
|            |                                                               |           | WKT-VS4-1              | 85                         | 79         | 0                                                   | 35         |                  |                                  |
|            |                                                               |           | WKT-VS4-3              | 100                        | 73         | 0                                                   | 28         |                  |                                  |
|            |                                                               | VS 5      | WKT-VS4-4              | 88                         | 74         | 0                                                   | 30         |                  |                                  |
|            |                                                               |           | WKT-VS5-1              | 99                         | 70         | 0                                                   | 25         |                  |                                  |
|            |                                                               |           | WKT-VS5-2              | 107                        | 92         | 0                                                   | 46         |                  |                                  |
|            |                                                               | VS 1      | WKT-VS5-4              | 126                        | 79         | 0                                                   | 32         |                  |                                  |
|            |                                                               |           | WKT-VS1-1              | 277                        | 67         | 0                                                   | 13         |                  |                                  |
|            |                                                               |           | WKT-VS1-2              | 253                        | 72         | 0                                                   | 19         |                  |                                  |
|            |                                                               |           | WKT-VS1-3              | 272                        | 72         | 10                                                  | 8          |                  |                                  |
|            |                                                               | VS 7      | WKT-VS1-4              | 281                        | 75         | 10                                                  | 11         |                  |                                  |
|            |                                                               |           | WKT-G-D14VS-03A        | 259                        | 81         | 0                                                   | 28         |                  |                                  |
|            |                                                               |           | WKT-G-D14VS-04A        | 265                        | 78         | 10                                                  | 15         |                  |                                  |
|            |                                                               |           | WKT-VS7-1A             | 265                        | 77         | 10                                                  | 14         |                  |                                  |
|            |                                                               |           | WKT-VS7-1B             | 268                        | 74         | 10                                                  | 10         |                  |                                  |
|            |                                                               |           | WKT-VS7-2              | 254                        | 69         | 0                                                   | 16         |                  |                                  |
|            |                                                               |           | WKT-VS7-3              | 254                        | 80         | 0                                                   | 27         | 47               | 50                               |

Remark:  
1) Fixed plant noise sources at a distance of over 300m from a noise sensitive receiver are considered to have an insignificant noise impact and are therefore not assessed.  
2) A negative correction of 10 dB(A) has been adopted to the direction facing of the ventilation shaft totally screened by buildings and negative correction of 5 dB(A) for NSR do not have direct line of sight to the louvre.

Appendix A3  
Fixed Plant Noise Impact Assessment

| NSR No.                  | Description          | ID        | Louvre ID (contractor)    | Distance, m <sup>(1)</sup> | SWL, dB(A) | Correction for line of sight <sup>(2)</sup> , dB(A) | SPL, dB(A) | Total SPL, dB(A) | Daytime Noise Criteria, dB(A) |
|--------------------------|----------------------|-----------|---------------------------|----------------------------|------------|-----------------------------------------------------|------------|------------------|-------------------------------|
| Daytime and Evening Time |                      |           |                           |                            |            |                                                     |            |                  |                               |
| WK14                     | Moon Tower, The Arch | VS 2 EAST | WKT-VS2E-1                | 288                        | 72         | 0                                                   | 18         |                  |                               |
|                          |                      |           | WKT-VS2E-2                | 284                        | 69         | 0                                                   | 15         |                  |                               |
|                          |                      |           | WKT-VS2E-3                | 281                        | 69         | 0                                                   | 15         |                  |                               |
|                          |                      | VS 4      | WKT-VS4-1                 | 290                        | 79         | 0                                                   | 25         |                  |                               |
|                          |                      |           | WKT-VS4-3                 | 292                        | 73         | 0                                                   | 19         |                  |                               |
|                          |                      |           | WKT-VS4-4                 | 285                        | 74         | 0                                                   | 20         |                  |                               |
|                          |                      | VS 5      | WKT-VS5-1                 | 285                        | 70         | 0                                                   | 16         |                  |                               |
|                          |                      |           | WKT-VS5-2                 | 279                        | 92         | 0                                                   | 38         |                  |                               |
|                          |                      |           | WKT-VS5-4                 | 282                        | 79         | 0                                                   | 25         |                  |                               |
|                          |                      | VS 2 WEST | WKT-VS2W-1                | 239                        | 75         | 10                                                  | 12         |                  |                               |
|                          |                      |           | WKT-VS2W-2A               | 239                        | 68         | 10                                                  | 5          |                  |                               |
|                          |                      |           | WKT-VS2W-2B               | 239                        | 70         | 10                                                  | 7          |                  |                               |
|                          |                      |           | WKT-VS2W-2C               | 226                        | 70         | 10                                                  | 8          |                  |                               |
|                          |                      | VS 1      | WKT-VS2W-3                | 210                        | 76         | 10                                                  | 15         |                  |                               |
|                          |                      |           | WKT-VS1-1                 | 94                         | 67         | 0                                                   | 23         |                  |                               |
|                          |                      |           | WKT-VS1-2                 | 119                        | 72         | 0                                                   | 25         |                  |                               |
|                          |                      |           | WKT-VS1-3                 | 99                         | 72         | 0                                                   | 27         |                  |                               |
|                          |                      | VS 6      | WKT-VS1-4                 | 90                         | 75         | 0                                                   | 31         |                  |                               |
|                          |                      |           | WKT-VS6-1                 | 221                        | 77         | 10                                                  | 15         |                  |                               |
|                          |                      |           | WKT-VS6-2A                | 222                        | 60         | 10                                                  | 0          |                  |                               |
|                          |                      |           | WKT-VS6-2B                | 222                        | 62         | 10                                                  | 0          |                  |                               |
|                          |                      |           | WKT-VS6-3A                | 215                        | 62         | 0                                                   | 10         |                  |                               |
|                          |                      |           | WKT-VS6-3B                | 215                        | 66         | 0                                                   | 14         |                  |                               |
|                          |                      |           | WKT-VS6-4                 | 215                        | 75         | 0                                                   | 23         |                  |                               |
|                          |                      |           | WKT-VS6-5A                | 215                        | 76         | 0                                                   | 24         |                  |                               |
|                          |                      |           | WKT-VS6-5B                | 215                        | 76         | 0                                                   | 24         |                  |                               |
|                          |                      |           | WKT-VS6-6A                | 215                        | 65         | 0                                                   | 13         |                  |                               |
|                          |                      |           | WKT-VS6-6B                | 215                        | 70         | 0                                                   | 18         |                  |                               |
|                          |                      |           | WKT-VS6-7A                | 214                        | 69         | 0                                                   | 17         |                  |                               |
|                          |                      | PVS6      | WKT-VS6-7B                | 214                        | 63         | 0                                                   | 11         |                  |                               |
|                          |                      |           | WKT-PVS6-1                | 237                        | 63         | 0                                                   | 10         |                  |                               |
|                          |                      |           | WKT-PVS6-2                | 238                        | 68         | 10                                                  | 5          |                  |                               |
|                          |                      |           | WKT-PVS6-3A               | 238                        | 69         | 10                                                  | 6          |                  |                               |
|                          |                      | VS6-4     | WKT-PVS6-3B               | 238                        | 73         | 10                                                  | 10         |                  |                               |
|                          |                      |           | WKT-PVS6-4                | 230                        | 72         | 0                                                   | 20         |                  |                               |
|                          |                      |           | WKT-G-G15VS-01A           | 264                        | 75         | 10                                                  | 12         |                  |                               |
|                          |                      |           | WKT-G-G15VS-01B           | 261                        | 76         | 0                                                   | 23         |                  |                               |
|                          |                      | VS 7      | WKT-G-G15VS-01C           | 260                        | 74         | 0                                                   | 21         |                  |                               |
|                          |                      |           | WKT-G-G15VS-03A Section 1 | 268                        | 72         | 10                                                  | 8          |                  |                               |
|                          |                      |           | WKT-G-G15VS-03A Section 2 | 267                        | 73         | 0                                                   | 19         |                  |                               |
|                          |                      |           | WKT-VS7-1A                | 294                        | 77         | 0                                                   | 23         |                  |                               |
|                          |                      |           | WKT-VS7-1B                | 297                        | 74         | 10                                                  | 10         |                  |                               |
|                          |                      |           | WKT-VS7-2                 | 298                        | 69         | 0                                                   | 15         |                  |                               |
|                          |                      |           | WKT-VS7-3                 | 298                        | 80         | 0                                                   | 26         | 41               | 60                            |

| NSR No.    | Description          | ID        | Louvre ID (contractor)    | Distance, m <sup>(1)</sup> | SWL, dB(A) | Correction for line of sight <sup>(2)</sup> , dB(A) | SPL, dB(A) | Total SPL, dB(A) | Night-time Noise Criteria, dB(A) |
|------------|----------------------|-----------|---------------------------|----------------------------|------------|-----------------------------------------------------|------------|------------------|----------------------------------|
| Night-time |                      |           |                           |                            |            |                                                     |            |                  |                                  |
| WK14       | Moon Tower, The Arch | VS 2 EAST | WKT-VS2E-1                | 288                        | 72         | 0                                                   | 18         |                  |                                  |
|            |                      |           | WKT-VS2E-2                | 284                        | 69         | 0                                                   | 15         |                  |                                  |
|            |                      |           | WKT-VS2E-3                | 281                        | 69         | 0                                                   | 15         |                  |                                  |
|            |                      | VS 4      | WKT-VS4-1                 | 290                        | 79         | 0                                                   | 25         |                  |                                  |
|            |                      |           | WKT-VS4-3                 | 292                        | 73         | 0                                                   | 19         |                  |                                  |
|            |                      |           | WKT-VS4-4                 | 285                        | 74         | 0                                                   | 20         |                  |                                  |
|            |                      | VS 5      | WKT-VS5-1                 | 285                        | 70         | 0                                                   | 16         |                  |                                  |
|            |                      |           | WKT-VS5-2                 | 279                        | 92         | 0                                                   | 38         |                  |                                  |
|            |                      |           | WKT-VS5-4                 | 282                        | 79         | 0                                                   | 25         |                  |                                  |
|            |                      | VS 2 WEST | WKT-VS2W-1                | 239                        | 75         | 10                                                  | 12         |                  |                                  |
|            |                      |           | WKT-VS2W-2A               | 239                        | 68         | 10                                                  | 5          |                  |                                  |
|            |                      |           | WKT-VS2W-2B               | 239                        | 70         | 10                                                  | 7          |                  |                                  |
|            |                      |           | WKT-VS2W-2C               | 226                        | 70         | 10                                                  | 8          |                  |                                  |
|            |                      | VS 1      | WKT-VS2W-3                | 210                        | 76         | 10                                                  | 15         |                  |                                  |
|            |                      |           | WKT-VS1-1                 | 94                         | 67         | 0                                                   | 23         |                  |                                  |
|            |                      |           | WKT-VS1-2                 | 119                        | 72         | 0                                                   | 25         |                  |                                  |
|            |                      |           | WKT-VS1-3                 | 99                         | 72         | 0                                                   | 27         |                  |                                  |
|            |                      | VS 6      | WKT-VS1-4                 | 90                         | 75         | 0                                                   | 31         |                  |                                  |
|            |                      |           | WKT-VS6-1                 | 221                        | 77         | 10                                                  | 15         |                  |                                  |
|            |                      |           | WKT-VS6-2A                | 222                        | 60         | 10                                                  | 0          |                  |                                  |
|            |                      |           | WKT-VS6-2B                | 222                        | 62         | 10                                                  | 0          |                  |                                  |
|            |                      |           | WKT-VS6-3A                | 215                        | 62         | 0                                                   | 10         |                  |                                  |
|            |                      |           | WKT-VS6-3B                | 215                        | 66         | 0                                                   | 14         |                  |                                  |
|            |                      |           | WKT-VS6-4                 | 215                        | 75         | 0                                                   | 23         |                  |                                  |
|            |                      |           | WKT-VS6-5A                | 215                        | 76         | 0                                                   | 24         |                  |                                  |
|            |                      |           | WKT-VS6-5B                | 215                        | 76         | 0                                                   | 24         |                  |                                  |
|            |                      |           | WKT-VS6-6A                | 215                        | 65         | 0                                                   | 13         |                  |                                  |
|            |                      |           | WKT-VS6-6B                | 215                        | 70         | 0                                                   | 18         |                  |                                  |
|            |                      |           | WKT-VS6-7A                | 214                        | 69         | 0                                                   | 17         |                  |                                  |
|            |                      | PVS6      | WKT-VS6-7B                | 214                        | 63         | 0                                                   | 11         |                  |                                  |
|            |                      |           | WKT-PVS6-1                | 237                        | 63         | 0                                                   | 10         |                  |                                  |
|            |                      |           | WKT-PVS6-2                | 238                        | 68         | 10                                                  | 5          |                  |                                  |
|            |                      |           | WKT-PVS6-3A               | 238                        | 69         | 10                                                  | 6          |                  |                                  |
|            |                      | VS6-4     | WKT-PVS6-3B               | 238                        | 73         | 10                                                  | 10         |                  |                                  |
|            |                      |           | WKT-PVS6-4                | 230                        | 72         | 0                                                   | 20         |                  |                                  |
|            |                      |           | WKT-G-G15VS-01A           | 264                        | 75         | 10                                                  | 12         |                  |                                  |
|            |                      |           | WKT-G-G15VS-01B           | 261                        | 76         | 0                                                   | 23         |                  |                                  |
|            |                      | VS7       | WKT-G-G15VS-01C           | 260                        | 74         | 0                                                   | 21         |                  |                                  |
|            |                      |           | WKT-G-G15VS-03A Section 1 | 268                        | 72         | 10                                                  | 8          |                  |                                  |
|            |                      |           | WKT-G-G15VS-03A Section 2 | 267                        | 73         | 0                                                   | 19         |                  |                                  |
|            |                      |           | WKT-VS7-1A                | 294                        | 77         | 0                                                   | 23         |                  |                                  |
|            |                      |           | WKT-VS7-1B                | 297                        | 74         | 10                                                  | 10         |                  |                                  |
|            |                      |           | WKT-VS7-2                 | 298                        | 69         | 0                                                   | 15         |                  |                                  |
|            |                      |           | WKT-VS7-3                 | 298                        | 80         | 0                                                   | 26         | 41               | 50                               |

Remark:  
1) Fixed plant noise sources at a distance of over 300m from a noise sensitive receiver are considered to have an insignificant noise impact and are therefore not assessed.  
2) A negative correction of 10 dB(A) has been adopted to the direction facing of the ventilation shaft totally screened by buildings and negative correction of 5 dB(A) for NSR do not have direct line of sight to the louvre.

Appendix A3  
Fixed Plant Noise Impact Assessment

| NSR No.                  | Description          | ID        | Louvre ID (contractor) | Distance, m <sup>(1)</sup> | SWL, dB(A) | Correction for line of sight <sup>(2)</sup> , dB(A) | SPL, dB(A) | Total SPL, dB(A) | Daytime Noise Criteria, dB(A) |
|--------------------------|----------------------|-----------|------------------------|----------------------------|------------|-----------------------------------------------------|------------|------------------|-------------------------------|
| Daytime and Evening Time |                      |           |                        |                            |            |                                                     |            |                  |                               |
| WK14a                    | Star Tower, The Arch | VS 3      | WKT-VS3-2              | 299                        | 67         | 0                                                   | 12         |                  |                               |
|                          |                      | VS 2 EAST | WKT-VS2E-1             | 255                        | 72         | 0                                                   | 19         |                  |                               |
|                          |                      |           | WKT-VS2E-2             | 253                        | 69         | 0                                                   | 16         |                  |                               |
|                          |                      |           | WKT-VS2E-3             | 251                        | 69         | 0                                                   | 16         |                  |                               |
|                          |                      | VS 4      | WKT-VS4-1              | 270                        | 79         | 0                                                   | 25         |                  |                               |
|                          |                      |           | WKT-VS4-3              | 267                        | 73         | 0                                                   | 19         |                  |                               |
|                          |                      |           | WKT-VS4-4              | 265                        | 74         | 0                                                   | 21         |                  |                               |
|                          |                      | VS 5      | WKT-VS5-1              | 276                        | 70         | 0                                                   | 16         |                  |                               |
|                          |                      |           | WKT-VS5-2              | 271                        | 92         | 0                                                   | 38         |                  |                               |
|                          |                      |           | WKT-VS5-4              | 279                        | 79         | 0                                                   | 25         |                  |                               |
|                          |                      | VS 2 WEST | WKT-VS2W-1             | 192                        | 75         | 0                                                   | 24         |                  |                               |
|                          |                      |           | WKT-VS2W-2A            | 192                        | 68         | 0                                                   | 17         |                  |                               |
|                          |                      |           | WKT-VS2W-2B            | 192                        | 70         | 0                                                   | 19         |                  |                               |
|                          |                      |           | WKT-VS2W-2C            | 179                        | 70         | 0                                                   | 20         |                  |                               |
|                          |                      | VS 1      | WKT-VS2W-3             | 163                        | 76         | 0                                                   | 27         |                  |                               |
|                          |                      |           | WKT-VS1-1              | 86                         | 67         | 0                                                   | 23         |                  |                               |
|                          |                      |           | WKT-VS1-2              | 116                        | 72         | 0                                                   | 26         |                  |                               |
|                          |                      |           | WKT-VS1-3              | 85                         | 72         | 0                                                   | 28         |                  |                               |
|                          |                      | VS 6      | WKT-VS1-4              | 82                         | 75         | 0                                                   | 32         |                  |                               |
|                          |                      |           | WKT-VS6-1              | 254                        | 77         | 0                                                   | 24         |                  |                               |
|                          |                      |           | WKT-VS6-2A             | 254                        | 60         | 10                                                  | 0          |                  |                               |
|                          |                      |           | WKT-VS6-2B             | 254                        | 62         | 10                                                  | 0          |                  |                               |
|                          |                      | PVS6      | WKT-VS6-3A             | 247                        | 62         | 0                                                   | 9          |                  |                               |
|                          |                      |           | WKT-VS6-3B             | 247                        | 66         | 0                                                   | 13         |                  |                               |
|                          |                      |           | WKT-VS6-4              | 247                        | 75         | 0                                                   | 22         |                  |                               |
|                          |                      |           | WKT-VS6-5A             | 247                        | 76         | 0                                                   | 23         |                  |                               |
|                          |                      |           | WKT-VS6-5B             | 247                        | 76         | 0                                                   | 23         |                  |                               |
|                          |                      |           | WKT-VS6-6A             | 247                        | 65         | 0                                                   | 12         |                  |                               |
|                          |                      |           | WKT-VS6-6B             | 247                        | 70         | 0                                                   | 17         |                  |                               |
|                          |                      |           | WKT-VS6-7A             | 247                        | 69         | 0                                                   | 16         |                  |                               |
|                          |                      |           | WKT-VS6-7B             | 247                        | 63         | 0                                                   | 10         |                  |                               |
|                          |                      |           | WKT-PVS6-1             | 271                        | 63         | 0                                                   | 9          |                  |                               |
|                          |                      |           | WKT-PVS6-2             | 273                        | 68         | 10                                                  | 4          |                  |                               |
|                          |                      |           | WKT-PVS6-3A            | 273                        | 69         | 10                                                  | 5          |                  |                               |
|                          |                      |           | WKT-PVS6-3B            | 273                        | 73         | 10                                                  | 9          |                  |                               |
|                          |                      |           | WKT-PVS6-4             | 265                        | 72         | 0                                                   | 19         |                  |                               |
|                          |                      | VS6-4     | WKT-G-G15VS-01B        | 300                        | 76         | 0                                                   | 21         |                  |                               |
|                          |                      |           | WKT-G-G15VS-01C        | 298                        | 74         | 0                                                   | 20         | 41               | 60                            |

| NSR No.    | Description          | ID        | Louvre ID (contractor) | Distance, m <sup>(1)</sup> | SWL, dB(A) | Correction for line of sight <sup>(2)</sup> , dB(A) | SPL, dB(A) | Total SPL, dB(A) | Night-time Noise Criteria, dB(A) |
|------------|----------------------|-----------|------------------------|----------------------------|------------|-----------------------------------------------------|------------|------------------|----------------------------------|
| Night-time |                      |           |                        |                            |            |                                                     |            |                  |                                  |
| WK14a      | Star Tower, The Arch | VS 3      | WKT-VS3-2              | 299                        | 67         | 0                                                   | 12         |                  |                                  |
|            |                      | VS 2 EAST | WKT-VS2E-1             | 255                        | 72         | 0                                                   | 19         |                  |                                  |
|            |                      |           | WKT-VS2E-2             | 253                        | 69         | 0                                                   | 16         |                  |                                  |
|            |                      |           | WKT-VS2E-3             | 251                        | 69         | 0                                                   | 16         |                  |                                  |
|            |                      | VS 4      | WKT-VS4-1              | 270                        | 79         | 0                                                   | 25         |                  |                                  |
|            |                      |           | WKT-VS4-3              | 267                        | 73         | 0                                                   | 19         |                  |                                  |
|            |                      |           | WKT-VS4-4              | 265                        | 74         | 0                                                   | 21         |                  |                                  |
|            |                      | VS 5      | WKT-VS5-1              | 276                        | 70         | 0                                                   | 16         |                  |                                  |
|            |                      |           | WKT-VS5-2              | 271                        | 92         | 0                                                   | 38         |                  |                                  |
|            |                      |           | WKT-VS5-4              | 279                        | 79         | 0                                                   | 25         |                  |                                  |
|            |                      | VS 2 WEST | WKT-VS2W-1             | 192                        | 75         | 0                                                   | 24         |                  |                                  |
|            |                      |           | WKT-VS2W-2A            | 192                        | 68         | 0                                                   | 17         |                  |                                  |
|            |                      |           | WKT-VS2W-2B            | 192                        | 70         | 0                                                   | 19         |                  |                                  |
|            |                      |           | WKT-VS2W-2C            | 179                        | 70         | 0                                                   | 20         |                  |                                  |
|            |                      | VS 1      | WKT-VS2W-3             | 163                        | 76         | 0                                                   | 27         |                  |                                  |
|            |                      |           | WKT-VS1-1              | 86                         | 67         | 0                                                   | 23         |                  |                                  |
|            |                      |           | WKT-VS1-2              | 116                        | 72         | 0                                                   | 26         |                  |                                  |
|            |                      |           | WKT-VS1-3              | 85                         | 72         | 0                                                   | 28         |                  |                                  |
|            |                      | VS 6      | WKT-VS1-4              | 82                         | 75         | 0                                                   | 32         |                  |                                  |
|            |                      |           | WKT-VS6-1              | 254                        | 77         | 0                                                   | 24         |                  |                                  |
|            |                      |           | WKT-VS6-2A             | 254                        | 60         | 10                                                  | 0          |                  |                                  |
|            |                      |           | WKT-VS6-2B             | 254                        | 62         | 10                                                  | 0          |                  |                                  |
|            |                      | PVS6      | WKT-VS6-3A             | 247                        | 62         | 0                                                   | 9          |                  |                                  |
|            |                      |           | WKT-VS6-3B             | 247                        | 66         | 0                                                   | 13         |                  |                                  |
|            |                      |           | WKT-VS6-4              | 247                        | 75         | 0                                                   | 22         |                  |                                  |
|            |                      |           | WKT-VS6-5A             | 247                        | 76         | 0                                                   | 23         |                  |                                  |
|            |                      |           | WKT-VS6-5B             | 247                        | 76         | 0                                                   | 23         |                  |                                  |
|            |                      |           | WKT-VS6-6A             | 247                        | 65         | 0                                                   | 12         |                  |                                  |
|            |                      |           | WKT-VS6-6B             | 247                        | 70         | 0                                                   | 17         |                  |                                  |
|            |                      |           | WKT-VS6-7A             | 247                        | 69         | 0                                                   | 16         |                  |                                  |
|            |                      |           | WKT-VS6-7B             | 247                        | 63         | 0                                                   | 10         |                  |                                  |
|            |                      |           | WKT-PVS6-1             | 271                        | 63         | 0                                                   | 9          |                  |                                  |
|            |                      |           | WKT-PVS6-2             | 273                        | 68         | 10                                                  | 4          |                  |                                  |
|            |                      |           | WKT-PVS6-3A            | 273                        | 69         | 10                                                  | 5          |                  |                                  |
|            |                      |           | WKT-PVS6-3B            | 273                        | 73         | 10                                                  | 9          |                  |                                  |
|            |                      |           | WKT-PVS6-4             | 265                        | 72         | 0                                                   | 19         |                  |                                  |
|            |                      | VS6-4     | WKT-G-G15VS-01B        | 300                        | 76         | 0                                                   | 21         |                  |                                  |
|            |                      |           | WKT-G-G15VS-01C        | 298                        | 74         | 0                                                   | 20         | 41               | 50                               |

Remark:  
1) Fixed plant noise sources at a distance of over 300m from a noise sensitive receiver are considered to have an insignificant noise impact and are therefore not assessed.  
2) A negative correction of 10 dB(A) has been adopted to the direction facing of the ventilation shaft totally screened by buildings and negative correction of 5 dB(A) for NSR do not have direct line of sight to the louvre.

Appendix A3  
Fixed Plant Noise Impact Assessment

| NSR No.                  | Description                 | ID                 | Louvre ID (contractor)   | Distance, m <sup>(1)</sup> | SWL, dB(A) | Correction for line of sight <sup>(2)</sup> , dB(A) | SPL, dB(A) | Total SPL, dB(A) | Daytime Noise Criteria, dB(A) |
|--------------------------|-----------------------------|--------------------|--------------------------|----------------------------|------------|-----------------------------------------------------|------------|------------------|-------------------------------|
| Daytime and Evening Time |                             |                    |                          |                            |            |                                                     |            |                  |                               |
| WK18                     | Hindu Temple <sup>(3)</sup> | MKV <sup>(4)</sup> | East E1                  | 288                        | 78         | 10                                                  | 14         |                  |                               |
|                          |                             |                    | East E2                  | 296                        | 72         | 10                                                  | 8          |                  |                               |
|                          |                             |                    | East E3                  | 293                        | 73         | 10                                                  | 9          |                  |                               |
|                          |                             |                    | East E4                  | 300                        | 79         | 10                                                  | 0          |                  |                               |
|                          |                             | CKR <sup>(4)</sup> | South S1                 | 291                        | 74         | 0                                                   | 20         |                  |                               |
|                          |                             |                    | South S2                 | 292                        | 75         | 0                                                   | 21         |                  |                               |
|                          |                             |                    | South S3                 | 272                        | 85         | 0                                                   | 31         |                  |                               |
|                          |                             |                    | South S4                 | 272                        | 72         | 0                                                   | 18         |                  |                               |
|                          |                             |                    | West W1                  | 279                        | 90         | 0                                                   | 36         |                  |                               |
|                          |                             | WKP                | WVSF 3                   | 246                        | 104        | 0                                                   | 51         |                  |                               |
|                          |                             |                    | WVSF 4                   | 299                        | 104        | 0                                                   | 49         |                  |                               |
|                          |                             |                    | WVSF 5                   | 290                        | 104        | 0                                                   | 50         |                  |                               |
|                          |                             |                    | WKP-U1-E6PN-03ASection 1 | 255                        | 82         | 10                                                  | 19         |                  |                               |
|                          |                             |                    | WKP-U1-E6PN-03ASection 2 | 233                        | 80         | 10                                                  | 18         |                  |                               |
|                          |                             | EAA<br>PTI         | WKP-U1-E6PN-06A          | 230                        | 69         | 0                                                   | 17         |                  |                               |
|                          |                             |                    | WKP-U1-E6PN-04A          | 248                        | 83         | 0                                                   | 30         |                  |                               |
|                          |                             |                    | WKP-E6PVS-02             | 242                        | 66         | 10                                                  | 3          |                  |                               |
|                          |                             |                    | WKP-U1-E6PN-09           | 223                        | 74         | 0                                                   | 22         |                  |                               |
|                          |                             |                    | WKT-VS3N-1               | 273                        | 80         | 0                                                   | 26         |                  |                               |
|                          |                             |                    | L-01                     | 267                        | 83         | 10                                                  | 19         |                  |                               |
|                          |                             |                    | L-02                     | 254                        | 79         | 10                                                  | 16         |                  |                               |
|                          |                             |                    | L-03                     | 243                        | 81         | 10                                                  | 18         |                  |                               |
|                          |                             |                    | L-03a                    | 216                        | 80         | 10                                                  | 18         |                  |                               |
|                          |                             |                    | L-06                     | 132                        | 75         | 0                                                   | 28         |                  |                               |
|                          |                             |                    | L-07                     | 128                        | 69         | 0                                                   | 22         |                  |                               |
|                          |                             |                    | L-08                     | 126                        | 72         | 0                                                   | 25         |                  |                               |
|                          |                             |                    | L-08a                    | 124                        | 69         | 0                                                   | 22         |                  |                               |
|                          |                             |                    | L-10                     | 156                        | 86         | 0                                                   | 37         |                  |                               |
|                          |                             |                    | L-11                     | 156                        | 84         | 0                                                   | 35         |                  |                               |
|                          |                             |                    | L-12                     | 162                        | 84         | 0                                                   | 35         |                  |                               |
|                          |                             |                    | L-13                     | 187                        | 90         | 0                                                   | 39         |                  |                               |
|                          |                             |                    | L-14                     | 278                        | 88         | 10                                                  | 24         |                  |                               |
|                          |                             |                    | L-15a                    | 286                        | 86         | 10                                                  | 22         |                  |                               |
|                          |                             |                    | L-15b                    | 293                        | 82         | 10                                                  | 18         |                  |                               |
|                          |                             |                    | L-21                     | 191                        | 75         | 0                                                   | 24         |                  |                               |
|                          |                             |                    | L-22                     | 198                        | 76         | 10                                                  | 15         |                  |                               |
|                          |                             |                    | L-23                     | 204                        | 78         | 10                                                  | 17         |                  |                               |
|                          |                             |                    | L-24                     | 208                        | 78         | 10                                                  | 17         |                  |                               |
|                          |                             |                    | L-28                     | 158                        | 72         | 0                                                   | 23         |                  |                               |
|                          |                             |                    | L-29                     | 148                        | 79         | 0                                                   | 31         |                  |                               |
|                          |                             |                    | L-30                     | 153                        | 75         | 0                                                   | 26         |                  |                               |
|                          |                             |                    | L-31                     | 122                        | 83         | 0                                                   | 36         | 55               | 60                            |

| NSR No.    | Description                 | ID                 | Louvre ID (contractor)   | Distance, m <sup>(1)</sup> | SWL, dB(A) | Correction for line of sight <sup>(2)</sup> , dB(A) | SPL, dB(A) | Total SPL, dB(A) | Night-time Noise Criteria, dB(A) |
|------------|-----------------------------|--------------------|--------------------------|----------------------------|------------|-----------------------------------------------------|------------|------------------|----------------------------------|
| Night-time |                             |                    |                          |                            |            |                                                     |            |                  |                                  |
| WK18       | Hindu Temple <sup>(3)</sup> | MKV <sup>(4)</sup> | East E2                  | 296                        | 72         | 10                                                  | 8          |                  |                                  |
|            |                             |                    | East E3                  | 293                        | 73         | 10                                                  | 9          |                  |                                  |
|            |                             |                    | South S3                 | 272                        | 85         | 0                                                   | 31         |                  |                                  |
|            |                             |                    | South S4                 | 272                        | 72         | 0                                                   | 18         |                  |                                  |
|            |                             | CKR <sup>(4)</sup> | West W1                  | 279                        | 90         | 0                                                   | 36         |                  |                                  |
|            |                             |                    | WVSF 3                   | 246                        | 104        | 0                                                   | 51         |                  |                                  |
|            |                             |                    | WVSF 4                   | 299                        | 104        | 0                                                   | 49         |                  |                                  |
|            |                             |                    | WVSF 5                   | 290                        | 104        | 0                                                   | 50         |                  |                                  |
|            |                             | WKP                | WKP-U1-E6PN-03ASection 1 | 255                        | 82         | 10                                                  | 19         |                  |                                  |
|            |                             |                    | WKP-U1-E6PN-03ASection 2 | 233                        | 80         | 10                                                  | 18         |                  |                                  |
|            |                             |                    | WKP-U1-E6PN-06A          | 230                        | 69         | 0                                                   | 17         |                  |                                  |
|            |                             |                    | WKP-U1-E6PN-04A          | 248                        | 83         | 0                                                   | 30         |                  |                                  |
|            |                             |                    | WKP-E6PVS-02             | 242                        | 66         | 10                                                  | 3          |                  |                                  |
|            |                             | EAA<br>PTI         | WKP-U1-E6PN-09           | 223                        | 74         | 0                                                   | 22         |                  |                                  |
|            |                             |                    | WKT-VS3N-1               | 273                        | 80         | 0                                                   | 26         |                  |                                  |
|            |                             |                    | L-01                     | 267                        | 83         | 10                                                  | 19         |                  |                                  |
|            |                             |                    | L-02                     | 254                        | 79         | 10                                                  | 16         |                  |                                  |
|            |                             |                    | L-03                     | 243                        | 81         | 10                                                  | 18         |                  |                                  |
|            |                             |                    | L-03a                    | 216                        | 80         | 10                                                  | 18         |                  |                                  |
|            |                             |                    | L-06                     | 132                        | 75         | 0                                                   | 28         |                  |                                  |
|            |                             |                    | L-07                     | 128                        | 69         | 0                                                   | 22         |                  |                                  |
|            |                             |                    | L-08                     | 126                        | 72         | 0                                                   | 25         |                  |                                  |
|            |                             |                    | L-08a                    | 124                        | 69         | 0                                                   | 22         |                  |                                  |
|            |                             |                    | L-10                     | 156                        | 86         | 0                                                   | 37         |                  |                                  |
|            |                             |                    | L-11                     | 156                        | 84         | 0                                                   | 35         |                  |                                  |
|            |                             |                    | L-12                     | 162                        | 84         | 0                                                   | 35         |                  |                                  |
|            |                             |                    | L-13                     | 187                        | 90         | 0                                                   | 39         |                  |                                  |
|            |                             |                    | L-14                     | 278                        | 88         | 10                                                  | 24         |                  |                                  |
|            |                             |                    | L-15a                    | 286                        | 86         | 10                                                  | 22         |                  |                                  |
|            |                             |                    | L-15b                    | 293                        | 82         | 10                                                  | 18         |                  |                                  |
|            |                             |                    | L-21                     | 191                        | 75         | 0                                                   | 24         |                  |                                  |
|            |                             |                    | L-22                     | 198                        | 76         | 10                                                  | 15         |                  |                                  |
|            |                             |                    | L-23                     | 204                        | 78         | 10                                                  | 17         |                  |                                  |
|            |                             |                    | L-24                     | 208                        | 78         | 10                                                  | 17         |                  |                                  |
|            |                             |                    | L-28                     | 158                        | 72         | 0                                                   | 23         |                  |                                  |
|            |                             |                    | L-29                     | 148                        | 79         | 0                                                   | 31         |                  |                                  |
|            |                             |                    | L-30                     | 153                        | 75         | 0                                                   | 26         |                  |                                  |
|            |                             |                    | L-31                     | 122                        | 83         | 0                                                   | 36         | N/A              | 55                               |

Remark:

1) Fixed plant noise sources at a distance of over 300m from a noise sensitive receiver are considered to have an insignificant noise impact and are therefore not assessed.

2) A negative correction of 10 dB(A) has been adopted to the direction facing of the ventilation shaft totally screened by buildings and negative correction of 5 dB(A) for NSR do not have direct line of sight to th

3) No sensitive uses at WK18 during night-time period.

4) SWL of noise sources at CKR are taken from "Environmental Review Report – Design Changes in Mong Kok West Ventilation Building, West Kowloon Terminus and Its Associated Building Elements, June 2013", while SWL of noise sources at MKV are taken from "Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link (XRL) - Commissioning Test Report for the Fixed Plant Noise at Pat Heung (PHV), Nam Cheong (NCV) and Mongkok West (MKV) Ventilation Buildings, May 2018".

Appendix A3 -  
WEK - Noise Measurement Result - data

| Description | Louvre ID                 | Scenario | Method <sup>(1)</sup> | Location/ Measurement | L <sub>Aeq</sub> (dB) |
|-------------|---------------------------|----------|-----------------------|-----------------------|-----------------------|
| WKP         | WKP-U1-E6PN-03A Section 1 | Normal   | 3                     | point 1               | 56.3                  |
|             | WKP-U1-E6PN-03A Section 1 | Normal   | 3                     | point 2               | 57.3                  |
|             | WKP-U1-E6PN-03A Section 1 | Normal   | 3                     | point 3               | 57.1                  |
|             | WKP-U1-E6PN-03A Section 1 | Normal   | 3                     | point 4               | 57.4                  |
|             | WKP-U1-E6PN-03A Section 1 | Normal   | 3                     | point 5               | 54.4                  |
|             | WKP-U1-E6PN-03A Section 1 | Normal   | 3                     | point 6               | 54.1                  |
|             | WKP-U1-E6PN-03A Section 1 | Normal   | 3                     | point 7               | 55.4                  |
|             | WKP-U1-E6PN-03A Section 1 | Normal   | 3                     | point 8               | 56.6                  |
|             | WKP-U1-E6PN-03A Section 1 | Normal   | 3                     | point 9               | 55.5                  |
|             | WKP-U1-E6PN-03A Section 1 | Normal   | 3                     | point 10              | 56.4                  |
|             | WKP-U1-E6PN-03A Section 1 | Normal   | 3                     | point 11              | 56.6                  |
|             | WKP-U1-E6PN-03A Section 1 | Normal   | 3                     | point 12              | 56.8                  |
|             | WKP-U1-E6PN-03A Section 1 | Normal   | 3                     | point 13              | 56.8                  |
|             | WKP-U1-E6PN-03A Section 1 | Normal   | 3                     | point 14              | 55.5                  |
|             | WKP-U1-E6PN-03A Section 1 | Normal   | 3                     | point 15              | 56.8                  |
|             | WKP-U1-E6PN-03A Section 1 | Normal   | 3                     | point 16              | 54.3                  |
|             | WKP-U1-E6PN-03A Section 1 | Normal   | 3                     | point 17              | 56.5                  |
|             | WKP-U1-E6PN-03A Section 1 | Normal   | 3                     | point 18              | 56.7                  |
|             | WKP-U1-E6PN-03A Section 1 | Normal   | 3                     | point 19              | 55.3                  |
|             | WKP-U1-E6PN-03A Section 1 | Normal   | 3                     | point 20              | 56.6                  |
|             |                           |          |                       | AVERAGE               | 56.2                  |
|             | WKP-U1-E6PN-03A Section 2 | Normal   | 3                     | point 1               | 54.3                  |
|             | WKP-U1-E6PN-03A Section 2 | Normal   | 3                     | point 2               | 55.6                  |
|             | WKP-U1-E6PN-03A Section 2 | Normal   | 3                     | point 3               | 55.2                  |
|             | WKP-U1-E6PN-03A Section 2 | Normal   | 3                     | point 4               | 54.9                  |
|             | WKP-U1-E6PN-03A Section 2 | Normal   | 3                     | point 5               | 54.8                  |
|             | WKP-U1-E6PN-03A Section 2 | Normal   | 3                     | point 6               | 54.6                  |
|             | WKP-U1-E6PN-03A Section 2 | Normal   | 3                     | point 7               | 53.6                  |
|             | WKP-U1-E6PN-03A Section 2 | Normal   | 3                     | point 8               | 52.6                  |
|             | WKP-U1-E6PN-03A Section 2 | Normal   | 3                     | point 9               | 52.8                  |
|             | WKP-U1-E6PN-03A Section 2 | Normal   | 3                     | point 10              | 54.8                  |
|             | WKP-U1-E6PN-03A Section 2 | Normal   | 3                     | point 11              | 54.8                  |
|             | WKP-U1-E6PN-03A Section 2 | Normal   | 3                     | point 12              | 55.0                  |
|             | WKP-U1-E6PN-03A Section 2 | Normal   | 3                     | point 13              | 55.0                  |
|             | WKP-U1-E6PN-03A Section 2 | Normal   | 3                     | point 14              | 55.0                  |
|             | WKP-U1-E6PN-03A Section 2 | Normal   | 3                     | point 15              | 54.9                  |
|             | WKP-U1-E6PN-03A Section 2 | Normal   | 3                     | point 16              | 54.8                  |
|             | WKP-U1-E6PN-03A Section 2 | Normal   | 3                     | point 17              | 57.1                  |
|             | WKP-U1-E6PN-03A Section 2 | Normal   | 3                     | point 18              | 55.2                  |
|             | WKP-U1-E6PN-03A Section 2 | Normal   | 3                     | point 19              | 56.2                  |
|             | WKP-U1-E6PN-03A Section 2 | Normal   | 3                     | point 20              | 56.3                  |
|             |                           |          |                       | AVERAGE               | 55.0                  |
|             | WKP-U1-E6PN-06A           | Normal   | 3                     | point 1               | 52.8                  |
|             | WKP-U1-E6PN-06A           | Normal   | 3                     | point 2               | 52.2                  |
|             | WKP-U1-E6PN-06A           | Normal   | 3                     | point 3               | 52.1                  |
|             | WKP-U1-E6PN-06A           | Normal   | 3                     | point 4               | 51.8                  |
|             | WKP-U1-E6PN-06A           | Normal   | 3                     | point 5               | 53.2                  |
|             | WKP-U1-E6PN-06A           | Normal   | 3                     | point 6               | 52.5                  |
|             | WKP-U1-E6PN-06A           | Normal   | 3                     | point 7               | 53.5                  |
|             | WKP-U1-E6PN-06A           | Normal   | 3                     | point 8               | 53.0                  |
|             | WKP-U1-E6PN-06A           | Normal   | 3                     | point 9               | 54.1                  |
|             |                           |          |                       | AVERAGE               | 52.9                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 1               | 59.2                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 2               | 61.3                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 3               | 61.1                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 4               | 58.7                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 5               | 58.7                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 6               | 59.1                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 7               | 59.8                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 8               | 60.6                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 9               | 59.1                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 10              | 60.0                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 11              | 61.2                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 12              | 61.0                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 13              | 60.7                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 14              | 61.7                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 15              | 60.7                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 16              | 60.3                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 17              | 62.1                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 18              | 63.3                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 19              | 63.2                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 20              | 63.6                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 21              | 62.4                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 22              | 60.7                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 23              | 58.3                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 24              | 59.8                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 25              | 61.2                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 26              | 59.8                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 27              | 58.5                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 28              | 59.2                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 29              | 59.6                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 30              | 58.7                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 31              | 59.1                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 32              | 59.9                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 33              | 61.0                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 34              | 58.9                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 35              | 61.2                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 36              | 60.2                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 37              | 61.0                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 38              | 60.6                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 39              | 59.9                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 40              | 60.8                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 41              | 61.2                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 42              | 60.5                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 43              | 61.2                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 44              | 60.0                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 45              | 59.9                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 46              | 61.1                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 47              | 60.4                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 48              | 60.4                  |
|             | WKP-U1-E6PN-04A           | Normal   | 3                     | point 49              | 61.0                  |

Appendix A3 -  
WEK - Noise Measurement Result - data

| Description | Louvre ID       | Scenario | Method <sup>(1)</sup> | Location/ Measurement      | L <sub>Aeq</sub> (dB) |
|-------------|-----------------|----------|-----------------------|----------------------------|-----------------------|
|             | WKP-U1-E6PN-04A | Normal   | 3                     | point 50<br><b>AVERAGE</b> | 59.9<br><b>60.6</b>   |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 1                    | 54.5                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 2                    | 53.5                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 3                    | 52.3                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 4                    | 53.2                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 5                    | 52.5                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 6                    | 53.6                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 7                    | 54.1                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 8                    | 54.7                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 9                    | 51.9                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 10                   | 51.9                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 11                   | 52.8                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 12                   | 51.9                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 13                   | 55.2                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 14                   | 54.2                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 15                   | 53.0                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 16                   | 54.0                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 17                   | 55.4                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 18                   | 55.7                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 19                   | 55.4                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 20                   | 54.0                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 21                   | 53.1                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 22                   | 54.8                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 23                   | 53.5                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 24                   | 53.4                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 25                   | 52.8                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 26                   | 53.8                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 27                   | 54.0                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 28                   | 54.0                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 29                   | 53.5                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 30                   | 53.4                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 31                   | 52.7                  |
|             | WKP-E6PVS-02    | Normal   | 3                     | point 32<br><b>AVERAGE</b> | 53.4<br><b>53.7</b>   |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 1                    | 61.4                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 2                    | 60.6                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 3                    | 62.9                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 4                    | 59.6                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 5                    | 64.5                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 6                    | 63.1                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 7                    | 65.0                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 8                    | 60.3                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 9                    | 65.3                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 10                   | 61.3                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 11                   | 62.6                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 12                   | 65.5                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 13                   | 64.2                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 14                   | 63.7                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 15                   | 60.1                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 16                   | 64.7                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 17                   | 61.1                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 18                   | 59.3                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 19                   | 63.9                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 20                   | 61.2                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 21                   | 62.5                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 22                   | 64.9                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 23                   | 62.8                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 24                   | 62.3                  |
|             | WKP-U1-E6PN-09  | Normal   | 3                     | point 25<br><b>AVERAGE</b> | 62.3<br><b>63.0</b>   |
| EAA         | WKT-VS3N-1      | Normal   | 3                     | point 1                    | 54.8                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 2                    | 53.8                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 3                    | 53.8                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 4                    | 55.3                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 5                    | 54.0                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 6                    | 54.4                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 7                    | 57.6                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 8                    | 56.5                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 9                    | 56.6                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 10                   | 57.6                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 11                   | 57.2                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 12                   | 55.1                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 13                   | 54.6                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 14                   | 56.7                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 15                   | 56.7                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 16                   | 55.3                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 17                   | 56.4                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 18                   | 56.5                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 19                   | 53.6                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 20                   | 54.3                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 21                   | 53.3                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 22                   | 54.8                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 23                   | 53.0                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 24                   | 56.9                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 25                   | 53.7                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 26                   | 54.6                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 27                   | 52.8                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 28                   | 53.8                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 29                   | 55.3                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 30                   | 53.8                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 31                   | 56.3                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 32                   | 56.1                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 33                   | 56.0                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 34                   | 56.5                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 35                   | 56.0                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 36                   | 56.1                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 37                   | 56.9                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 38                   | 57.8                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 39                   | 58.4                  |
|             | WKT-VS3N-1      | Normal   | 3                     | point 40                   | 59.0                  |

Appendix A3 -  
WEK - Noise Measurement Result - data

| Description | Louvre ID  | Scenario | Method <sup>(1)</sup> | Location/ Measurement | L <sub>Aeq</sub> (dB) |
|-------------|------------|----------|-----------------------|-----------------------|-----------------------|
|             | WKT-VS3N-1 | Normal   | 3                     | point 41              | 58.3                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 42              | 55.3                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 43              | 54.8                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 44              | 54.4                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 45              | 55.9                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 46              | 53.2                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 47              | 53.8                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 48              | 56.0                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 49              | 55.2                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 50              | 54.8                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 51              | 54.3                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 52              | 55.8                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 53              | 55.8                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 54              | 54.2                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 55              | 54.9                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 56              | 52.9                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 57              | 55.2                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 58              | 55.2                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 59              | 55.5                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 60              | 53.7                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 61              | 53.3                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 62              | 55.6                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 63              | 53.8                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 64              | 53.8                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 65              | 55.4                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 66              | 54.6                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 67              | 55.6                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 68              | 57.3                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 69              | 57.5                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 70              | 56.4                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 71              | 56.6                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 72              | 56.7                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 73              | 56.2                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 74              | 55.0                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 75              | 56.0                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 76              | 54.9                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 77              | 54.5                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 78              | 53.1                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 79              | 53.1                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 80              | 53.3                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 81              | 53.0                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 82              | 53.3                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 83              | 53.3                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 84              | 52.3                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 85              | 53.0                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 86              | 55.2                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 87              | 52.4                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 88              | 54.8                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 89              | 57.0                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 90              | 56.1                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 91              | 57.2                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 92              | 58.4                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 93              | 57.2                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 94              | 57.9                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 95              | 58.0                  |
|             | WKT-VS3N-1 | Normal   | 3                     | point 96              | 55.4                  |
|             |            |          |                       | AVERAGE               | 56                    |
| VS 3        | WKT-VS3-1  | Normal   | 3                     | point 1               | 53.3                  |
|             | WKT-VS3-1  | Normal   | 3                     | point 2               | 52.2                  |
|             | WKT-VS3-1  | Normal   | 3                     | point 3               | 56.6                  |
|             | WKT-VS3-1  | Normal   | 3                     | point 4               | 55.8                  |
|             | WKT-VS3-1  | Normal   | 3                     | point 5               | 54.7                  |
|             | WKT-VS3-1  | Normal   | 3                     | point 6               | 53.3                  |
|             | WKT-VS3-1  | Normal   | 3                     | point 7               | 54.7                  |
|             | WKT-VS3-1  | Normal   | 3                     | point 8               | 55.8                  |
|             | WKT-VS3-1  | Normal   | 3                     | point 9               | 53.5                  |
|             | WKT-VS3-1  | Normal   | 3                     | point 10              | 53.1                  |
|             |            |          |                       | AVERAGE               | 55                    |
|             | WKT-VS3-2  | Normal   | 3                     | point 1               | 55.1                  |
|             | WKT-VS3-2  | Normal   | 3                     | point 2               | 53.4                  |
|             | WKT-VS3-2  | Normal   | 3                     | point 3               | 54.9                  |
|             | WKT-VS3-2  | Normal   | 3                     | point 4               | 56.1                  |
|             | WKT-VS3-2  | Normal   | 3                     | point 5               | 57.1                  |
|             | WKT-VS3-2  | Normal   | 3                     | point 6               | 55.6                  |
|             | WKT-VS3-2  | Normal   | 3                     | point 7               | 54.0                  |
|             | WKT-VS3-2  | Normal   | 3                     | point 8               | 54.8                  |
|             |            |          |                       | AVERAGE               | 55                    |
|             | WKT-VS3-3  | Normal   | 3                     | point 1               | 57.6                  |
|             | WKT-VS3-3  | Normal   | 3                     | point 2               | 59.1                  |
|             | WKT-VS3-3  | Normal   | 3                     | point 3               | 56.8                  |
|             | WKT-VS3-3  | Normal   | 3                     | point 4               | 56.9                  |
|             | WKT-VS3-3  | Normal   | 3                     | point 5               | 56.7                  |
|             | WKT-VS3-3  | Normal   | 3                     | point 6               | 57.6                  |
|             | WKT-VS3-3  | Normal   | 3                     | point 7               | 56.9                  |
|             | WKT-VS3-3  | Normal   | 3                     | point 8               | 56.6                  |
|             | WKT-VS3-3  | Normal   | 3                     | point 9               | 56.0                  |
|             | WKT-VS3-3  | Normal   | 3                     | point 10              | 56.9                  |
|             | WKT-VS3-3  | Normal   | 3                     | point 11              | 57.2                  |
|             | WKT-VS3-3  | Normal   | 3                     | point 12              | 56.1                  |
|             | WKT-VS3-3  | Normal   | 3                     | point 13              | 56.2                  |
|             | WKT-VS3-3  | Normal   | 3                     | point 14              | 55.2                  |
|             | WKT-VS3-3  | Normal   | 3                     | point 15              | 56.1                  |
|             | WKT-VS3-3  | Normal   | 3                     | point 16              | 59.1                  |
|             |            |          |                       | AVERAGE               | 57                    |
|             | WKT-VS3-4  | Normal   | 3                     | point 1               | 51.8                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 2               | 51.7                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 3               | 49.1                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 4               | 51.2                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 5               | 51.8                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 6               | 51.7                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 7               | 52.0                  |

Appendix A3 -  
WEK - Noise Measurement Result - data

| Description | Louvre ID  | Scenario | Method <sup>(1)</sup> | Location/ Measurement | L <sub>Aeq</sub> (dB) |
|-------------|------------|----------|-----------------------|-----------------------|-----------------------|
|             | WKT-VS3-4  | Normal   | 3                     | point 8               | 51.6                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 9               | 51.2                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 10              | 50.5                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 11              | 49.5                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 12              | 48.7                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 13              | 52.0                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 14              | 51.3                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 15              | 51.1                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 16              | 49.9                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 17              | 50.2                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 18              | 51.5                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 19              | 51.7                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 20              | 50.8                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 21              | 49.9                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 22              | 51.4                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 23              | 52.5                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 24              | 48.8                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 25              | 51.5                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 26              | 50.9                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 27              | 51.8                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 28              | 52.7                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 29              | 49.2                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 30              | 51.7                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 31              | 51.1                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 32              | 52.7                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 33              | 51.9                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 34              | 49.1                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 35              | 50.0                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 36              | 50.0                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 37              | 49.4                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 38              | 50.5                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 39              | 49.4                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 40              | 48.5                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 41              | 50.3                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 42              | 49.4                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 43              | 53.2                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 44              | 48.9                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 45              | 50.3                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 46              | 49.0                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 47              | 49.3                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 48              | 51.9                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 49              | 51.7                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 50              | 52.4                  |
|             | WKT-VS3-4  | Normal   | 3                     | point 51              | 50.7                  |
|             |            |          |                       | AVERAGE               | 51                    |
|             | WKT-VS3-5  | Normal   | 3                     | point 1               | 53.3                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 2               | 52.9                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 3               | 50.9                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 4               | 51.9                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 5               | 52.7                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 6               | 52.1                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 7               | 50.1                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 8               | 51.8                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 9               | 52.3                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 10              | 53.2                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 11              | 50.2                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 12              | 50.3                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 13              | 50.8                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 14              | 49.9                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 15              | 50.1                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 16              | 50.6                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 17              | 52.5                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 18              | 51.5                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 19              | 52.2                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 20              | 51.4                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 21              | 51.7                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 22              | 51.4                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 23              | 51.9                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 24              | 51.5                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 25              | 50.6                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 26              | 50.9                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 27              | 50.1                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 28              | 51.0                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 29              | 50.5                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 30              | 51.7                  |
|             | WKT-VS3-5  | Normal   | 3                     | point 31              | 50.9                  |
|             |            |          |                       | AVERAGE               | 51                    |
|             | WKT-VS3-6A | Normal   | 3                     | point 1               | 52.4                  |
|             | WKT-VS3-6A | Normal   | 3                     | point 2               | 52.6                  |
|             | WKT-VS3-6A | Normal   | 3                     | point 3               | 55.3                  |
|             | WKT-VS3-6A | Normal   | 3                     | point 4               | 53.7                  |
|             | WKT-VS3-6A | Normal   | 3                     | point 5               | 55.3                  |
|             | WKT-VS3-6A | Normal   | 3                     | point 6               | 54.2                  |
|             | WKT-VS3-6A | Normal   | 3                     | point 7               | 52.4                  |
|             | WKT-VS3-6A | Normal   | 3                     | point 8               | 54.0                  |
|             | WKT-VS3-6A | Normal   | 3                     | point 9               | 53.5                  |
|             | WKT-VS3-6A | Normal   | 3                     | point 10              | 52.5                  |
|             | WKT-VS3-6A | Normal   | 3                     | point 11              | 50.8                  |
|             | WKT-VS3-6A | Normal   | 3                     | point 12              | 51.1                  |
|             |            |          |                       | AVERAGE               | 53                    |
|             | WKT-VS3-6B | Normal   | 3                     | point 1               | 54.7                  |
|             | WKT-VS3-6B | Normal   | 3                     | point 2               | 54.1                  |
|             | WKT-VS3-6B | Normal   | 3                     | point 3               | 55.0                  |
|             | WKT-VS3-6B | Normal   | 3                     | point 4               | 54.9                  |
|             | WKT-VS3-6B | Normal   | 3                     | point 5               | 53.4                  |
|             | WKT-VS3-6B | Normal   | 3                     | point 6               | 53.9                  |
|             | WKT-VS3-6B | Normal   | 3                     | point 7               | 53.3                  |
|             | WKT-VS3-6B | Normal   | 3                     | point 8               | 54.8                  |
|             | WKT-VS3-6B | Normal   | 3                     | point 9               | 54.4                  |
|             | WKT-VS3-6B | Normal   | 3                     | point 10              | 52.3                  |
|             | WKT-VS3-6B | Normal   | 3                     | point 11              | 52.2                  |

Appendix A3 -  
WEK - Noise Measurement Result - data

| Description | Louvre ID  | Scenario | Method <sup>(1)</sup> | Location/ Measurement | L <sub>Aeq</sub> (dB) |
|-------------|------------|----------|-----------------------|-----------------------|-----------------------|
|             | WKT-VS3-6B | Normal   | 3                     | point 12<br>AVERAGE   | 53.9<br>54            |
|             | WKT-VS3-7  | Normal   | 3                     | point 1               | 56.3                  |
|             | WKT-VS3-7  | Normal   | 3                     | point 2               | 55.0                  |
|             | WKT-VS3-7  | Normal   | 3                     | point 3               | 54.9                  |
|             | WKT-VS3-7  | Normal   | 3                     | point 4               | 52.5                  |
|             | WKT-VS3-7  | Normal   | 3                     | point 5               | 54.9                  |
|             | WKT-VS3-7  | Normal   | 3                     | point 6               | 54.5                  |
|             | WKT-VS3-7  | Normal   | 3                     | point 7               | 53.4                  |
|             | WKT-VS3-7  | Normal   | 3                     | point 8<br>AVERAGE    | 52.7<br>54            |
|             | WKT-VS3-8  | Normal   | 3                     | point 1               | 54.2                  |
|             | WKT-VS3-8  | Normal   | 3                     | point 2               | 52.4                  |
|             | WKT-VS3-8  | Normal   | 3                     | point 3               | 54.5                  |
|             | WKT-VS3-8  | Normal   | 3                     | point 4               | 51.9                  |
|             | WKT-VS3-8  | Normal   | 3                     | point 5               | 52.0                  |
|             | WKT-VS3-8  | Normal   | 3                     | point 6               | 52.9                  |
|             | WKT-VS3-8  | Normal   | 3                     | point 7               | 50.5                  |
|             | WKT-VS3-8  | Normal   | 3                     | point 8               | 52.3                  |
|             | WKT-VS3-8  | Normal   | 3                     | point 9               | 54.1                  |
|             | WKT-VS3-8  | Normal   | 3                     | point 10              | 54.7                  |
|             | WKT-VS3-8  | Normal   | 3                     | point 11              | 51.5                  |
|             | WKT-VS3-8  | Normal   | 3                     | point 12<br>AVERAGE   | 52.6<br>53            |
| VS 2 EAST   | WKT-VS2E-1 | Normal   | 3                     | point 1               | 54.8                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 2               | 55.5                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 3               | 54.5                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 4               | 55.5                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 5               | 54.9                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 6               | 52.2                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 7               | 53.5                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 8               | 52.2                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 9               | 52.6                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 10              | 51.6                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 11              | 52.2                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 12              | 51.6                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 13              | 51.7                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 14              | 50.7                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 15              | 50.9                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 16              | 50.6                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 17              | 51.3                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 18              | 51.3                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 19              | 51.1                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 20              | 53.3                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 21              | 51.9                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 22              | 52.3                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 23              | 52.5                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 24              | 52.2                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 25              | 50.6                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 26              | 51.4                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 27              | 51.2                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 28              | 52.7                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 29              | 51.3                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 30              | 52.5                  |
|             | WKT-VS2E-1 | Normal   | 3                     | point 31<br>AVERAGE   | 52.1<br>53            |
|             | WKT-VS2E-2 | Normal   | 3                     | point 1               | 53.7                  |
|             | WKT-VS2E-2 | Normal   | 3                     | point 2               | 54.8                  |
|             | WKT-VS2E-2 | Normal   | 3                     | point 3               | 54.6                  |
|             | WKT-VS2E-2 | Normal   | 3                     | point 4               | 53.0                  |
|             | WKT-VS2E-2 | Normal   | 3                     | point 5               | 53.3                  |
|             | WKT-VS2E-2 | Normal   | 3                     | point 6               | 53.2                  |
|             | WKT-VS2E-2 | Normal   | 3                     | point 7               | 51.6                  |
|             | WKT-VS2E-2 | Normal   | 3                     | point 8               | 51.6                  |
|             | WKT-VS2E-2 | Normal   | 3                     | point 9               | 51.1                  |
|             | WKT-VS2E-2 | Normal   | 3                     | point 10              | 51.3                  |
|             | WKT-VS2E-2 | Normal   | 3                     | point 11              | 51.6                  |
|             | WKT-VS2E-2 | Normal   | 3                     | point 12              | 51.4                  |
|             | WKT-VS2E-2 | Normal   | 3                     | point 13              | 50.4                  |
|             | WKT-VS2E-2 | Normal   | 3                     | point 14              | 52.1                  |
|             | WKT-VS2E-2 | Normal   | 3                     | point 15              | 51.1                  |
|             | WKT-VS2E-2 | Normal   | 3                     | point 16              | 50.9                  |
|             | WKT-VS2E-2 | Normal   | 3                     | point 17              | 51.5                  |
|             | WKT-VS2E-2 | Normal   | 3                     | point 18              | 52.0                  |
|             | WKT-VS2E-2 | Normal   | 3                     | point 19              | 52.4                  |
|             | WKT-VS2E-2 | Normal   | 3                     | point 20              | 52.1                  |
|             | WKT-VS2E-2 | Normal   | 3                     | point 21<br>AVERAGE   | 52.7<br>52            |
|             | WKT-VS2E-3 | Normal   | 3                     | point 1               | 52.6                  |
|             | WKT-VS2E-3 | Normal   | 3                     | point 2               | 53.4                  |
|             | WKT-VS2E-3 | Normal   | 3                     | point 3               | 53.3                  |
|             | WKT-VS2E-3 | Normal   | 3                     | point 4               | 53.7                  |
|             | WKT-VS2E-3 | Normal   | 3                     | point 5               | 53.5                  |
|             | WKT-VS2E-3 | Normal   | 3                     | point 6               | 51.7                  |
|             | WKT-VS2E-3 | Normal   | 3                     | point 7               | 53.8                  |
|             | WKT-VS2E-3 | Normal   | 3                     | point 8               | 51.3                  |
|             | WKT-VS2E-3 | Normal   | 3                     | point 9               | 53.8                  |
|             | WKT-VS2E-3 | Normal   | 3                     | point 10              | 52.3                  |
|             | WKT-VS2E-3 | Normal   | 3                     | point 11              | 53.3                  |
|             | WKT-VS2E-3 | Normal   | 3                     | point 12              | 52.1                  |
|             | WKT-VS2E-3 | Normal   | 3                     | point 13              | 53.7                  |
|             | WKT-VS2E-3 | Normal   | 3                     | point 14              | 53.0                  |
|             | WKT-VS2E-3 | Normal   | 3                     | point 15              | 52.6                  |
|             | WKT-VS2E-3 | Normal   | 3                     | point 16              | 52.5                  |
|             | WKT-VS2E-3 | Normal   | 3                     | point 17              | 53.1                  |
|             | WKT-VS2E-3 | Normal   | 3                     | point 18              | 53.7                  |
|             | WKT-VS2E-3 | Normal   | 3                     | point 19              | 52.7                  |
|             | WKT-VS2E-3 | Normal   | 3                     | point 20              | 51.4                  |
|             | WKT-VS2E-3 | Normal   | 3                     | point 21<br>AVERAGE   | 51.3<br>53            |
| VS 4        | WKT-VS4-1  | Normal   | 3                     | point 1               | 59.5                  |

Appendix A3 -  
WEK - Noise Measurement Result - data

| Description | Louvre ID | Scenario | Method <sup>(1)</sup> | Location/ Measurement | L <sub>Aeq</sub> (dB) |
|-------------|-----------|----------|-----------------------|-----------------------|-----------------------|
|             | WKT-VS4-1 | Normal   | 3                     | point 2               | 59.4                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 3               | 59.2                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 4               | 60.6                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 5               | 60.3                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 6               | 59.4                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 7               | 60.5                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 8               | 61.0                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 9               | 59.6                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 10              | 60.4                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 11              | 60.4                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 12              | 58.9                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 13              | 60.6                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 14              | 60.7                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 15              | 58.7                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 16              | 60.5                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 17              | 60.9                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 18              | 58.6                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 19              | 60.3                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 20              | 60.9                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 21              | 58.6                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 22              | 61.2                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 23              | 61.6                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 24              | 59.3                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 25              | 61.1                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 26              | 61.5                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 27              | 59.9                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 28              | 61.3                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 29              | 61.4                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 30              | 61.8                  |
|             | WKT-VS4-1 | Normal   | 3                     | point 31              | 61.6                  |
|             |           |          |                       | AVERAGE               | 60                    |
|             | WKT-VS4-3 | Normal   | 3                     | point 1               | 56.5                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 2               | 57.0                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 3               | 54.5                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 4               | 55.0                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 5               | 55.3                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 6               | 55.6                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 7               | 55.2                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 8               | 55.0                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 9               | 56.3                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 10              | 56.1                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 11              | 53.1                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 12              | 52.5                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 13              | 54.8                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 14              | 51.1                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 15              | 54.5                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 16              | 55.1                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 17              | 53.0                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 18              | 54.4                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 19              | 54.2                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 20              | 54.8                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 21              | 54.9                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 22              | 56.4                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 23              | 53.2                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 24              | 54.3                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 25              | 56.6                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 26              | 55.1                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 27              | 54.5                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 28              | 52.3                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 29              | 54.4                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 30              | 55.3                  |
|             | WKT-VS4-3 | Normal   | 3                     | point 31              | 55.9                  |
|             |           |          |                       | AVERAGE               | 55                    |
|             | WKT-VS4-4 | Normal   | 3                     | point 1               | 54.5                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 2               | 54.3                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 3               | 53.9                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 4               | 54.5                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 5               | 54.8                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 6               | 52.7                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 7               | 53.8                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 8               | 54.9                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 9               | 52.3                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 10              | 53.1                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 11              | 54.9                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 12              | 53.2                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 13              | 53.4                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 14              | 53.2                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 15              | 53.2                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 16              | 54.6                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 17              | 54.6                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 18              | 53.4                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 19              | 54.2                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 20              | 54.5                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 21              | 51.9                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 22              | 53.5                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 23              | 54.2                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 24              | 53.8                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 25              | 53.5                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 26              | 54.3                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 27              | 54.0                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 28              | 52.6                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 29              | 54.1                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 30              | 54.7                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 31              | 53.3                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 32              | 52.5                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 33              | 52.3                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 34              | 54.3                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 35              | 52.1                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 36              | 52.4                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 37              | 52.4                  |
|             | WKT-VS4-4 | Normal   | 3                     | point 38              | 52.2                  |

Appendix A3 -  
WEK - Noise Measurement Result - data

| Description | Louvre ID  | Scenario  | Method <sup>(1)</sup> | Location/ Measurement | L <sub>Aeq</sub> (dB) |      |
|-------------|------------|-----------|-----------------------|-----------------------|-----------------------|------|
|             | WKT-VS4-4  | Normal    | 3                     | point 39              | 54.1                  |      |
|             | WKT-VS4-4  | Normal    | 3                     | point 40              | 54.5                  |      |
|             | WKT-VS4-4  | Normal    | 3                     | point 41              | 53.2                  |      |
|             | WKT-VS4-4  | Normal    | 3                     | point 42              | 51.4                  |      |
|             | WKT-VS4-4  | Normal    | 3                     | point 43              | 52.4                  |      |
|             | WKT-VS4-4  | Normal    | 3                     | point 44              | 53.0                  |      |
|             | WKT-VS4-4  | Normal    | 3                     | point 45              | 53.6                  |      |
|             | WKT-VS4-4  | Normal    | 3                     | point 46              | 52.8                  |      |
|             |            |           |                       | AVERAGE               | 54                    |      |
| VS 5        | WKT-VS5-1  | Normal    | 3                     | point 1               | 51.9                  |      |
|             | WKT-VS5-1  | Normal    | 3                     | point 2               | 52.6                  |      |
|             | WKT-VS5-1  | Normal    | 3                     | point 3               | 51.5                  |      |
|             | WKT-VS5-1  | Normal    | 3                     | point 4               | 51.6                  |      |
|             | WKT-VS5-1  | Normal    | 3                     | point 5               | 53.9                  |      |
|             | WKT-VS5-1  | Normal    | 3                     | point 6               | 53.1                  |      |
|             | WKT-VS5-1  | Normal    | 3                     | point 7               | 52.0                  |      |
|             | WKT-VS5-1  | Normal    | 3                     | point 8               | 53.4                  |      |
|             | WKT-VS5-1  | Normal    | 3                     | point 9               | 52.4                  |      |
|             | WKT-VS5-1  | Normal    | 3                     | point 10              | 53.6                  |      |
|             | WKT-VS5-1  | Normal    | 3                     | point 11              | 53.1                  |      |
|             | WKT-VS5-1  | Normal    | 3                     | point 12              | 55.5                  |      |
|             | WKT-VS5-1  | Normal    | 3                     | point 13              | 56.1                  |      |
|             | WKT-VS5-1  | Normal    | 3                     | point 14              | 53.3                  |      |
|             | WKT-VS5-1  | Normal    | 3                     | point 15              | 53.1                  |      |
|             | WKT-VS5-1  | Normal    | 3                     | point 16              | 52.8                  |      |
|             | WKT-VS5-1  | Normal    | 3                     | point 17              | 53.1                  |      |
|             |            |           |                       |                       | AVERAGE               | 53   |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 1               | 65.3 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 2               | 66.5 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 3               | 66.4 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 4               | 66.4 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 5               | 68.1 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 6               | 68.6 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 7               | 69.5 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 8               | 70.1 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 9               | 69.5 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 10              | 68.5 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 11              | 64.7 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 12              | 64.5 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 13              | 65.8 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 14              | 69.0 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 15              | 69.6 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 16              | 68.7 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 17              | 69.4 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 18              | 68.2 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 19              | 69.0 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 20              | 68.2 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 21              | 68.0 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 22              | 65.5 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 23              | 65.2 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 24              | 65.5 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 25              | 69.2 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 26              | 70.1 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 27              | 70.0 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 28              | 69.9 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 29              | 70.7 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 30              | 70.5 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 31              | 72.0 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 32              | 73.0 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 33              | 67.9 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 34              | 71.3 |
|             |            | WKT-VS5-2 | Normal                | 3                     | point 35              | 67.7 |
|             | WKT-VS5-2  | Normal    | 3                     | point 36              | 69.7                  |      |
|             | WKT-VS5-2  | Normal    | 3                     | point 37              | 70.3                  |      |
|             | WKT-VS5-2  | Normal    | 3                     | point 38              | 70.4                  |      |
|             | WKT-VS5-2  | Normal    | 3                     | point 39              | 70.3                  |      |
|             | WKT-VS5-2  | Normal    | 3                     | point 40              | 71.0                  |      |
|             | WKT-VS5-2  | Normal    | 3                     | point 41              | 70.5                  |      |
|             | WKT-VS5-2  | Normal    | 3                     | point 42              | 71.7                  |      |
|             | WKT-VS5-2  | Normal    | 3                     | point 43              | 72.5                  |      |
|             | WKT-VS5-2  | Normal    | 3                     | point 44              | 69.9                  |      |
|             |            |           |                       | AVERAGE               | 69                    |      |
|             | WKT-VS5-4  | Normal    | 3                     | point 1               | 58.9                  |      |
|             | WKT-VS5-4  | Normal    | 3                     | point 2               | 61.0                  |      |
|             | WKT-VS5-4  | Normal    | 3                     | point 3               | 58.8                  |      |
|             | WKT-VS5-4  | Normal    | 3                     | point 4               | 57.5                  |      |
|             | WKT-VS5-4  | Normal    | 3                     | point 5               | 57.0                  |      |
|             | WKT-VS5-4  | Normal    | 3                     | point 6               | 56.5                  |      |
|             | WKT-VS5-4  | Normal    | 3                     | point 7               | 59.8                  |      |
|             | WKT-VS5-4  | Normal    | 3                     | point 8               | 51.7                  |      |
|             | WKT-VS5-4  | Normal    | 3                     | point 9               | 60.3                  |      |
|             | WKT-VS5-4  | Normal    | 3                     | point 10              | 59.8                  |      |
|             | WKT-VS5-4  | Normal    | 3                     | point 11              | 58.9                  |      |
|             | WKT-VS5-4  | Normal    | 3                     | point 12              | 57.5                  |      |
|             | WKT-VS5-4  | Normal    | 3                     | point 13              | 64.0                  |      |
|             | WKT-VS5-4  | Normal    | 3                     | point 14              | 65.2                  |      |
|             | WKT-VS5-4  | Normal    | 3                     | point 15              | 61.1                  |      |
|             | WKT-VS5-4  | Normal    | 3                     | point 16              | 59.7                  |      |
|             | WKT-VS5-4  | Normal    | 3                     | point 17              | 63.1                  |      |
|             | WKT-VS5-4  | Normal    | 3                     | point 18              | 65.2                  |      |
|             | WKT-VS5-4  | Normal    | 3                     | point 19              | 60.3                  |      |
|             | WKT-VS5-4  | Normal    | 3                     | point 20              | 59.3                  |      |
|             |            |           |                       | AVERAGE               | 61                    |      |
| VS 2 WEST   | WKT-VS2W-1 | Normal    | 3                     | point 1               | 58.9                  |      |
|             | WKT-VS2W-1 | Normal    | 3                     | point 2               | 59.5                  |      |
|             | WKT-VS2W-1 | Normal    | 3                     | point 3               | 58.7                  |      |
|             | WKT-VS2W-1 | Normal    | 3                     | point 4               | 59.6                  |      |
|             | WKT-VS2W-1 | Normal    | 3                     | point 5               | 58.9                  |      |
|             | WKT-VS2W-1 | Normal    | 3                     | point 6               | 59.3                  |      |
|             | WKT-VS2W-1 | Normal    | 3                     | point 7               | 59.2                  |      |
|             |            |           |                       | point 8               | 58.8                  |      |

Appendix A3 -  
WEK - Noise Measurement Result - data

| Description | Louvre ID   | Scenario | Method <sup>(1)</sup> | Location/ Measurement | L <sub>Aeq</sub> (dB) |
|-------------|-------------|----------|-----------------------|-----------------------|-----------------------|
|             | WKT-VS2W-1  | Normal   | 3                     | point 9               | 60.1                  |
|             | WKT-VS2W-1  | Normal   | 3                     | point 10              | 59.5                  |
|             | WKT-VS2W-1  | Normal   | 3                     | point 11              | 55.3                  |
|             | WKT-VS2W-1  | Normal   | 3                     | point 12              | 56.0                  |
|             | WKT-VS2W-1  | Normal   | 3                     | point 13              | 56.3                  |
|             | WKT-VS2W-1  | Normal   | 3                     | point 14              | 56.9                  |
|             | WKT-VS2W-1  | Normal   | 3                     | point 15              | 56.2                  |
|             | WKT-VS2W-1  | Normal   | 3                     | point 16              | 56.9                  |
|             | WKT-VS2W-1  | Normal   | 3                     | point 17              | 56.5                  |
|             | WKT-VS2W-1  | Normal   | 3                     | point 18              | 58.5                  |
|             | WKT-VS2W-1  | Normal   | 3                     | point 19              | 58.0                  |
|             |             |          |                       | AVERAGE               | 58                    |
|             | WKT-VS2W-2A | Normal   | 3                     | point 1               | 56.2                  |
|             | WKT-VS2W-2A | Normal   | 3                     | point 2               | 56.2                  |
|             | WKT-VS2W-2A | Normal   | 3                     | point 3               | 55.3                  |
|             | WKT-VS2W-2A | Normal   | 3                     | point 4               | 55.6                  |
|             | WKT-VS2W-2A | Normal   | 3                     | point 5               | 56.0                  |
|             | WKT-VS2W-2A | Normal   | 3                     | point 6               | 56.6                  |
|             | WKT-VS2W-2A | Normal   | 3                     | point 7               | 56.0                  |
|             | WKT-VS2W-2A | Normal   | 3                     | point 8               | 55.7                  |
|             | WKT-VS2W-2A | Normal   | 3                     | point 9               | 54.8                  |
|             | WKT-VS2W-2A | Normal   | 3                     | point 10              | 54.3                  |
|             | WKT-VS2W-2A | Normal   | 3                     | point 11              | 54.8                  |
|             | WKT-VS2W-2A | Normal   | 3                     | point 12              | 55.0                  |
|             | WKT-VS2W-2A | Normal   | 3                     | point 13              | 56.2                  |
|             | WKT-VS2W-2A | Normal   | 3                     | point 14              | 55.3                  |
|             | WKT-VS2W-2A | Normal   | 3                     | point 15              | 53.8                  |
|             | WKT-VS2W-2A | Normal   | 3                     | point 16              | 53.9                  |
|             |             |          |                       | AVERAGE               | 55                    |
|             | WKT-VS2W-2B | Normal   | 3                     | point 1               | 57.5                  |
|             | WKT-VS2W-2B | Normal   | 3                     | point 2               | 57.1                  |
|             | WKT-VS2W-2B | Normal   | 3                     | point 3               | 56.4                  |
|             | WKT-VS2W-2B | Normal   | 3                     | point 4               | 56.1                  |
|             | WKT-VS2W-2B | Normal   | 3                     | point 5               | 57.1                  |
|             | WKT-VS2W-2B | Normal   | 3                     | point 6               | 56.2                  |
|             | WKT-VS2W-2B | Normal   | 3                     | point 7               | 59.8                  |
|             | WKT-VS2W-2B | Normal   | 3                     | point 8               | 58.2                  |
|             | WKT-VS2W-2B | Normal   | 3                     | point 9               | 55.9                  |
|             | WKT-VS2W-2B | Normal   | 3                     | point 10              | 57.6                  |
|             | WKT-VS2W-2B | Normal   | 3                     | point 11              | 55.8                  |
|             | WKT-VS2W-2B | Normal   | 3                     | point 12              | 55.9                  |
|             | WKT-VS2W-2B | Normal   | 3                     | point 13              | 56.3                  |
|             | WKT-VS2W-2B | Normal   | 3                     | point 14              | 56.3                  |
|             | WKT-VS2W-2B | Normal   | 3                     | point 15              | 55.3                  |
|             | WKT-VS2W-2B | Normal   | 3                     | point 16              | 55.8                  |
|             |             |          |                       | AVERAGE               | 57                    |
|             | WKT-VS2W-2C | Normal   | 3                     | point 1               | 56.8                  |
|             | WKT-VS2W-2C | Normal   | 3                     | point 2               | 57.3                  |
|             | WKT-VS2W-2C | Normal   | 3                     | point 3               | 57.9                  |
|             | WKT-VS2W-2C | Normal   | 3                     | point 4               | 58.6                  |
|             | WKT-VS2W-2C | Normal   | 3                     | point 5               | 55.9                  |
|             | WKT-VS2W-2C | Normal   | 3                     | point 6               | 57.0                  |
|             | WKT-VS2W-2C | Normal   | 3                     | point 7               | 56.8                  |
|             | WKT-VS2W-2C | Normal   | 3                     | point 8               | 57.1                  |
|             | WKT-VS2W-2C | Normal   | 3                     | point 9               | 57.5                  |
|             | WKT-VS2W-2C | Normal   | 3                     | point 10              | 56.9                  |
|             | WKT-VS2W-2C | Normal   | 3                     | point 11              | 56.9                  |
|             | WKT-VS2W-2C | Normal   | 3                     | point 12              | 57.0                  |
|             |             |          |                       | AVERAGE               | 57                    |
|             | WKT-VS2W-3  | Normal   | 3                     | point 1               | 57.1                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 2               | 56.9                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 3               | 57.0                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 4               | 57.4                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 5               | 58.7                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 6               | 58.4                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 7               | 58.9                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 8               | 56.9                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 9               | 58.1                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 10              | 58.0                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 11              | 55.8                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 12              | 58.2                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 13              | 57.1                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 14              | 57.2                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 15              | 58.6                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 16              | 61.6                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 17              | 60.9                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 18              | 60.4                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 19              | 60.5                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 20              | 61.8                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 21              | 62.4                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 22              | 60.6                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 23              | 59.5                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 24              | 60.7                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 25              | 61.3                  |
|             | WKT-VS2W-3  | Normal   | 3                     | point 26              | 60.3                  |
|             |             |          |                       | AVERAGE               | 59                    |
| VS 1        | WKT-VS1-1   | Normal   | 3                     | point 1               | 48.3                  |
|             | WKT-VS1-1   | Normal   | 3                     | point 2               | 48.3                  |
|             | WKT-VS1-1   | Normal   | 3                     | point 3               | 51.2                  |
|             | WKT-VS1-1   | Normal   | 3                     | point 4               | 49.3                  |
|             | WKT-VS1-1   | Normal   | 3                     | point 5               | 48.5                  |
|             | WKT-VS1-1   | Normal   | 3                     | point 6               | 49.4                  |
|             | WKT-VS1-1   | Normal   | 3                     | point 7               | 49.4                  |
|             | WKT-VS1-1   | Normal   | 3                     | point 8               | 49.5                  |
|             | WKT-VS1-1   | Normal   | 3                     | point 9               | 50.0                  |
|             | WKT-VS1-1   | Normal   | 3                     | point 10              | 50.5                  |
|             | WKT-VS1-1   | Normal   | 3                     | point 11              | 50.0                  |
|             | WKT-VS1-1   | Normal   | 3                     | point 12              | 50.5                  |
|             | WKT-VS1-1   | Normal   | 3                     | point 13              | 48.9                  |
|             | WKT-VS1-1   | Normal   | 3                     | point 14              | 49.3                  |
|             | WKT-VS1-1   | Normal   | 3                     | point 15              | 48.9                  |

Appendix A3 -  
WEK - Noise Measurement Result - data

| Description | Louvre ID | Scenario | Method <sup>(1)</sup> | Location/ Measurement | L <sub>Aeq</sub> (dB) |
|-------------|-----------|----------|-----------------------|-----------------------|-----------------------|
|             | WKT-VS1-1 | Normal   | 3                     | point 16              | 49.3                  |
|             | WKT-VS1-1 | Normal   | 3                     | point 17              | 50.9                  |
|             | WKT-VS1-1 | Normal   | 3                     | point 18              | 50.1                  |
|             | WKT-VS1-1 | Normal   | 3                     | point 19              | 50.5                  |
|             | WKT-VS1-1 | Normal   | 3                     | point 20              | 50.2                  |
|             |           |          |                       | AVERAGE               | 50                    |
|             | WKT-VS1-2 | Normal   | 3                     | point 1               | 49.4                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 2               | 50.3                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 3               | 50.5                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 4               | 50.2                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 5               | 49.4                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 6               | 49.3                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 7               | 49.0                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 8               | 49.1                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 9               | 48.7                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 10              | 49.8                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 11              | 49.4                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 12              | 48.9                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 13              | 49.8                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 14              | 50.2                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 15              | 50.2                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 16              | 50.4                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 17              | 50.8                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 18              | 50.7                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 19              | 50.7                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 20              | 50.3                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 21              | 49.8                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 22              | 50.1                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 23              | 50.3                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 24              | 50.7                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 25              | 50.8                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 26              | 51.0                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 27              | 51.0                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 28              | 50.1                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 29              | 49.7                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 30              | 50.2                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 31              | 50.8                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 32              | 50.9                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 33              | 49.8                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 34              | 49.9                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 35              | 49.2                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 36              | 49.6                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 37              | 49.5                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 38              | 49.8                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 39              | 49.8                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 40              | 49.1                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 41              | 50.0                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 42              | 51.0                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 43              | 49.9                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 44              | 50.1                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 45              | 49.1                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 46              | 48.6                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 47              | 48.3                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 48              | 49.9                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 49              | 48.7                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 50              | 49.2                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 51              | 49.8                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 52              | 49.7                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 53              | 48.4                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 54              | 49.9                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 55              | 50.6                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 56              | 50.0                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 57              | 49.7                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 58              | 48.8                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 59              | 48.9                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 60              | 50.4                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 61              | 49.7                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 62              | 48.2                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 63              | 48.7                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 64              | 47.8                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 65              | 47.6                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 66              | 48.9                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 67              | 49.4                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 68              | 48.2                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 69              | 48.9                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 70              | 48.4                  |
|             | WKT-VS1-2 | Normal   | 3                     | point 71              | 48.5                  |
|             |           |          |                       | AVERAGE               | 50                    |
|             | WKT-VS1-3 | Normal   | 3                     | point 1               | 50.6                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 2               | 52.2                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 3               | 51.3                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 4               | 52.1                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 5               | 49.3                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 6               | 53.2                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 7               | 53.2                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 8               | 52.5                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 9               | 53.3                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 10              | 51.0                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 11              | 50.0                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 12              | 49.9                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 13              | 51.7                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 14              | 51.1                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 15              | 53.8                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 16              | 54.1                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 17              | 52.3                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 18              | 50.7                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 19              | 50.0                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 20              | 52.4                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 21              | 52.9                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 22              | 54.1                  |
|             | WKT-VS1-3 | Normal   | 3                     | point 23              | 55.3                  |

Appendix A3 -  
WEK - Noise Measurement Result - data

| Description | Louvre ID  | Scenario | Method <sup>(1)</sup> | Location/ Measurement | L <sub>Aeq</sub> (dB) |
|-------------|------------|----------|-----------------------|-----------------------|-----------------------|
|             | WKT-VS1-3  | Normal   | 3                     | point 24              | 52.6                  |
|             | WKT-VS1-3  | Normal   | 3                     | point 25              | 53.0                  |
|             | WKT-VS1-3  | Normal   | 3                     | point 26              | 54.1                  |
|             | WKT-VS1-3  | Normal   | 3                     | point 27              | 53.9                  |
|             | WKT-VS1-3  | Normal   | 3                     | point 28              | 54.3                  |
|             | WKT-VS1-3  | Normal   | 3                     | point 29              | 52.3                  |
|             | WKT-VS1-3  | Normal   | 3                     | point 30              | 52.6                  |
|             | WKT-VS1-3  | Normal   | 3                     | point 31              | 55.5                  |
|             | WKT-VS1-3  | Normal   | 3                     | point 32              | 55.3                  |
|             | WKT-VS1-3  | Normal   | 3                     | point 33              | 53.8                  |
|             | WKT-VS1-3  | Normal   | 3                     | point 34              | 55.2                  |
|             | WKT-VS1-3  | Normal   | 3                     | point 35              | 53.8                  |
|             | WKT-VS1-3  | Normal   | 3                     | point 36              | 54.6                  |
|             | WKT-VS1-3  | Normal   | 3                     | point 37              | 54.8                  |
|             | WKT-VS1-3  | Normal   | 3                     | point 38              | 51.7                  |
|             |            |          |                       | AVERAGE               | 53                    |
|             | WKT-VS1-4  | Normal   | 3                     | point 1               | 57.1                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 2               | 56.8                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 3               | 56.9                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 4               | 52.9                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 5               | 54.6                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 6               | 53.2                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 7               | 53.3                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 8               | 53.1                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 9               | 53.4                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 10              | 53.2                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 11              | 52.2                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 12              | 50.6                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 13              | 58.1                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 14              | 57.1                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 15              | 51.6                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 16              | 52.0                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 17              | 54.2                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 18              | 54.6                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 19              | 51.8                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 20              | 53.2                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 21              | 53.8                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 22              | 53.1                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 23              | 53.3                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 24              | 52.7                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 25              | 53.2                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 26              | 53.8                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 27              | 53.6                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 28              | 53.6                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 29              | 53.9                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 30              | 55.3                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 31              | 52.1                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 32              | 52.2                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 33              | 53.6                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 34              | 52.4                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 35              | 52.3                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 36              | 52.4                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 37              | 51.6                  |
|             | WKT-VS1-4  | Normal   | 3                     | point 38              | 53.0                  |
|             |            |          |                       | AVERAGE               | 54                    |
| VS 6        | WKT-VS6-1  | Normal   | 3                     | point 1               | 57.0                  |
|             | WKT-VS6-1  | Normal   | 3                     | point 2               | 55.5                  |
|             | WKT-VS6-1  | Normal   | 3                     | point 3               | 56.6                  |
|             | WKT-VS6-1  | Normal   | 3                     | point 4               | 58.1                  |
|             | WKT-VS6-1  | Normal   | 3                     | point 5               | 57.6                  |
|             | WKT-VS6-1  | Normal   | 3                     | point 6               | 58.5                  |
|             | WKT-VS6-1  | Normal   | 3                     | point 7               | 55.6                  |
|             | WKT-VS6-1  | Normal   | 3                     | point 8               | 54.7                  |
|             | WKT-VS6-1  | Normal   | 3                     | point 9               | 54.0                  |
|             | WKT-VS6-1  | Normal   | 3                     | point 10              | 54.8                  |
|             | WKT-VS6-1  | Normal   | 3                     | point 11              | 53.8                  |
|             | WKT-VS6-1  | Normal   | 3                     | point 12              | 55.4                  |
|             | WKT-VS6-1  | Normal   | 3                     | point 13              | 56.2                  |
|             | WKT-VS6-1  | Normal   | 3                     | point 14              | 54.6                  |
|             | WKT-VS6-1  | Normal   | 3                     | point 15              | 54.2                  |
|             | WKT-VS6-1  | Normal   | 3                     | point 16              | 55.2                  |
|             |            |          |                       | AVERAGE               | 56                    |
|             | WKT-VS6-2A | Normal   | 3                     | point 1               | 47.9                  |
|             | WKT-VS6-2A | Normal   | 3                     | point 2               | 48.6                  |
|             | WKT-VS6-2A | Normal   | 3                     | point 3               | 49.9                  |
|             | WKT-VS6-2A | Normal   | 3                     | point 4               | 48.3                  |
|             | WKT-VS6-2A | Normal   | 3                     | point 5               | 49.4                  |
|             | WKT-VS6-2A | Normal   | 3                     | point 6               | 49.4                  |
|             | WKT-VS6-2A | Normal   | 3                     | point 7               | 48.3                  |
|             | WKT-VS6-2A | Normal   | 3                     | point 8               | 48.5                  |
|             | WKT-VS6-2A | Normal   | 3                     | point 9               | 48.5                  |
|             | WKT-VS6-2A | Normal   | 3                     | point 10              | 49.1                  |
|             | WKT-VS6-2A | Normal   | 3                     | point 11              | 48.9                  |
|             | WKT-VS6-2A | Normal   | 3                     | point 12              | 48.1                  |
|             |            |          |                       | AVERAGE               | 49                    |
|             | WKT-VS6-2B | Normal   | 3                     | point 1               | 49.0                  |
|             | WKT-VS6-2B | Normal   | 3                     | point 2               | 49.4                  |
|             | WKT-VS6-2B | Normal   | 3                     | point 3               | 47.8                  |
|             | WKT-VS6-2B | Normal   | 3                     | point 4               | 48.2                  |
|             | WKT-VS6-2B | Normal   | 3                     | point 5               | 49.3                  |
|             | WKT-VS6-2B | Normal   | 3                     | point 6               | 49.9                  |
|             | WKT-VS6-2B | Normal   | 3                     | point 7               | 49.1                  |
|             | WKT-VS6-2B | Normal   | 3                     | point 8               | 48.6                  |
|             | WKT-VS6-2B | Normal   | 3                     | point 9               | 48.3                  |
|             | WKT-VS6-2B | Normal   | 3                     | point 10              | 48.3                  |
|             | WKT-VS6-2B | Normal   | 3                     | point 11              | 49.0                  |
|             | WKT-VS6-2B | Normal   | 3                     | point 12              | 48.0                  |
|             |            |          |                       | AVERAGE               | 49                    |
|             | WKT-VS6-3A | Normal   | 3                     | point 1               | 48.6                  |
|             | WKT-VS6-3A | Normal   | 3                     | point 2               | 48.0                  |
|             | WKT-VS6-3A | Normal   | 3                     | point 3               | 49.1                  |

Appendix A3 -  
WEK - Noise Measurement Result - data

| Description | Louvre ID  | Scenario | Method <sup>(1)</sup> | Location/ Measurement | L <sub>Aeq</sub> (dB) |
|-------------|------------|----------|-----------------------|-----------------------|-----------------------|
|             | WKT-VS6-3A | Normal   | 3                     | point 4               | 48.1                  |
|             | WKT-VS6-3A | Normal   | 3                     | point 5               | 47.8                  |
|             | WKT-VS6-3A | Normal   | 3                     | point 6               | 48.7                  |
|             | WKT-VS6-3A | Normal   | 3                     | point 7               | 49.5                  |
|             | WKT-VS6-3A | Normal   | 3                     | point 8               | 49.1                  |
|             | WKT-VS6-3A | Normal   | 3                     | point 9               | 48.6                  |
|             | WKT-VS6-3A | Normal   | 3                     | point 10              | 47.8                  |
|             | WKT-VS6-3A | Normal   | 3                     | point 11              | 47.8                  |
|             | WKT-VS6-3A | Normal   | 3                     | point 12              | 48.0                  |
|             |            |          |                       | AVERAGE               | 48                    |
|             | WKT-VS6-3B | Normal   | 3                     | point 1               | 53.3                  |
|             | WKT-VS6-3B | Normal   | 3                     | point 2               | 53.2                  |
|             | WKT-VS6-3B | Normal   | 3                     | point 3               | 52.2                  |
|             | WKT-VS6-3B | Normal   | 3                     | point 4               | 52.7                  |
|             | WKT-VS6-3B | Normal   | 3                     | point 5               | 51.5                  |
|             | WKT-VS6-3B | Normal   | 3                     | point 6               | 52.2                  |
|             | WKT-VS6-3B | Normal   | 3                     | point 7               | 51.9                  |
|             | WKT-VS6-3B | Normal   | 3                     | point 8               | 52.8                  |
|             | WKT-VS6-3B | Normal   | 3                     | point 9               | 52.0                  |
|             | WKT-VS6-3B | Normal   | 3                     | point 10              | 52.3                  |
|             | WKT-VS6-3B | Normal   | 3                     | point 11              | 51.3                  |
|             | WKT-VS6-3B | Normal   | 3                     | point 12              | 51.7                  |
|             |            |          |                       | AVERAGE               | 52                    |
|             | WKT-VS6-4  | Normal   | 3                     | point 1               | 62.1                  |
|             | WKT-VS6-4  | Normal   | 3                     | point 2               | 65.1                  |
|             | WKT-VS6-4  | Normal   | 3                     | point 3               | 61.3                  |
|             | WKT-VS6-4  | Normal   | 3                     | point 4               | 60.0                  |
|             | WKT-VS6-4  | Normal   | 3                     | point 5               | 57.3                  |
|             | WKT-VS6-4  | Normal   | 3                     | point 6               | 63.0                  |
|             | WKT-VS6-4  | Normal   | 3                     | point 7               | 56.4                  |
|             | WKT-VS6-4  | Normal   | 3                     | point 8               | 57.4                  |
|             | WKT-VS6-4  | Normal   | 3                     | point 9               | 59.6                  |
|             | WKT-VS6-4  | Normal   | 3                     | point 10              | 63.3                  |
|             | WKT-VS6-4  | Normal   | 3                     | point 11              | 54.0                  |
|             | WKT-VS6-4  | Normal   | 3                     | point 12              | 52.8                  |
|             | WKT-VS6-4  | Normal   | 3                     | point 13              | 54.5                  |
|             | WKT-VS6-4  | Normal   | 3                     | point 14              | 54.8                  |
|             | WKT-VS6-4  | Normal   | 3                     | point 15              | 51.8                  |
|             | WKT-VS6-4  | Normal   | 3                     | point 16              | 51.4                  |
|             | WKT-VS6-4  | Normal   | 3                     | point 17              | 57.8                  |
|             | WKT-VS6-4  | Normal   | 3                     | point 18              | 52.4                  |
|             |            |          |                       | AVERAGE               | 59                    |
|             | WKT-VS6-5A | Normal   | 3                     | point 1               | 58.3                  |
|             | WKT-VS6-5A | Normal   | 3                     | point 2               | 61.0                  |
|             | WKT-VS6-5A | Normal   | 3                     | point 3               | 56.4                  |
|             | WKT-VS6-5A | Normal   | 3                     | point 4               | 60.8                  |
|             | WKT-VS6-5A | Normal   | 3                     | point 5               | 57.8                  |
|             | WKT-VS6-5A | Normal   | 3                     | point 6               | 63.1                  |
|             | WKT-VS6-5A | Normal   | 3                     | point 7               | 60.4                  |
|             | WKT-VS6-5A | Normal   | 3                     | point 8               | 63.7                  |
|             | WKT-VS6-5A | Normal   | 3                     | point 9               | 59.8                  |
|             | WKT-VS6-5A | Normal   | 3                     | point 10              | 60.8                  |
|             | WKT-VS6-5A | Normal   | 3                     | point 11              | 61.8                  |
|             | WKT-VS6-5A | Normal   | 3                     | point 12              | 58.6                  |
|             |            |          |                       | AVERAGE               | 61                    |
|             | WKT-VS6-5B | Normal   | 3                     | point 1               | 61.4                  |
|             | WKT-VS6-5B | Normal   | 3                     | point 2               | 52.5                  |
|             | WKT-VS6-5B | Normal   | 3                     | point 3               | 62.5                  |
|             | WKT-VS6-5B | Normal   | 3                     | point 4               | 62.0                  |
|             | WKT-VS6-5B | Normal   | 3                     | point 5               | 56.9                  |
|             | WKT-VS6-5B | Normal   | 3                     | point 6               | 61.5                  |
|             | WKT-VS6-5B | Normal   | 3                     | point 7               | 52.6                  |
|             | WKT-VS6-5B | Normal   | 3                     | point 8               | 53.9                  |
|             | WKT-VS6-5B | Normal   | 3                     | point 9               | 54.5                  |
|             | WKT-VS6-5B | Normal   | 3                     | point 10              | 54.2                  |
|             | WKT-VS6-5B | Normal   | 3                     | point 11              | 63.4                  |
|             | WKT-VS6-5B | Normal   | 3                     | point 12              | 61.6                  |
|             | WKT-VS6-5B | Normal   | 3                     | point 13              | 60.4                  |
|             | WKT-VS6-5B | Normal   | 3                     | point 14              | 62.3                  |
|             | WKT-VS6-5B | Normal   | 3                     | point 15              | 58.7                  |
|             | WKT-VS6-5B | Normal   | 3                     | point 16              | 56.6                  |
|             |            |          |                       | AVERAGE               | 60                    |
|             | WKT-VS6-6A | Normal   | 3                     | point 1               | 59.6                  |
|             | WKT-VS6-6A | Normal   | 3                     | point 2               | 54.5                  |
|             | WKT-VS6-6A | Normal   | 3                     | point 3               | 54.9                  |
|             | WKT-VS6-6A | Normal   | 3                     | point 4               | 54.8                  |
|             |            |          |                       | AVERAGE               | 57                    |
|             | WKT-VS6-6B | Normal   | 3                     | point 1               | 64.9                  |
|             | WKT-VS6-6B | Normal   | 3                     | point 2               | 58.9                  |
|             | WKT-VS6-6B | Normal   | 3                     | point 3               | 53.8                  |
|             | WKT-VS6-6B | Normal   | 3                     | point 4               | 53.9                  |
|             |            |          |                       | AVERAGE               | 60                    |
|             | WKT-VS6-7A | Normal   | 3                     | point 1               | 50.0                  |
|             | WKT-VS6-7A | Normal   | 3                     | point 2               | 51.2                  |
|             | WKT-VS6-7A | Normal   | 3                     | point 3               | 52.4                  |
|             | WKT-VS6-7A | Normal   | 3                     | point 4               | 49.7                  |
|             | WKT-VS6-7A | Normal   | 3                     | point 5               | 47.8                  |
|             | WKT-VS6-7A | Normal   | 3                     | point 6               | 51.6                  |
|             | WKT-VS6-7A | Normal   | 3                     | point 7               | 51.6                  |
|             | WKT-VS6-7A | Normal   | 3                     | point 8               | 51.5                  |
|             | WKT-VS6-7A | Normal   | 3                     | point 9               | 50.1                  |
|             | WKT-VS6-7A | Normal   | 3                     | point 10              | 50.9                  |
|             | WKT-VS6-7A | Normal   | 3                     | point 11              | 49.7                  |
|             | WKT-VS6-7A | Normal   | 3                     | point 12              | 50.5                  |
|             | WKT-VS6-7A | Normal   | 3                     | point 13              | 49.8                  |
|             | WKT-VS6-7A | Normal   | 3                     | point 14              | 51.4                  |
|             | WKT-VS6-7A | Normal   | 3                     | point 15              | 50.2                  |
|             | WKT-VS6-7A | Normal   | 3                     | point 16              | 50.9                  |
|             | WKT-VS6-7A | Normal   | 3                     | point 17              | 49.5                  |
|             | WKT-VS6-7A | Normal   | 3                     | point 18              | 52.4                  |
|             | WKT-VS6-7A | Normal   | 3                     | point 19              | 52.5                  |

Appendix A3 -  
WEK - Noise Measurement Result - data

| Description | Louvre ID       | Scenario | Method <sup>(1)</sup> | Location/ Measurement | L <sub>Aeq</sub> (dB) |
|-------------|-----------------|----------|-----------------------|-----------------------|-----------------------|
|             | WKT-VS6-7A      | Normal   | 3                     | point 20              | 50.0                  |
|             | WKT-VS6-7A      | Normal   | 3                     | point 21              | 48.9                  |
|             | WKT-VS6-7A      | Normal   | 3                     | point 22              | 50.3                  |
|             | WKT-VS6-7A      | Normal   | 3                     | point 23              | 49.7                  |
|             | WKT-VS6-7A      | Normal   | 3                     | point 24              | 50.0                  |
|             | WKT-VS6-7A      | Normal   | 3                     | point 25              | 49.5                  |
|             | WKT-VS6-7A      | Normal   | 3                     | point 26              | 49.0                  |
|             | WKT-VS6-7A      | Normal   | 3                     | point 27              | 50.3                  |
|             | WKT-VS6-7A      | Normal   | 3                     | point 28              | 49.5                  |
|             | WKT-VS6-7A      | Normal   | 3                     | point 29              | 50.0                  |
|             | WKT-VS6-7A      | Normal   | 3                     | point 30              | 49.7                  |
|             | WKT-VS6-7A      | Normal   | 3                     | point 31              | 49.8                  |
|             | WKT-VS6-7A      | Normal   | 3                     | point 32              | 49.9                  |
|             |                 |          |                       | AVERAGE               | 50                    |
|             | WKT-VS6-7B      | Normal   | 3                     | point 1               | 51.1                  |
|             | WKT-VS6-7B      | Normal   | 3                     | point 2               | 52.9                  |
|             | WKT-VS6-7B      | Normal   | 3                     | point 3               | 51.8                  |
|             | WKT-VS6-7B      | Normal   | 3                     | point 4               | 50.5                  |
|             | WKT-VS6-7B      | Normal   | 3                     | point 5               | 51.6                  |
|             | WKT-VS6-7B      | Normal   | 3                     | point 6               | 51.6                  |
|             | WKT-VS6-7B      | Normal   | 3                     | point 7               | 50.7                  |
|             | WKT-VS6-7B      | Normal   | 3                     | point 8               | 49.6                  |
|             |                 |          |                       | AVERAGE               | 51                    |
| PVS6        | WKT-PVS6-1      | Normal   | 3                     | point 1               | 53.1                  |
|             | WKT-PVS6-1      | Normal   | 3                     | point 2               | 52.3                  |
|             | WKT-PVS6-1      | Normal   | 3                     | point 3               | 53.3                  |
|             | WKT-PVS6-1      | Normal   | 3                     | point 4               | 52.6                  |
|             | WKT-PVS6-1      | Normal   | 3                     | point 5               | 52.4                  |
|             |                 |          |                       | AVERAGE               | 53                    |
|             | WKT-PVS6-2      | Normal   | 3                     | point 1               | 55.8                  |
|             | WKT-PVS6-2      | Normal   | 3                     | point 2               | 56.8                  |
|             | WKT-PVS6-2      | Normal   | 3                     | point 3               | 57.0                  |
|             | WKT-PVS6-2      | Normal   | 3                     | point 4               | 58.9                  |
|             | WKT-PVS6-2      | Normal   | 3                     | point 5               | 58.2                  |
|             | WKT-PVS6-2      | Normal   | 3                     | point 6               | 58.4                  |
|             | WKT-PVS6-2      | Normal   | 3                     | point 7               | 54.4                  |
|             | WKT-PVS6-2      | Normal   | 3                     | point 8               | 55.9                  |
|             |                 |          |                       | AVERAGE               | 57                    |
|             | WKT-PVS6-3A     | Normal   | 3                     | point 1               | 58.6                  |
|             | WKT-PVS6-3A     | Normal   | 3                     | point 2               | 57.5                  |
|             | WKT-PVS6-3A     | Normal   | 3                     | point 3               | 59.2                  |
|             | WKT-PVS6-3A     | Normal   | 3                     | point 4               | 57.2                  |
|             | WKT-PVS6-3A     | Normal   | 3                     | point 5               | 58.2                  |
|             | WKT-PVS6-3A     | Normal   | 3                     | point 6               | 57.0                  |
|             | WKT-PVS6-3A     | Normal   | 3                     | point 7               | 57.9                  |
|             | WKT-PVS6-3A     | Normal   | 3                     | point 8               | 58.0                  |
|             |                 |          |                       | AVERAGE               | 58                    |
|             | WKT-PVS6-3B     | Normal   | 3                     | point 1               | 58.5                  |
|             | WKT-PVS6-3B     | Normal   | 3                     | point 2               | 58.3                  |
|             | WKT-PVS6-3B     | Normal   | 3                     | point 3               | 59.2                  |
|             | WKT-PVS6-3B     | Normal   | 3                     | point 4               | 59.7                  |
|             | WKT-PVS6-3B     | Normal   | 3                     | point 5               | 56.2                  |
|             | WKT-PVS6-3B     | Normal   | 3                     | point 6               | 57.0                  |
|             | WKT-PVS6-3B     | Normal   | 3                     | point 7               | 57.5                  |
|             | WKT-PVS6-3B     | Normal   | 3                     | point 8               | 56.7                  |
|             | WKT-PVS6-3B     | Normal   | 3                     | point 9               | 54.8                  |
|             | WKT-PVS6-3B     | Normal   | 3                     | point 10              | 56.0                  |
|             | WKT-PVS6-3B     | Normal   | 3                     | point 11              | 61.2                  |
|             | WKT-PVS6-3B     | Normal   | 3                     | point 12              | 61.6                  |
|             | WKT-PVS6-3B     | Normal   | 3                     | point 13              | 57.6                  |
|             | WKT-PVS6-3B     | Normal   | 3                     | point 14              | 58.3                  |
|             | WKT-PVS6-3B     | Normal   | 3                     | point 15              | 56.2                  |
|             | WKT-PVS6-3B     | Normal   | 3                     | point 16              | 56.8                  |
|             |                 |          |                       | AVERAGE               | 58                    |
|             | WKT-PVS6-4      | Normal   | 3                     | point 1               | 56.2                  |
|             | WKT-PVS6-4      | Normal   | 3                     | point 2               | 57.6                  |
|             | WKT-PVS6-4      | Normal   | 3                     | point 3               | 56.1                  |
|             | WKT-PVS6-4      | Normal   | 3                     | point 4               | 54.9                  |
|             | WKT-PVS6-4      | Normal   | 3                     | point 5               | 57.0                  |
|             | WKT-PVS6-4      | Normal   | 3                     | point 6               | 59.1                  |
|             | WKT-PVS6-4      | Normal   | 3                     | point 7               | 56.3                  |
|             | WKT-PVS6-4      | Normal   | 3                     | point 8               | 53.4                  |
|             |                 |          |                       | AVERAGE               | 57                    |
| VS6-4       | WKT-G-G15VS-01A | Normal   | 3                     | point 1               | 57.4                  |
|             | WKT-G-G15VS-01A | Normal   | 3                     | point 2               | 57.3                  |
|             | WKT-G-G15VS-01A | Normal   | 3                     | point 3               | 57.2                  |
|             | WKT-G-G15VS-01A | Normal   | 3                     | point 4               | 57.2                  |
|             | WKT-G-G15VS-01A | Normal   | 3                     | point 5               | 57.1                  |
|             | WKT-G-G15VS-01A | Normal   | 3                     | point 6               | 57.3                  |
|             | WKT-G-G15VS-01A | Normal   | 3                     | point 7               | 55.0                  |
|             | WKT-G-G15VS-01A | Normal   | 3                     | point 8               | 55.1                  |
|             | WKT-G-G15VS-01A | Normal   | 3                     | point 9               | 54.8                  |
|             | WKT-G-G15VS-01A | Normal   | 3                     | point 10              | 54.8                  |
|             | WKT-G-G15VS-01A | Normal   | 3                     | point 11              | 54.9                  |
|             | WKT-G-G15VS-01A | Normal   | 3                     | point 12              | 55.4                  |
|             |                 |          |                       | AVERAGE               | 56.3                  |
|             | WKT-G-G15VS-01B | Normal   | 3                     | point 1               | 57.4                  |
|             | WKT-G-G15VS-01B | Normal   | 3                     | point 2               | 57.6                  |
|             | WKT-G-G15VS-01B | Normal   | 3                     | point 3               | 57.6                  |
|             | WKT-G-G15VS-01B | Normal   | 3                     | point 4               | 57.5                  |
|             | WKT-G-G15VS-01B | Normal   | 3                     | point 5               | 55.1                  |
|             | WKT-G-G15VS-01B | Normal   | 3                     | point 6               | 55.3                  |
|             | WKT-G-G15VS-01B | Normal   | 3                     | point 7               | 55.3                  |
|             | WKT-G-G15VS-01B | Normal   | 3                     | point 8               | 54.9                  |
|             | WKT-G-G15VS-01B | Normal   | 3                     | point 9               | 54.9                  |
|             | WKT-G-G15VS-01B | Normal   | 3                     | point 10              | 55.0                  |
|             | WKT-G-G15VS-01B | Normal   | 3                     | point 11              | 54.9                  |
|             | WKT-G-G15VS-01B | Normal   | 3                     | point 12              | 55.3                  |
|             |                 |          |                       | AVERAGE               | 56.1                  |
|             | WKT-G-G15VS-01C | Normal   | 3                     | point 1               | 54.9                  |
|             | WKT-G-G15VS-01C | Normal   | 3                     | point 2               | 54.8                  |

Appendix A3 -  
WEK - Noise Measurement Result - data

| Description | Louvre ID                 | Scenario | Method <sup>(1)</sup> | Location/ Measurement | L <sub>Aeq</sub> (dB) |
|-------------|---------------------------|----------|-----------------------|-----------------------|-----------------------|
|             | WKT-G-G15VS-01C           | Normal   | 3                     | point 3               | 54.5                  |
|             | WKT-G-G15VS-01C           | Normal   | 3                     | point 4               | 54.9                  |
|             | WKT-G-G15VS-01C           | Normal   | 3                     | point 5               | 55.3                  |
|             | WKT-G-G15VS-01C           | Normal   | 3                     | point 6               | 55.7                  |
|             | WKT-G-G15VS-01C           | Normal   | 3                     | point 7               | 55.1                  |
|             | WKT-G-G15VS-01C           | Normal   | 3                     | point 8               | 55.5                  |
|             |                           |          |                       | AVERAGE               | 55.1                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 1               | 55.9                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 2               | 55.3                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 3               | 55.1                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 4               | 54.6                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 5               | 54.8                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 6               | 55.6                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 7               | 55.6                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 8               | 55.1                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 9               | 55.1                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 10              | 55.8                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 11              | 55.0                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 12              | 55.0                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 13              | 55.5                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 14              | 55.3                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 15              | 55.1                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 16              | 54.1                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 17              | 56.0                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 18              | 56.1                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 19              | 56.2                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 20              | 55.9                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 21              | 55.9                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 22              | 55.8                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 23              | 55.9                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 24              | 55.7                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 25              | 55.9                  |
|             | WKT-G-G15VS-03A Section 1 | Normal   | 3                     | point 26              | 55.9                  |
|             |                           |          |                       | AVERAGE               | 55.5                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 1               | 54.9                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 2               | 55.5                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 3               | 55.1                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 4               | 55.2                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 5               | 55.2                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 6               | 56.0                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 7               | 55.8                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 8               | 55.1                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 9               | 54.9                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 10              | 55.1                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 11              | 55.3                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 12              | 54.8                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 13              | 55.1                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 14              | 55.0                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 15              | 54.8                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 16              | 54.6                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 17              | 54.8                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 18              | 55.5                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 19              | 55.3                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 20              | 55.4                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 21              | 55.0                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 22              | 55.0                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 23              | 55.0                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 24              | 55.1                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 25              | 55.0                  |
|             | WKT-G-G15VS-03A Section 2 | Normal   | 3                     | point 26              | 55.2                  |
|             |                           |          |                       | AVERAGE               | 55.2                  |
| VS 7        | WKT-G-D14VS-03A           | Normal   | 3                     | point 1               | 57.3                  |
|             | WKT-G-D14VS-03A           | Normal   | 3                     | point 2               | 56.7                  |
|             | WKT-G-D14VS-03A           | Normal   | 3                     | point 3               | 57.4                  |
|             | WKT-G-D14VS-03A           | Normal   | 3                     | point 4               | 57.0                  |
|             | WKT-G-D14VS-03A           | Normal   | 3                     | point 5               | 56.8                  |
|             | WKT-G-D14VS-03A           | Normal   | 3                     | point 6               | 56.8                  |
|             | WKT-G-D14VS-03A           | Normal   | 3                     | point 7               | 55.7                  |
|             | WKT-G-D14VS-03A           | Normal   | 3                     | point 8               | 56.8                  |
|             | WKT-G-D14VS-03A           | Normal   | 3                     | point 9               | 56.3                  |
|             | WKT-G-D14VS-03A           | Normal   | 3                     | point 10              | 56.9                  |
|             | WKT-G-D14VS-03A           | Normal   | 3                     | point 11              | 56.0                  |
|             | WKT-G-D14VS-03A           | Normal   | 3                     | point 12              | 55.9                  |
|             | WKT-G-D14VS-03A           | Normal   | 3                     | point 13              | 57.4                  |
|             | WKT-G-D14VS-03A           | Normal   | 3                     | point 14              | 58.5                  |
|             | WKT-G-D14VS-03A           | Normal   | 3                     | point 15              | 55.8                  |
|             | WKT-G-D14VS-03A           | Normal   | 3                     | point 16              | 58.2                  |
|             | WKT-G-D14VS-03A           | Normal   | 3                     | point 17              | 56.1                  |
|             | WKT-G-D14VS-03A           | Normal   | 3                     | point 18              | 56.1                  |
|             | WKT-G-D14VS-03A           | Normal   | 3                     | point 19              | 55.5                  |
|             | WKT-G-D14VS-03A           | Normal   | 3                     | point 20              | 55.6                  |
|             |                           |          |                       | AVERAGE               | 56.8                  |
|             | WKT-G-D14VS-04A           | Normal   | 3                     | point 1               | 56.6                  |
|             | WKT-G-D14VS-04A           | Normal   | 3                     | point 2               | 56.9                  |
|             | WKT-G-D14VS-04A           | Normal   | 3                     | point 3               | 56.6                  |
|             | WKT-G-D14VS-04A           | Normal   | 3                     | point 4               | 56.6                  |
|             | WKT-G-D14VS-04A           | Normal   | 3                     | point 5               | 56.4                  |
|             | WKT-G-D14VS-04A           | Normal   | 3                     | point 6               | 56.6                  |
|             | WKT-G-D14VS-04A           | Normal   | 3                     | point 7               | 56.8                  |
|             | WKT-G-D14VS-04A           | Normal   | 3                     | point 8               | 56.1                  |
|             | WKT-G-D14VS-04A           | Normal   | 3                     | point 9               | 56.6                  |
|             | WKT-G-D14VS-04A           | Normal   | 3                     | point 10              | 56.2                  |
|             | WKT-G-D14VS-04A           | Normal   | 3                     | point 11              | 56.5                  |
|             | WKT-G-D14VS-04A           | Normal   | 3                     | point 12              | 56.8                  |
|             | WKT-G-D14VS-04A           | Normal   | 3                     | point 13              | 56.7                  |
|             | WKT-G-D14VS-04A           | Normal   | 3                     | point 14              | 56.8                  |
|             | WKT-G-D14VS-04A           | Normal   | 3                     | point 15              | 56.4                  |
|             | WKT-G-D14VS-04A           | Normal   | 3                     | point 16              | 56.7                  |
|             | WKT-G-D14VS-04A           | Normal   | 3                     | point 17              | 56.6                  |
|             | WKT-G-D14VS-04A           | Normal   | 3                     | point 18              | 56.9                  |
|             | WKT-G-D14VS-04A           | Normal   | 3                     | point 19              | 56.4                  |

Appendix A3 -  
WEK - Noise Measurement Result - data

| Description | Louvre ID       | Scenario | Method <sup>(1)</sup> | Location/ Measurement      | L <sub>Aeq</sub> (dB) |
|-------------|-----------------|----------|-----------------------|----------------------------|-----------------------|
|             | WKT-G-D14VS-04A | Normal   | 3                     | point 20<br><b>AVERAGE</b> | 56.8<br><b>56.6</b>   |
|             | WKT-VS7-1A      | Normal   | 3                     | point 1                    | 51.6                  |
|             | WKT-VS7-1A      | Normal   | 3                     | point 2                    | 53.6                  |
|             | WKT-VS7-1A      | Normal   | 3                     | point 3                    | 54.2                  |
|             | WKT-VS7-1A      | Normal   | 3                     | point 4                    | 54.3                  |
|             | WKT-VS7-1A      | Normal   | 3                     | point 5                    | 54.4                  |
|             | WKT-VS7-1A      | Normal   | 3                     | point 6                    | 52.8                  |
|             | WKT-VS7-1A      | Normal   | 3                     | point 7                    | 52.3                  |
|             | WKT-VS7-1A      | Normal   | 3                     | point 8                    | 51.7                  |
|             | WKT-VS7-1A      | Normal   | 3                     | point 9                    | 52.0                  |
|             | WKT-VS7-1A      | Normal   | 3                     | point 10                   | 49.9                  |
|             | WKT-VS7-1A      | Normal   | 3                     | point 11                   | 53.9                  |
|             | WKT-VS7-1A      | Normal   | 3                     | point 12                   | 51.4                  |
|             | WKT-VS7-1A      | Normal   | 3                     | point 13                   | 54.4                  |
|             | WKT-VS7-1A      | Normal   | 3                     | point 14                   | 52.3                  |
|             | WKT-VS7-1A      | Normal   | 3                     | point 15                   | 52.6                  |
|             | WKT-VS7-1A      | Normal   | 3                     | point 16                   | 52.9                  |
|             | WKT-VS7-1A      | Normal   | 3                     | point 17                   | 56.5                  |
|             | WKT-VS7-1A      | Normal   | 3                     | point 18                   | 55.9                  |
|             | WKT-VS7-1A      | Normal   | 3                     | point 19                   | 55.9                  |
|             | WKT-VS7-1A      | Normal   | 3                     | point 20<br><b>AVERAGE</b> | 55.3<br><b>54</b>     |
|             | WKT-VS7-1B      | Normal   | 3                     | point 1                    | 51.7                  |
|             | WKT-VS7-1B      | Normal   | 3                     | point 2                    | 51.9                  |
|             | WKT-VS7-1B      | Normal   | 3                     | point 3                    | 52.0                  |
|             | WKT-VS7-1B      | Normal   | 3                     | point 4                    | 54.0                  |
|             | WKT-VS7-1B      | Normal   | 3                     | point 5                    | 56.1                  |
|             | WKT-VS7-1B      | Normal   | 3                     | point 6                    | 53.9                  |
|             | WKT-VS7-1B      | Normal   | 3                     | point 7                    | 51.1                  |
|             | WKT-VS7-1B      | Normal   | 3                     | point 8                    | 50.1                  |
|             | WKT-VS7-1B      | Normal   | 3                     | point 9                    | 51.7                  |
|             | WKT-VS7-1B      | Normal   | 3                     | point 10                   | 51.9                  |
|             | WKT-VS7-1B      | Normal   | 3                     | point 11                   | 50.8                  |
|             | WKT-VS7-1B      | Normal   | 3                     | point 12                   | 54.1                  |
|             | WKT-VS7-1B      | Normal   | 3                     | point 13                   | 51.5                  |
|             | WKT-VS7-1B      | Normal   | 3                     | point 14                   | 54.1                  |
|             | WKT-VS7-1B      | Normal   | 3                     | point 15                   | 51.5                  |
|             | WKT-VS7-1B      | Normal   | 3                     | point 16                   | 51.9                  |
|             | WKT-VS7-1B      | Normal   | 3                     | point 17                   | 52.5                  |
|             | WKT-VS7-1B      | Normal   | 3                     | point 18                   | 54.8                  |
|             | WKT-VS7-1B      | Normal   | 3                     | point 19                   | 53.1                  |
|             | WKT-VS7-1B      | Normal   | 3                     | point 20<br><b>AVERAGE</b> | 54.4<br><b>53</b>     |
|             | WKT-VS7-2       | Normal   | 3                     | point 1                    | 51.2                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 2                    | 51.5                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 3                    | 52.3                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 4                    | 53.1                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 5                    | 51.2                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 6                    | 51.2                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 7                    | 49.8                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 8                    | 54.1                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 9                    | 53.1                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 10                   | 50.5                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 11                   | 49.5                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 12                   | 48.8                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 13                   | 50.0                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 14                   | 49.0                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 15                   | 48.8                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 16                   | 49.9                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 17                   | 49.8                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 18                   | 50.3                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 19                   | 52.7                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 20                   | 51.3                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 21                   | 50.3                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 22                   | 50.9                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 23                   | 52.0                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 24                   | 51.1                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 25                   | 51.5                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 26                   | 50.3                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 27                   | 51.9                  |
|             | WKT-VS7-2       | Normal   | 3                     | point 28<br><b>AVERAGE</b> | 51.6<br><b>51</b>     |
|             | WKT-VS7-3       | Normal   | 3                     | point 1                    | 53.8                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 2                    | 57.5                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 3                    | 57.6                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 4                    | 56.8                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 5                    | 56.0                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 6                    | 56.0                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 7                    | 57.9                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 8                    | 58.5                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 9                    | 57.6                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 10                   | 53.8                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 11                   | 55.8                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 12                   | 59.1                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 13                   | 59.0                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 14                   | 58.1                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 15                   | 57.2                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 16                   | 55.3                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 17                   | 55.0                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 18                   | 56.9                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 19                   | 60.1                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 20                   | 60.8                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 21                   | 59.0                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 22                   | 57.0                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 23                   | 56.5                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 24                   | 58.8                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 25                   | 62.1                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 26                   | 60.5                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 27                   | 56.1                  |
|             | WKT-VS7-3       | Normal   | 3                     | point 28                   | 53.7                  |

Appendix A3 -  
WEK - Noise Measurement Result - data

| Description | Louvre ID | Scenario | Method <sup>(1)</sup> | Location/ Measurement | L <sub>Aeq</sub> (dB) |
|-------------|-----------|----------|-----------------------|-----------------------|-----------------------|
|             | WKT-VS7-3 | Normal   | 3                     | point 29              | 57.4                  |
|             | WKT-VS7-3 | Normal   | 3                     | point 30              | 58.8                  |
|             | WKT-VS7-3 | Normal   | 3                     | point 31              | 57.7                  |
|             | WKT-VS7-3 | Normal   | 3                     | point 32              | 59.1                  |
|             | WKT-VS7-3 | Normal   | 3                     | point 33              | 55.5                  |
|             | WKT-VS7-3 | Normal   | 3                     | point 34              | 57.6                  |
|             | WKT-VS7-3 | Normal   | 3                     | point 35              | 59.4                  |
|             | WKT-VS7-3 | Normal   | 3                     | point 36              | 59.8                  |
|             | WKT-VS7-3 | Normal   | 3                     | point 37              | 56.5                  |
|             | WKT-VS7-3 | Normal   | 3                     | point 38              | 58.7                  |
|             | WKT-VS7-3 | Normal   | 3                     | point 39              | 58.9                  |
|             | WKT-VS7-3 | Normal   | 3                     | point 40              | 57.5                  |
|             | WKT-VS7-3 | Normal   | 3                     | point 41              | 59.7                  |
|             | WKT-VS7-3 | Normal   | 3                     | point 42              | 59.5                  |
|             | WKT-VS7-3 | Normal   | 3                     | point 43              | 57.2                  |
|             | WKT-VS7-3 | Normal   | 3                     | point 44              | 53.8                  |
|             | WKT-VS7-3 | Normal   | 3                     | point 45              | 56.0                  |
|             | WKT-VS7-3 | Normal   | 3                     | point 46              | 55.0                  |
|             | WKT-VS7-3 | Normal   | 3                     | point 47              | 59.5                  |
|             | WKT-VS7-3 | Normal   | 3                     | point 48              | 60.1                  |
|             | WKT-VS7-3 | Normal   | 3                     | point 49              | 56.9                  |
|             | WKT-VS7-3 | Normal   | 3                     | point 50              | 55.7                  |
|             |           |          |                       | AVERAGE               | 58                    |
| PTI         | L-01      | Normal   | 3                     | point 1               | 61.0                  |
|             | L-01      | Normal   | 3                     | point 2               | 60.1                  |
|             | L-01      | Normal   | 3                     | point 3               | 60.4                  |
|             | L-01      | Normal   | 3                     | point 4               | 60.0                  |
|             | L-01      | Normal   | 3                     | point 5               | 60.4                  |
|             | L-01      | Normal   | 3                     | point 6               | 61.2                  |
|             | L-01      | Normal   | 3                     | point 7               | 60.7                  |
|             | L-01      | Normal   | 3                     | point 8               | 61.2                  |
|             | L-01      | Normal   | 3                     | point 9               | 60.7                  |
|             | L-01      | Normal   | 3                     | point 10              | 56.4                  |
|             | L-01      | Normal   | 3                     | point 11              | 61.5                  |
|             | L-01      | Normal   | 3                     | point 12              | 63.1                  |
|             |           |          |                       | AVERAGE               | 60.8                  |
|             | L-01      | Normal   | 3                     | point 1               | 60.9                  |
|             | L-01      | Normal   | 3                     | point 2               | 57.4                  |
|             | L-01      | Normal   | 3                     | point 3               | 61.2                  |
|             | L-01      | Normal   | 3                     | point 4               | 58.5                  |
|             | L-01      | Normal   | 3                     | point 5               | 57.7                  |
|             | L-01      | Normal   | 3                     | point 6               | 57.7                  |
|             | L-01      | Normal   | 3                     | point 7               | 58.9                  |
|             | L-01      | Normal   | 3                     | point 8               | 58.1                  |
|             | L-01      | Normal   | 3                     | point 9               | 57.9                  |
|             | L-01      | Normal   | 3                     | point 10              | 58.3                  |
|             | L-01      | Normal   | 3                     | point 11              | 59.5                  |
|             | L-01      | Normal   | 3                     | point 12              | 60.2                  |
|             |           |          |                       | AVERAGE               | 59.0                  |
|             | L-02      | Normal   | 3                     | point 1               | 58.9                  |
|             | L-02      | Normal   | 3                     | point 2               | 59.4                  |
|             | L-02      | Normal   | 3                     | point 3               | 59.4                  |
|             | L-02      | Normal   | 3                     | point 4               | 59.2                  |
|             | L-02      | Normal   | 3                     | point 5               | 59.6                  |
|             | L-02      | Normal   | 3                     | point 6               | 59.0                  |
|             | L-02      | Normal   | 3                     | point 7               | 59.8                  |
|             | L-02      | Normal   | 3                     | point 8               | 61.3                  |
|             | L-02      | Normal   | 3                     | point 9               | 59.5                  |
|             | L-02      | Normal   | 3                     | point 10              | 59.9                  |
|             | L-02      | Normal   | 3                     | point 11              | 59.6                  |
|             | L-02      | Normal   | 3                     | point 12              | 59.5                  |
|             |           |          |                       | AVERAGE               | 59.6                  |
|             | L-03      | Normal   | 3                     | point 1               | 60.6                  |
|             | L-03      | Normal   | 3                     | point 2               | 61.3                  |
|             | L-03      | Normal   | 3                     | point 3               | 61.3                  |
|             | L-03      | Normal   | 3                     | point 4               | 60.2                  |
|             | L-03      | Normal   | 3                     | point 5               | 61.0                  |
|             | L-03      | Normal   | 3                     | point 6               | 62.1                  |
|             | L-03      | Normal   | 3                     | point 7               | 59.3                  |
|             | L-03      | Normal   | 3                     | point 8               | 61.3                  |
|             | L-03      | Normal   | 3                     | point 9               | 58.7                  |
|             | L-03      | Normal   | 3                     | point 10              | 60.3                  |
|             | L-03      | Normal   | 3                     | point 11              | 61.2                  |
|             | L-03      | Normal   | 3                     | point 12              | 59.3                  |
|             |           |          |                       | AVERAGE               | 60.7                  |
|             | L-03a     | Normal   | 3                     | point 1               | 60.4                  |
|             | L-03a     | Normal   | 3                     | point 2               | 59.2                  |
|             | L-03a     | Normal   | 3                     | point 3               | 59.9                  |
|             | L-03a     | Normal   | 3                     | point 4               | 59.6                  |
|             | L-03a     | Normal   | 3                     | point 5               | 61.3                  |
|             | L-03a     | Normal   | 3                     | point 6               | 60.1                  |
|             | L-03a     | Normal   | 3                     | point 7               | 60.2                  |
|             | L-03a     | Normal   | 3                     | point 8               | 59.8                  |
|             | L-03a     | Normal   | 3                     | point 9               | 59.0                  |
|             | L-03a     | Normal   | 3                     | point 10              | 60.3                  |
|             | L-03a     | Normal   | 3                     | point 11              | 59.0                  |
|             |           |          |                       | AVERAGE               | 59.9                  |
|             | L-06      | Normal   | 2                     | measurement 1         | 62.3                  |
|             | L-06      | Normal   | 2                     | measurement 2         | 62.7                  |
|             | L-06      | Normal   | 2                     | measurement 3         | 62.5                  |
|             | L-06      | Normal   | 2                     | measurement 4         | 63.5                  |
|             | L-06      | Normal   | 2                     | measurement 5         | 63.3                  |
|             | L-06      | Normal   | 2                     | measurement 6         | 62.4                  |
|             | L-06      | Normal   | 2                     | measurement 7         | 62.6                  |
|             | L-06      | Normal   | 2                     | measurement 8         | 62.2                  |
|             | L-06      | Normal   | 2                     | measurement 9         | 62.7                  |
|             | L-06      | Normal   | 2                     | measurement 10        | 61.9                  |
|             |           |          |                       | AVERAGE               | 62.7                  |
|             | L-07      | Normal   | 2                     | measurement 1         | 55.4                  |
|             | L-07      | Normal   | 2                     | measurement 2         | 55.9                  |
|             | L-07      | Normal   | 2                     | measurement 3         | 56.5                  |

Appendix A3 -  
WEK - Noise Measurement Result - data

| Description | Louvre ID | Scenario | Method <sup>(1)</sup> | Location/ Measurement | L <sub>Aeq</sub> (dB) |
|-------------|-----------|----------|-----------------------|-----------------------|-----------------------|
|             | L-07      | Normal   | 2                     | measurement 4         | 57.3                  |
|             | L-07      | Normal   | 2                     | measurement 5         | 57.6                  |
|             | L-07      | Normal   | 2                     | measurement 6         | 58.0                  |
|             | L-07      | Normal   | 2                     | measurement 7         | 58.3                  |
|             | L-07      | Normal   | 2                     | measurement 8         | 58.8                  |
|             | L-07      | Normal   | 2                     | measurement 9         | 58.8                  |
|             | L-07      | Normal   | 2                     | measurement 10        | 58.5                  |
|             |           |          |                       | AVERAGE               | 57.7                  |
|             | L-08      | Normal   | 2                     | measurement 1         | 61.4                  |
|             | L-08      | Normal   | 2                     | measurement 2         | 61.5                  |
|             | L-08      | Normal   | 2                     | measurement 3         | 60.1                  |
|             | L-08      | Normal   | 2                     | measurement 4         | 60.4                  |
|             | L-08      | Normal   | 2                     | measurement 5         | 59.6                  |
|             | L-08      | Normal   | 2                     | measurement 6         | 58.0                  |
|             | L-08      | Normal   | 2                     | measurement 7         | 57.3                  |
|             | L-08      | Normal   | 2                     | measurement 8         | 56.8                  |
|             | L-08      | Normal   | 2                     | measurement 9         | 56.0                  |
|             | L-08      | Normal   | 2                     | measurement 10        | 55.3                  |
|             |           |          |                       | AVERAGE               | 59.2                  |
|             | L-08a     | Normal   | 2                     | measurement 1         | 55.3                  |
|             | L-08a     | Normal   | 2                     | measurement 2         | 55.4                  |
|             | L-08a     | Normal   | 2                     | measurement 3         | 55.9                  |
|             | L-08a     | Normal   | 2                     | measurement 4         | 56.5                  |
|             | L-08a     | Normal   | 2                     | measurement 5         | 57.3                  |
|             | L-08a     | Normal   | 2                     | measurement 6         | 57.6                  |
|             | L-08a     | Normal   | 2                     | measurement 7         | 58.0                  |
|             | L-08a     | Normal   | 2                     | measurement 8         | 58.3                  |
|             | L-08a     | Normal   | 2                     | measurement 9         | 58.8                  |
|             | L-08a     | Normal   | 2                     | measurement 10        | 58.8                  |
|             |           |          |                       | AVERAGE               | 57.4                  |
|             | L-10      | Normal   | 3                     | point 1               | 66.2                  |
|             | L-10      | Normal   | 3                     | point 2               | 66.9                  |
|             | L-10      | Normal   | 3                     | point 3               | 66.6                  |
|             | L-10      | Normal   | 3                     | point 4               | 64.8                  |
|             | L-10      | Normal   | 3                     | point 5               | 66.3                  |
|             | L-10      | Normal   | 3                     | point 6               | 67.0                  |
|             | L-10      | Normal   | 3                     | point 7               | 66.7                  |
|             | L-10      | Normal   | 3                     | point 8               | 64.3                  |
|             | L-10      | Normal   | 3                     | point 9               | 66.0                  |
|             | L-10      | Normal   | 3                     | point 10              | 66.0                  |
|             | L-10      | Normal   | 3                     | point 11              | 64.6                  |
|             | L-10      | Normal   | 3                     | point 12              | 64.4                  |
|             |           |          |                       | AVERAGE               | 65.9                  |
|             | L-11      | Normal   | 3                     | point 1               | 64.6                  |
|             | L-11      | Normal   | 3                     | point 2               | 66.7                  |
|             | L-11      | Normal   | 3                     | point 3               | 63.9                  |
|             | L-11      | Normal   | 3                     | point 4               | 64.4                  |
|             | L-11      | Normal   | 3                     | point 5               | 64.7                  |
|             | L-11      | Normal   | 3                     | point 6               | 63.0                  |
|             | L-11      | Normal   | 3                     | point 7               | 62.1                  |
|             | L-11      | Normal   | 3                     | point 8               | 62.7                  |
|             | L-11      | Normal   | 3                     | point 9               | 65.4                  |
|             | L-11      | Normal   | 3                     | point 10              | 64.3                  |
|             | L-11      | Normal   | 3                     | point 11              | 64.8                  |
|             | L-11      | Normal   | 3                     | point 12              | 65.0                  |
|             |           |          |                       | AVERAGE               | 64.5                  |
|             | L-12      | Normal   | 3                     | point 1               | 64.2                  |
|             | L-12      | Normal   | 3                     | point 2               | 63.7                  |
|             | L-12      | Normal   | 3                     | point 3               | 64.5                  |
|             | L-12      | Normal   | 3                     | point 4               | 64.8                  |
|             | L-12      | Normal   | 3                     | point 5               | 65.3                  |
|             | L-12      | Normal   | 3                     | point 6               | 64.7                  |
|             | L-12      | Normal   | 3                     | point 7               | 65.0                  |
|             | L-12      | Normal   | 3                     | point 8               | 64.8                  |
|             | L-12      | Normal   | 3                     | point 9               | 64.8                  |
|             | L-12      | Normal   | 3                     | point 10              | 63.6                  |
|             | L-12      | Normal   | 3                     | point 11              | 63.7                  |
|             | L-12      | Normal   | 3                     | point 12              | 63.6                  |
|             |           |          |                       | AVERAGE               | 64.4                  |
|             | L-13      | Normal   | 3                     | point 1               | 66.6                  |
|             | L-13      | Normal   | 3                     | point 2               | 64.2                  |
|             | L-13      | Normal   | 3                     | point 3               | 61.2                  |
|             | L-13      | Normal   | 3                     | point 4               | 61.7                  |
|             | L-13      | Normal   | 3                     | point 5               | 61.4                  |
|             | L-13      | Normal   | 3                     | point 6               | 61.1                  |
|             | L-13      | Normal   | 3                     | point 7               | 61.2                  |
|             | L-13      | Normal   | 3                     | point 8               | 62.5                  |
|             | L-13      | Normal   | 3                     | point 9               | 61.9                  |
|             | L-13      | Normal   | 3                     | point 10              | 62.5                  |
|             | L-13      | Normal   | 3                     | point 11              | 63.2                  |
|             | L-13      | Normal   | 3                     | point 12              | 61.8                  |
|             |           |          |                       | AVERAGE               | 62.8                  |
|             | L-13      | Normal   | 3                     | point 1               | 62.1                  |
|             | L-13      | Normal   | 3                     | point 2               | 62.2                  |
|             | L-13      | Normal   | 3                     | point 3               | 61.9                  |
|             | L-13      | Normal   | 3                     | point 4               | 62.3                  |
|             | L-13      | Normal   | 3                     | point 5               | 63.5                  |
|             | L-13      | Normal   | 3                     | point 6               | 61.7                  |
|             | L-13      | Normal   | 3                     | point 7               | 61.7                  |
|             | L-13      | Normal   | 3                     | point 8               | 63.9                  |
|             | L-13      | Normal   | 3                     | point 9               | 61.8                  |
|             | L-13      | Normal   | 3                     | point 10              | 62.3                  |
|             | L-13      | Normal   | 3                     | point 11              | 61.8                  |
|             | L-13      | Normal   | 3                     | point 12              | 63.1                  |
|             |           |          |                       | AVERAGE               | 62.4                  |
|             | L-13      | Normal   | 3                     | point 1               | 65.1                  |
|             | L-13      | Normal   | 3                     | point 2               | 63.8                  |
|             | L-13      | Normal   | 3                     | point 3               | 64.1                  |
|             | L-13      | Normal   | 3                     | point 4               | 64.5                  |
|             | L-13      | Normal   | 3                     | point 5               | 66.1                  |
|             | L-13      | Normal   | 3                     | point 6               | 66.0                  |

Appendix A3 -  
WEK - Noise Measurement Result - data

| Description | Louvre ID | Scenario | Method <sup>(1)</sup> | Location/ Measurement | L <sub>Aeq</sub> (dB) |
|-------------|-----------|----------|-----------------------|-----------------------|-----------------------|
|             | L-13      | Normal   | 3                     | point 7               | 63.2                  |
|             | L-13      | Normal   | 3                     | point 8               | 64.4                  |
|             | L-13      | Normal   | 3                     | point 9               | 63.7                  |
|             | L-13      | Normal   | 3                     | point 10              | 62.8                  |
|             | L-13      | Normal   | 3                     | point 11              | 64.0                  |
|             | L-13      | Normal   | 3                     | point 12              | 65.1                  |
|             |           |          |                       | <b>AVERAGE</b>        | <b>64.5</b>           |
|             | L-13      | Normal   | 3                     | point 1               | 61.6                  |
|             | L-13      | Normal   | 3                     | point 2               | 62.5                  |
|             | L-13      | Normal   | 3                     | point 3               | 62.2                  |
|             | L-13      | Normal   | 3                     | point 4               | 62.1                  |
|             | L-13      | Normal   | 3                     | point 5               | 62.2                  |
|             | L-13      | Normal   | 3                     | point 6               | 62.3                  |
|             | L-13      | Normal   | 3                     | point 7               | 61.7                  |
|             | L-13      | Normal   | 3                     | point 8               | 63.2                  |
|             | L-13      | Normal   | 3                     | point 9               | 63.0                  |
|             | L-13      | Normal   | 3                     | point 10              | 62.1                  |
|             | L-13      | Normal   | 3                     | point 11              | 62.7                  |
|             | L-13      | Normal   | 3                     | point 12              | 61.8                  |
|             |           |          |                       | <b>AVERAGE</b>        | <b>62.3</b>           |
|             | L-13      | Normal   | 3                     | point 1               | 60.6                  |
|             | L-13      | Normal   | 3                     | point 2               | 59.2                  |
|             | L-13      | Normal   | 3                     | point 3               | 62.3                  |
|             | L-13      | Normal   | 3                     | point 4               | 62.3                  |
|             | L-13      | Normal   | 3                     | point 5               | 61.3                  |
|             | L-13      | Normal   | 3                     | point 6               | 62.0                  |
|             | L-13      | Normal   | 3                     | point 7               | 61.3                  |
|             | L-13      | Normal   | 3                     | point 8               | 62.0                  |
|             | L-13      | Normal   | 3                     | point 9               | 62.7                  |
|             | L-13      | Normal   | 3                     | point 10              | 59.0                  |
|             | L-13      | Normal   | 3                     | point 11              | 61.7                  |
|             | L-13      | Normal   | 3                     | point 12              | 59.0                  |
|             |           |          |                       | <b>AVERAGE</b>        | <b>61.3</b>           |
|             | L-14      | Normal   | 3                     | point 1               | 66.5                  |
|             | L-14      | Normal   | 3                     | point 2               | 66.2                  |
|             | L-14      | Normal   | 3                     | point 3               | 65.1                  |
|             | L-14      | Normal   | 3                     | point 4               | 66.6                  |
|             | L-14      | Normal   | 3                     | point 5               | 66.7                  |
|             | L-14      | Normal   | 3                     | point 6               | 64.1                  |
|             | L-14      | Normal   | 3                     | point 7               | 67.3                  |
|             | L-14      | Normal   | 3                     | point 8               | 65.8                  |
|             | L-14      | Normal   | 3                     | point 9               | 66.4                  |
|             | L-14      | Normal   | 3                     | point 10              | 67.2                  |
|             | L-14      | Normal   | 3                     | point 11              | 68.6                  |
|             | L-14      | Normal   | 3                     | point 12              | 66.6                  |
|             |           |          |                       | <b>AVERAGE</b>        | <b>66.6</b>           |
|             | L-15a     | Normal   | 3                     | point 1               | 64.2                  |
|             | L-15a     | Normal   | 3                     | point 2               | 67.1                  |
|             | L-15a     | Normal   | 3                     | point 3               | 64.1                  |
|             | L-15a     | Normal   | 3                     | point 4               | 63.9                  |
|             | L-15a     | Normal   | 3                     | point 5               | 64.9                  |
|             | L-15a     | Normal   | 3                     | point 6               | 67.6                  |
|             | L-15a     | Normal   | 3                     | point 7               | 67.3                  |
|             | L-15a     | Normal   | 3                     | point 8               | 65.3                  |
|             | L-15a     | Normal   | 3                     | point 9               | 66.6                  |
|             | L-15a     | Normal   | 3                     | point 10              | 65.0                  |
|             | L-15a     | Normal   | 3                     | point 11              | 65.0                  |
|             | L-15a     | Normal   | 3                     | point 12              | 65.1                  |
|             |           |          |                       | <b>AVERAGE</b>        | <b>65.7</b>           |
|             | L-15b     | Normal   | 3                     | point 1               | 58.9                  |
|             | L-15b     | Normal   | 3                     | point 2               | 64.4                  |
|             | L-15b     | Normal   | 3                     | point 3               | 60.9                  |
|             | L-15b     | Normal   | 3                     | point 4               | 61.1                  |
|             | L-15b     | Normal   | 3                     | point 5               | 61.7                  |
|             | L-15b     | Normal   | 3                     | point 6               | 61.8                  |
|             | L-15b     | Normal   | 3                     | point 7               | 61.3                  |
|             | L-15b     | Normal   | 3                     | point 8               | 61.3                  |
|             | L-15b     | Normal   | 3                     | point 9               | 62.6                  |
|             | L-15b     | Normal   | 3                     | point 10              | 64.5                  |
|             | L-15b     | Normal   | 3                     | point 11              | 62.0                  |
|             | L-15b     | Normal   | 3                     | point 12              | 63.6                  |
|             |           |          |                       | <b>AVERAGE</b>        | <b>62.3</b>           |
|             | L-21      | Normal   | 3                     | point 1               | 56.4                  |
|             | L-21      | Normal   | 3                     | point 2               | 56.4                  |
|             | L-21      | Normal   | 3                     | point 3               | 56.4                  |
|             | L-21      | Normal   | 3                     | point 4               | 56.9                  |
|             | L-21      | Normal   | 3                     | point 5               | 56.3                  |
|             | L-21      | Normal   | 3                     | point 6               | 55.6                  |
|             | L-21      | Normal   | 3                     | point 7               | 56.8                  |
|             | L-21      | Normal   | 3                     | point 8               | 56.7                  |
|             | L-21      | Normal   | 3                     | point 9               | 56.2                  |
|             | L-21      | Normal   | 3                     | point 10              | 56.3                  |
|             | L-21      | Normal   | 3                     | point 11              | 56.9                  |
|             |           |          |                       | <b>AVERAGE</b>        | <b>56.5</b>           |
|             | L-22      | Normal   | 3                     | point 1               | 56.4                  |
|             | L-22      | Normal   | 3                     | point 2               | 56.0                  |
|             | L-22      | Normal   | 3                     | point 3               | 57.5                  |
|             | L-22      | Normal   | 3                     | point 4               | 56.6                  |
|             | L-22      | Normal   | 3                     | point 5               | 56.5                  |
|             | L-22      | Normal   | 3                     | point 6               | 57.5                  |
|             | L-22      | Normal   | 3                     | point 7               | 57.9                  |
|             | L-22      | Normal   | 3                     | point 8               | 56.9                  |
|             | L-22      | Normal   | 3                     | point 9               | 57.2                  |
|             | L-22      | Normal   | 3                     | point 10              | 56.4                  |
|             | L-22      | Normal   | 3                     | point 11              | 56.3                  |
|             |           |          |                       | <b>AVERAGE</b>        | <b>56.9</b>           |
|             | L-23      | Normal   | 3                     | point 1               | 58.8                  |
|             | L-23      | Normal   | 3                     | point 2               | 58.4                  |
|             | L-23      | Normal   | 3                     | point 3               | 59.2                  |
|             | L-23      | Normal   | 3                     | point 4               | 59.4                  |
|             | L-23      | Normal   | 3                     | point 5               | 59.2                  |

Appendix A3 -  
WEK - Noise Measurement Result - data

| Description | Louvre ID | Scenario | Method <sup>(1)</sup> | Location/ Measurement | L <sub>Aeq</sub> (dB) |
|-------------|-----------|----------|-----------------------|-----------------------|-----------------------|
|             | L-23      | Normal   | 3                     | point 6               | 59.1                  |
|             | L-23      | Normal   | 3                     | point 7               | 59.0                  |
|             | L-23      | Normal   | 3                     | point 8               | 59.6                  |
|             | L-23      | Normal   | 3                     | point 9               | 59.5                  |
|             | L-23      | Normal   | 3                     | point 10              | 59.7                  |
|             | L-23      | Normal   | 3                     | point 11              | 59.5                  |
|             |           |          |                       | AVERAGE               | 59.2                  |
|             | L-24      | Normal   | 3                     | point 1               | 59.0                  |
|             | L-24      | Normal   | 3                     | point 2               | 59.1                  |
|             | L-24      | Normal   | 3                     | point 3               | 59.6                  |
|             | L-24      | Normal   | 3                     | point 4               | 58.8                  |
|             | L-24      | Normal   | 3                     | point 5               | 59.4                  |
|             | L-24      | Normal   | 3                     | point 6               | 59.5                  |
|             | L-24      | Normal   | 3                     | point 7               | 59.5                  |
|             | L-24      | Normal   | 3                     | point 8               | 59.5                  |
|             | L-24      | Normal   | 3                     | point 9               | 59.9                  |
|             | L-24      | Normal   | 3                     | point 10              | 59.4                  |
|             | L-24      | Normal   | 3                     | point 11              | 59.0                  |
|             |           |          |                       | AVERAGE               | 59.4                  |
|             | L-28      | Normal   | 3                     | point 1               | 54.0                  |
|             | L-28      | Normal   | 3                     | point 2               | 54.8                  |
|             | L-28      | Normal   | 3                     | point 3               | 54.3                  |
|             | L-28      | Normal   | 3                     | point 4               | 54.9                  |
|             | L-28      | Normal   | 3                     | point 5               | 54.4                  |
|             | L-28      | Normal   | 3                     | point 6               | 54.1                  |
|             | L-28      | Normal   | 3                     | point 7               | 52.3                  |
|             | L-28      | Normal   | 3                     | point 8               | 54.4                  |
|             |           |          |                       | AVERAGE               | 54.2                  |
|             | L-29      | Normal   | 3                     | point 1               | 61.2                  |
|             | L-29      | Normal   | 3                     | point 2               | 60.2                  |
|             | L-29      | Normal   | 3                     | point 3               | 60.0                  |
|             | L-29      | Normal   | 3                     | point 4               | 60.8                  |
|             | L-29      | Normal   | 3                     | point 5               | 61.3                  |
|             | L-29      | Normal   | 3                     | point 6               | 60.4                  |
|             | L-29      | Normal   | 3                     | point 7               | 60.6                  |
|             | L-29      | Normal   | 3                     | point 8               | 61.1                  |
|             |           |          |                       | AVERAGE               | 60.7                  |
|             | L-30      | Normal   | 3                     | point 1               | 56.7                  |
|             | L-30      | Normal   | 3                     | point 2               | 56.7                  |
|             | L-30      | Normal   | 3                     | point 3               | 56.8                  |
|             | L-30      | Normal   | 3                     | point 4               | 57.4                  |
|             | L-30      | Normal   | 3                     | point 5               | 56.5                  |
|             | L-30      | Normal   | 3                     | point 6               | 57.7                  |
|             | L-30      | Normal   | 3                     | point 7               | 57.8                  |
|             | L-30      | Normal   | 3                     | point 8               | 56.8                  |
|             |           |          |                       | AVERAGE               | 57.1                  |
|             | L-31      | Normal   | 3                     | point 1               | 62.6                  |
|             | L-31      | Normal   | 3                     | point 2               | 62.7                  |
|             | L-31      | Normal   | 3                     | point 3               | 64.2                  |
|             | L-31      | Normal   | 3                     | point 4               | 64.1                  |
|             | L-31      | Normal   | 3                     | point 5               | 62.4                  |
|             | L-31      | Normal   | 3                     | point 6               | 62.5                  |
|             | L-31      | Normal   | 3                     | point 7               | 62.6                  |
|             | L-31      | Normal   | 3                     | point 8               | 64.7                  |
|             |           |          |                       | AVERAGE               | 63.3                  |

(1): 2: Far-field measurement; 3: Near-field measurement.

## **Appendix A4 – Measurement Results at NSRs**

**Appendix A4 - Measurement Results at NSRs**

| NSR                                                         | Scenario   | Measurement Type        | Start Time       | End Time         | L <sub>Aeq</sub> , dB(A) |
|-------------------------------------------------------------|------------|-------------------------|------------------|------------------|--------------------------|
| WK3a -<br>Rooftop of<br>Man King Building                   | Night-time | Background Noise Levels | 7-Jul-2018 01:13 | 7-Jul-2018 01:23 | 56.5                     |
|                                                             |            |                         | 7-Jul-2018 01:24 | 7-Jul-2018 01:34 | 53.8                     |
|                                                             |            | Measured Noise Levels   | 6-Jul-2018 23:46 | 7-Jul-2018 00:16 | 54.9                     |
|                                                             |            |                         | 7-Jul-2018 00:22 | 7-Jul-2018 00:52 | 54.3                     |
| WK4 -<br>Refuge Floor (17/F),<br>The Sorrento               | Night-time | Background Noise Levels | 7-Jul-2018 01:17 | 7-Jul-2018 01:22 | 59.4                     |
|                                                             |            |                         | 7-Jul-2018 01:22 | 7-Jul-2018 01:27 | 59.5                     |
|                                                             |            | Measured Noise Levels   | 7-Jul-2018 00:02 | 7-Jul-2018 00:32 | 60.4                     |
|                                                             |            |                         | 7-Jul-2018 00:32 | 7-Jul-2018 01:02 | 60.2                     |
| WK7a -<br>Top Level,<br>TST Fire Station                    | Night-time | Background Noise Levels | 7-Jul-2018 01:20 | 7-Jul-2018 01:30 | 54.1                     |
|                                                             |            |                         | 7-Jul-2018 01:31 | 7-Jul-2018 01:41 | 54.7                     |
|                                                             |            | Measured Noise Levels   | 6-Jul-2018 23:52 | 7-Jul-2018 00:22 | 56.2                     |
|                                                             |            |                         | 7-Jul-2018 00:23 | 7-Jul-2018 00:53 | 56.0                     |
| WK8a -<br>Podium,<br>The Waterfront                         | Night-time | Background Noise Levels | 7-Jul-2018 01:24 | 7-Jul-2018 01:29 | 56.8                     |
|                                                             |            |                         | 7-Jul-2018 01:29 | 7-Jul-2018 01:34 | 57.9                     |
|                                                             |            | Measured Noise Levels   | 6-Jul-2018 23:52 | 7-Jul-2018 00:22 | 58.4                     |
|                                                             |            |                         | 7-Jul-2018 00:22 | 7-Jul-2018 00:52 | 56.9                     |
| WK11 -<br>Refuge Floor<br>(Top Level),<br>T5, The Austin    | Night-time | Background Noise Levels | 7-Jul-2018 01:16 | 7-Jul-2018 01:26 | 57.5                     |
|                                                             |            |                         | 7-Jul-2018 01:26 | 7-Jul-2018 01:36 | 55.8                     |
|                                                             |            | Measured Noise Levels   | 6-Jul-2018 23:54 | 7-Jul-2018 00:24 | 58.5                     |
|                                                             |            |                         | 7-Jul-2018 00:24 | 7-Jul-2018 00:54 | 58.0                     |
| WK12a -<br>Refuge Floor<br>(Top Level),<br>T5, Grand Austin | Night-time | Background Noise Levels | 7-Jul-2018 01:13 | 7-Jul-2018 01:23 | 49.9                     |
|                                                             |            |                         | 7-Jul-2018 01:23 | 7-Jul-2018 01:33 | 50.0                     |
|                                                             |            | Measured Noise Levels   | 6-Jul-2018 23:53 | 7-Jul-2018 00:23 | 52.4                     |
|                                                             |            |                         | 7-Jul-2018 00:23 | 7-Jul-2018 00:53 | 51.4                     |
| WK14 -<br>Refuge Floor (29/F),<br>Moon Tower,<br>The Arch   | Night-time | Background Noise Levels | 7-Jul-2018 01:12 | 7-Jul-2018 01:22 | 55.3                     |
|                                                             |            |                         | 7-Jul-2018 01:23 | 7-Jul-2018 01:33 | 53.6                     |
|                                                             |            | Measured Noise Levels   | 6-Jul-2018 23:51 | 7-Jul-2018 00:21 | 56.0                     |
|                                                             |            |                         | 7-Jul-2018 00:22 | 7-Jul-2018 00:52 | 54.3                     |
| WK14a -<br>Refuge Floor (19/F),<br>Star Tower,<br>The Arch  | Night-time | Background Noise Levels | 7-Jul-2018 01:13 | 7-Jul-2018 01:23 | 56.9                     |
|                                                             |            |                         | 7-Jul-2018 01:23 | 7-Jul-2018 01:33 | 55.3                     |
|                                                             |            | Measured Noise Levels   | 7-Jul-2018 00:00 | 7-Jul-2018 00:30 | 56.4                     |
|                                                             |            |                         | 7-Jul-2018 00:30 | 7-Jul-2018 01:00 | 56.0                     |