

MTR Corporation Limited

**Shatin to Central Link –
Tai Wai to Hung Hom Section and
Mong Kok East to Hung Hom Section**

Fixed Plant Noise Audit Report

(Batch 7 –

Hung Hom Station and Hung Hom Siding (HUH& HHS))

(Sep 2019)

Certified by: Fredrick Leong



Position: Independent Environmental Checker

Date: 23 / 9 / 2019

MTR Corporation Limited

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(Sep 2019)

Certified by: Lisa Poon 

Position: Environmental Team Leader



Date: 23 September 2019

MTR Corporation Limited

Consultancy Agreement No. C11033B

**Shatin to Central Link – Tai Wai to
Hung Hom Section [SCL(TAW-HUH)]
and Mong Kok East to Hung Hom
Section [SCL(MKK – HUH)]****Fixed Plant Noise Audit Report
(Batch 7 - Hung Hom Station and Hung Hom
Siding (HUH & HHS))**

September 2019

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1 INTRODUCTION

1.1 Background

- 1.1.1 The Shatin to Central Link (SCL) is a 17km extension of the existing Ma On Shan Line (MOL) and East Rail Line (EAL) comprising (i) The East-West Corridor which extends the MOL from Tai Wai to Hung Hom via East Kowloon to connect with the West Rail Line (WRL) at Hung Hom Station (HUH) and Stabling Sidings at Hung Hom Freight Yard (HHS); and (ii) The North-South Corridor which is an extension of the EAL at Hung Hom across the harbour to Admiralty Station (ADM).
- 1.1.2 The SCL Tai Wai to Hung Hom Section [SCL (TAW-HUH)] included a total of 7 stations, including Hin Keng Station (HIK), Diamond Hill Station (DIH), Kai Tak Station (KAT), Sung Wong Toi Station (SUW) (formerly named as To Kwa Wan Station (TKW) in SCL(TAW-HUH) EIA), To Kwa Wan Station (formerly named as Ma Tau Wai Station (MTW) in SCL (TAW-HUH) EIA Report), Ho Man Tin Station (HOM) and Hung Hom Station (HUH).
- 1.1.3 Following the cessation of the operations of various freight facilities at Hung Hom in April 2011, MTR Corporation Limited started a detailed study to investigate the feasibility and environmental acceptability of utilizing the former freight yard to accommodate the train stabling requirements for SCL (TAW-HUH). To allow Stabling Sidings at Hung Hom Freight Yard (HHS) feasible for the use of stabling, in addition to providing siding tracks underneath the existing podium structure covering the freight yard, and launching/retrieval and emergency tracks and shunt neck extending outside the podium, appropriate changes were made to the design of SCL (TAW-HUH) and SCL Mong Kok East to Hung Hom Section [SCL (MKK-HUH)] at HUH, Kai Tak Station (KAT) and Diamond Hill Station (DIH) and its associated alignment and facilities.
- 1.1.4 Environmental Impact Assessment (EIA) Reports for SCL – Tai Wai to Hung Hom Section [SCL (TAW-HUH)] (Register No. AEIAR-167/2012), SCL Stabling Sidings at Hung Hom Freight Yard [SCL (HHS)] (Register No. AEIAR-164/2012) and SCL - Mong Kok East to Hung Hom Section [SCL(MKK – HUH)] (Register No. AEIAR-165/2012) (hereinafter referred to as “the EIA Reports”) were approved on 17 February 2012 under the Environmental Impact Assessment Ordinance (EIAO). The alignment and associated facilities under SCL (TAW-HUH) at HUH, KAT and DIH, and SCL (MKK-HUH) at HUH were superseded by those proposed and assessed in SCL (HHS) EIA Report.
- 1.1.5 Following the approval of the EIA Reports, the Environmental Permits, EP-437/2012 and EP-438/2012 covering the construction of SCL (MKK-HUH), both SCL (TAW-HUH) and SCL (HHS) respectively (hereinafter referred to as “the SCL Project”) were granted on 22 March 2012. Variations of Environmental Permit (VEP) were subsequently applied for EP-437/2012 and EP-438/2012. EP-437/2012/A and EP-438/2012/K, which are the latest Environmental Permits, were issued by Director of Environmental Protection (DEP) on 27 November 2017 and 4 October 2016, respectively.
- 1.1.6 Pursuant to Condition 2.21 of EP No. EP-437/2012/A, at least one month before commencement of operation of the Project, the Permit Holder, MTR Corporation Ltd (MTR), shall carry out fixed plant noise audit and deposit with the Director four hardcopies and one electronic copy of an audit report showing the design of the fixed plant noise sources associated with the Project complies with the maximum sound power levels determined in the approved SCL(MKK-HUH) EIA Report and SCL(HHS) EIA Report, or otherwise approved by the Director in compliance with the requirements in Technical Memorandum on Environmental Impact Assessment Process (TM-EIAO) having due regard to the characteristics of tonality, impulsiveness and intermittency.
- 1.1.7 For EP No. EP-438/2012/K, according to Condition 2.32, at least one month before commencement of operation of the Project, the Permit Holder, MTR Corporation Ltd (MTR), shall carry out fixed plant noise audit and deposit with the Director four hardcopies and one electronic copy of an audit report showing the design of the fixed plant noise sources

associated with the Project complies with the maximum sound power levels determined in the approved SCL (TAW-HUH) EIA Report and SCL(HHS) EIA Report and all relevant documents in the Register, or otherwise approved by the Director in compliance with the requirements in Technical Memorandum on Environmental Impact Assessment Process (TM-EIAO) having due regard to the characteristics of tonality, impulsiveness and intermittency.

- 1.1.8 Since the installation of fixed plant and louvers for the HUH and HHS would be completed in stages, the fixed plant noise audit would be conducted in stages in each area to audit the fixed plant noise under the operational conditions.
- 1.1.9 Based on the latest design information, the maximum allowable SWLs of fixed plant items has been updated to reflect the latest design of the Project, with consideration of cumulative noise impact from the fixed plant sources for HUH and HHS, a Proposal was prepared to present the updated maximum allowable sound power levels (SWLs) of the fixed plant items at HUH and HHS for both EP-437/2012/A and EP-438/2012/K. The Proposal for Updating Maximum Allowable Sound Power Levels of Fixed Plant Sources (Hung Hom Station (HUH) and Stabling Sidings at Hung Hom Freight Yard (HHS)) (hereinafter referred to as “the Proposal (HUH & HHS)”) (**Appendix A** refers) was approved by DEP on 14 August 2019.
- 1.1.10 This Fixed Plant Noise Audit Report (Hung Hom Station (HUH) and Stabling Sidings at Hung Hom Freight Yard (HHS)) (hereinafter referred to as “the FPNAR (HUH and HHS)”) presents the noise measurement methodology and measurement results at the fixed plant noise sources of HHS and at the representative NSRs near HHS, for checking compliance with the maximum allowable sound power levels (SWLs) determined in the Proposal (HUH and HHS). For HUH, after the completion of HUH fixed plant noise measurements, the results and compliance status will be reported in a revised Fixed Plant Noise Audit Report to be deposited under both EP-437/2012/A and EP-438/2012/K.

1.2 Fulfilment of EP Submission Related to Fixed Plant Noise Audit Report

- 1.2.1 The SCL(TAW-HUH) will connect the West Rail Line and Ma On Shan Line to form Tuen Ma Line (TML). The MTR Corporation Limited has recommended phased opening of TML under SCL project, covering three new stations at Hin Keng, Diamond Hill and Kai Tak with a target opening in the 1st quarter of 2020. **Table 1.1** presents the submission status of fixed plant noise audit report under relevant EP conditions. As shown in **Table 1.1**, EP submissions related to fixed plant noise are completed and fulfilled for TML phased opening.

Table 1.1 Summary of Submission Status of Fixed Plant Noise Audit Report

Relevant EP Condition	Batch	Location	Submission Date
Condition 2.32 of EP-438/2012/K	Batch 1	TKW	15 Mar 2019
	Batch 2	FTA ⁽¹⁾	16 Apr 2019
	Batch 3	DIH ⁽¹⁾	24 Jun 2019
	Batch 4	TKA	
	Batch 5	KAT ⁽¹⁾ , MCV ⁽¹⁾ & SUW	2 Aug 2019
	Batch 6	HIK ⁽¹⁾	27 Aug 2019
Condition 2.21 of EP-437/2012/A & Condition 2.32 of EP-438/2012/K	Batch 7	HHS / HUH	29 Aug 2019 ⁽²⁾

Notes:

(1) Locations related to phased opening of the TML under SCL.

(2) Fixed plant noise measurement results and compliance status for HUH will be reported after completion in a later stage before full opening of TML under SCL.

1.3 Purpose of This Report

- 1.3.1 This Report presents the noise measurement methodology and measurement results at the fixed plant noise sources of HHS and at the representative NSRs near HHS. For HUH, after the completion of HUH fixed plant noise measurements, the results and compliance status will be reported in a revised Fixed Plant Noise Audit Report to be deposited under both EP-437/2012/A and EP-438/2012/K.
- 1.3.2 This Report comprises the following sections:
- Section 1 presents the background information.
 - Section 2 presents the Updated SWL of fixed plant noise sources.
 - Section 3 presents the noise measurement methodology.
 - Section 4 presents the noise measurement results.
 - Section 5 presents the conclusions.

2 UPDATED SOUND POWER LEVELS OF FIXED PLANT NOISE SOURCES

2.1.1 The updated maximum allowable SWL of fixed plant noise sources at HUH and HHS are extracted from the Proposal (HUH and HHS) and are summarised in **Table 2.1**. The updated fixed plant noise sources locations at HUH and HHS are shown in **Figure No. C11033B/C/SCL/ACM/M52/011**. The measured noise level of fixed plant noise sources during the commissioning test shall comply with the maximum allowable SWLs as summarised in **Table 2.1**. Appropriate corrections in tonal, impulsive or intermittent characteristics should be applied, where applicable, in accordance with the IND-TM during the commissioning test conducted at the representative NSRs.

Table 2.1 Summary of Updated Maximum Allowable SWLs for Fixed Plant Noise Sources at HUH and HHS

Location	Fixed Plant ID.	Fixed Plant Source	Maximum Allowable SWL, dB(A) ⁽¹⁾⁽²⁾	
			Daytime & Evening ⁽³⁾	Night-time ⁽³⁾
HHS	HHS-38	Siding Ventilation Louver	64	64
	HHS-40	Siding Ventilation Louver	88	-
	HHS-41-1	Siding Ventilation Louver	54	54
	HHS-41-2	Siding Ventilation Louver	66	66
	HHS-42-1	Siding Ventilation Louver	66	66
	HHS-42-2	Siding Ventilation Louver	64	64
	HHS-42-3	Siding Ventilation Louver	63	63
	HHS-45-1	Siding Ventilation Louver	85	85
	HHS-45-2	Siding Ventilation Louver	60	60
	HHS-49-2	Siding Ventilation Louver	78	78
	HHS-49-3	Siding Ventilation Louver	71	71
	HHS-49-6	Siding Ventilation Louver	67	67
	HHS-49-8	Siding Ventilation Louver	70	70
	HHS-50-1	Siding Ventilation Louver	75	75
	HHS-50-2	Siding Ventilation Louver	69	69
	HHS-51	Siding Ventilation Louver	86	85
	HHS-52-1	Siding Ventilation Louver	63	63
	HHS-53-1	Siding Ventilation Louver	68	68
	HHS-53-2	Siding Ventilation Louver	75	75
	HHS-53-3	Siding Ventilation Louver	59	59
	HHS-53-4	Siding Ventilation Louver	67	67
	HHS-53-5	Siding Ventilation Louver	69	69
	HHS-53-6	Siding Ventilation Louver	66	66
	HHS-56	Siding Ventilation Louver	73	73
	HHS-57-2	Siding Ventilation Louver	61	61
	HHS-58-1	Siding Ventilation Louver	68	68
	HHS-58-2	Siding Ventilation Louver	69	69
	HHS-62-2	Siding Ventilation Louver	69	69
	HHS-67-1	Siding Ventilation Louver	71	71
	HHS-67-3	Siding Ventilation Louver	73	73
	HHS-68-1	Siding Ventilation Louver	72	72
	HHS-68-2	Siding Ventilation Louver	71	71
	HHS-68-3	Siding Ventilation Louver	70	70

Location	Fixed Plant ID.	Fixed Plant Source	Maximum Allowable SWL, dB(A) ⁽¹⁾⁽²⁾	
			Daytime & Evening ⁽³⁾	Night-time ⁽³⁾
	HHS-70-3	Siding Ventilation Louver	59	59
	HHS-71-1	Siding Ventilation Louver	54	54
	HHS-71-2	Siding Ventilation Louver	56	56
	HHS-71-3	Siding Ventilation Louver	67	67
	HHS-73	Siding Ventilation Louver	53	53
	HHS-77-1	Siding Ventilation Louver	54	54
	HHS-77-2	Siding Ventilation Louver	55	55
	HHS-77-3	Siding Ventilation Louver	55	55
	HHS-78	Siding Ventilation Louver	87	79
	HHS-84	Siding Ventilation Louver	72	72
	HHS-87-2	Siding Ventilation Louver	75	75
	HHS-88-2	Siding Ventilation Louver	58	58
	HHS-100-2	Siding Ventilation Louver	62	62
	HHS-101-1	Siding Ventilation Louver	76	76
	HHS-102-1	Siding Ventilation Louver	69	69
	HHS-102-2	Siding Ventilation Louver	71	71
	HHS-102-3	Siding Ventilation Louver	75	75
	HHS-102-6	Siding Ventilation Louver	71	71
	HHS-102-7	Siding Ventilation Louver	73	73
	HHS-102-9	Siding Ventilation Louver	71	71
	HHS-102-11	Siding Ventilation Louver	72	72
	HHS-121	Siding Ventilation Louver	60	60
HUH ⁽⁴⁾	HUH-4-2	Station Ventilation Louvre	103	93
	HUH-7a	Tunnel Ventilation Louvre	100	90
	HUH-7b	Tunnel Ventilation Louvre	100	90
	HUH-8a	Tunnel Ventilation Louvre	101	91
	HUH-8b	Tunnel Ventilation Louvre	100	90
	HUH-8c	Tunnel Ventilation Louvre	100	90
	HUH-9a	Tunnel Ventilation Louvre	101	91
	HUH-9b	Tunnel Ventilation Louvre	101	91
	HUH-9c	Tunnel Ventilation Louvre	101	91
	HUH-10a	Tunnel Ventilation Louvre	101	91
	HUH-10b	Tunnel Ventilation Louvre	101	91
	HUH-10c	Tunnel Ventilation Louvre	101	91
	HUH-11a	Tunnel Ventilation Louvre	101	91
	HUH-11b	Tunnel Ventilation Louvre	101	91
	HUH-12a	Tunnel Ventilation Louvre	101	91
	HUH-12b	Tunnel Ventilation Louvre	101	91
	HUH-13a	Station Ventilation Louvre	101	91
	HUH-13b	Station Ventilation Louvre	101	91
	HUH-14-1-1	Station Ventilation Louvre	101	91
	HUH-14-1-2	Station Ventilation Louvre	101	91
	HUH-14-2	Station Ventilation Louvre	101	91
	HUH-14-3	Station Ventilation Louvre	101	91

Location	Fixed Plant ID.	Fixed Plant Source	Maximum Allowable SWL, dB(A) ⁽¹⁾⁽²⁾	
			Daytime & Evening ⁽³⁾	Night-time ⁽³⁾
	HUH-15-1	Tunnel Ventilation Louvre	101	91
	HUH-15-2	Tunnel Ventilation Louvre	101	91
	HUH-15-3	Tunnel Ventilation Louvre	101	91
	HUH-16a	Tunnel Ventilation Louvre	96	86
	HUH-16b	Tunnel Ventilation Louvre	96	86
	HUH-17	Tunnel Ventilation Louvre	101	91
	HUH-18	Tunnel Ventilation Louvre	97	87
	HUH-19a	Tunnel Ventilation Louvre	100	90
	HUH-19b	Tunnel Ventilation Louvre	103	93
	HUH-20	Station Ventilation Louvre	97	87
	HUH-21a	Tunnel Ventilation Louvre	100	90
	HUH-21b	Tunnel Ventilation Louvre	100	90
	HUH-22a-1	Station Ventilation Louvre	100	90
	HUH-22a-2	Station Ventilation Louvre	100	90
	HUH-22b	Station Ventilation Louvre	100	90
	HUH-26H	Station Ventilation Louvre	79	79
	HUH-27H	Station Ventilation Louvre	103	93
	HUH-29	Station Ventilation Louvre	103	93
	HUH-30H	Station Ventilation Louvre	79	79
	HUH-32H	Station Ventilation Louvre	80	80
	HUH-33H	Station Ventilation Louvre	103	93
	HUH-37H	Station Ventilation Louvre	83	83
	HUH-80-1	Station Ventilation Louvre	123	113
	HUH-80-2	Station Ventilation Louvre	123	113
	HUH-80-3	Station Ventilation Louvre	123	113
	HUH-81	Station Ventilation Louvre	103	93
	HUH-82-1	Station Ventilation Louvre	98	88
	HUH-82-2	Station Ventilation Louvre	98	88
	HUH-82-3	Station Ventilation Louvre	98	88
	HUH-82-4	Station Ventilation Louvre	98	88
	HUH-82-5	Station Ventilation Louvre	98	88
	HUH-82-6	Station Ventilation Louvre	98	88
	HUH-82-7	Station Ventilation Louvre	98	88
	HUH-82-8	Station Ventilation Louvre	98	88
	HUH-82-9	Station Ventilation Louvre	98	88
	HUH-82-10	Station Ventilation Louvre	98	88
	HUH-82-11	Station Ventilation Louvre	98	88
	HUH-82-12	Station Ventilation Louvre	98	88
	HUH-85b	Station Ventilation Louvre	101	91
	HUH-86-4	Station Ventilation Louvre	99	89
	HUH-86-13	Station Ventilation Louvre	99	89
	HUH-95b	Station Ventilation Louvre	101	91
	HUH-103-1	Station Ventilation Louvre	101	91
	HUH-103-2	Station Ventilation Louvre	101	91

Location	Fixed Plant ID.	Fixed Plant Source	Maximum Allowable SWL, dB(A) ⁽¹⁾⁽²⁾	
			Daytime & Evening ⁽³⁾	Night-time ⁽³⁾
	HUH-103-3	Station Ventilation Louvre	101	91
	HUH-103-4	Station Ventilation Louvre	101	91
	HUH-103-5	Station Ventilation Louvre	101	91
	HUH-103-6	Station Ventilation Louvre	101	91
	HUH-103-7	Station Ventilation Louvre	101	91
	HUH-103-8	Station Ventilation Louvre	101	91
	HUH-103-9	Station Ventilation Louvre	101	91
	HUH-103-10	Station Ventilation Louvre	101	91
	HUH-103-11	Station Ventilation Louvre	101	91
	HUH-103-12	Station Ventilation Louvre	101	91
	HUH-103-13	Station Ventilation Louvre	101	91
	HUH-103-14	Station Ventilation Louvre	101	91
	HUH-104-1	Station Ventilation Louvre	98	88
	HUH-104-2	Station Ventilation Louvre	98	88
	HUH-104-3	Station Ventilation Louvre	98	88
	HUH-104-4	Station Ventilation Louvre	98	88
	HUH-104-5	Station Ventilation Louvre	98	88
	HUH-104-6	Station Ventilation Louvre	98	88
	HUH-104-7	Station Ventilation Louvre	98	88
	HUH-107b	Station Ventilation Louvre	98	88
	HUH-108	Station Ventilation Louvre	98	88
	HUH-109	Station Ventilation Louvre	98	88
	HUH-110	Station Ventilation Louvre	98	88
	HUH-111	Station Ventilation Louvre	98	88
	HUH-112	Station Ventilation Louvre	98	88
	HUH-113	Station Ventilation Louvre	98	88
	HUH-115	Station Ventilation Louvre	98	88
	HUH-116	Station Ventilation Louvre	98	88
	HUH-117	Station Ventilation Louvre	98	88
	HUH-118	Station Ventilation Louvre	98	88
	HUH-119	Station Ventilation Louvre	100	90
	HUH-120	Station Ventilation Louvre	100	90

Notes:

- (1) The maximum allowable sound power levels have due regard to the characteristics of tonality, intermittency and impulsiveness.
- (2) As the louvre will not be under operation during night-time period, the maximum allowable SWL is presented as “-”.
- (3) Day: 0700 to 1900 hours, Evening: 1900 to 2300 hours, Night: 2300 to 0700 hours.
- (4) Design of fixed plant noise sources for HUH are yet to be finalized and their maximum allowable SWLs are calculated based on the latest information. The Proposal (HUH & HHS) will be updated in case there are changes in the maximum allowable SWLs for HUH fixed plant noise sources.

3 MEASUREMENT METHODOLOGY

3.1 Noise Measurement to obtain the SWLs of Fixed Plant Noise Sources

Measurement Methodology

- 3.1.1 Details of measurement methodology for SCL are presented in **Appendix B1**. Noise measurements to obtain the SWLs of the fixed plant noise sources followed **Appendix B1** and were conducted by Wilson Acoustics Limited.

Measurement Equipment

- 3.1.2 The sound level meters and calibrators used for noise measurements are listed in the **Table 3.1**. The instruments used for the noise measurements complied with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1). The calibration certificates of equipment are provided in **Appendix B2**.

Table 3.1 Noise Measurement Equipment

Equipment	Model	Serial Number
Sound Level Meter	SVANTEK SVAN 955	15234
	SVANTEK SVAN 958	20890
	SVANTEK SVAN 958	28422
	SVANTEK SVAN 958A	59120
	SVANTEK SVAN 958A	59121
	SVANTEK SVAN 958A	69082
	SVANTEK SVAN 959	11228
Calibrator	SVANTEK SV30A	10814
	SVANTEK SV30A	29088

- 3.1.3 Before and after each series of measurements, a calibration check was carried out on the sound level meter by the calibrator. Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0 dB.

Measurement Date and Time

- 3.1.4 There will be daytime/evening and night-time operation modes for fixed plant sources at HHS. Nevertheless, the noise measurements at HHS were all conducted during night-time period at the fixed plant noise sources in order to minimise influence from background noise on measurement data. Details of the noise measurement schedule are shown in **Table 3.2**.

Table 3.2 Measurement Schedule

Location	Date
HHS	20 November 2017
	19, 20 and 21 June 2018
	3 July 2018
	4, 5, 6, 12 and 13 December 2018
	5 June 2019

3.2 Noise Measurement to Confirm any Tonal, Impulsive and Intermittent Characteristics from the Fixed Plant Noise Sources at Representative NSRs

Measurement Parameters

- 3.2.1 L_{Aeq} (30min) was measured at each designated measurement location. 1/3 octave band spectrum and time history over the measurement period was also be logged for determination of tonal, impulsiveness and intermittency characteristic.
- 3.2.2 Background noise level was measured at the same measurement location in term of L_{Aeq} (5 min) immediate before or after the noise measurement when all Project's fixed plant equipment shut down. To minimise the measurement data being influenced by background noise, noise data obtained at an instance of minimal or no traffic on the road was used to evaluate the tonal characteristic. The corrections for tonality, impulsiveness or intermittency at the representative NSRs was determined in accordance with IND-TM. In addition, any noticeable characteristics of tonality, impulsiveness and intermittency from the fixed plant noise sources was recorded during the measurement.

Measurement Equipment

- 3.2.3 The sound level meters and calibrators used for noise measurements at representative NSRs are listed in **Table 3.3**. The instruments used for the noise measurements complied with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1). The calibration certificates of equipment are shown in **Appendix C1**.

Table 3.3 Noise Measurement Equipment

Equipment	Model	Serial Number
Sound Level Meter	SVANTEK SVAN 958	20890
	SVANTEK SVAN 958A	69082
	SVANTEK SVAN 958A	59120
	SVANTEK SVAN 958A	59121
	SVANTEK SVAN 959	11228
Acoustic Calibrator	SVANTEK SVAN SV30A	29088

- 3.2.4 Before and after each series of measurements, a calibration check was carried out on the sound level meter by the calibrator. Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0 dB.

Measurement Locations

- 3.2.5 The proposed noise measurement locations were selected at the representative NSRs where have direct line of sight to the noise sources and were accessible for noise measurement. These measurement locations were agreed with EPD prior to noise measurement. However, the rooftop of the Metropolis Tower 1 was under renovation during the noise measurement and hence not available to carry out noise measurement. Considering that the footbridge near Harbour Plaza Metropolis is located closer to the noise sources as compared with Metropolis Tower 1 and also have direct line of sight to the noise sources, the measurement location HUH-FN2 was shifted to the footbridge. The measurement locations are summarised in **Table 3.4** and shown in **Figure No. C11033B/C/SCL/ACM/M52/012**. Photographs of measurement locations are shown in **Appendix C2**.

Table 3.4 Noise Measurement Locations

Measurement Location ID	Representative NSR (NSR ID)	Type	Measurement Height
HUH-FN1	Royal Peninsula Block 2 (HUH-3-1 ⁽³⁾)	Residential	Rooftop of Royal Peninsula Block 2 (1m from building façade)
HUH-FN2	The Metropolis Residence Tower 1 ⁽¹⁾ (HUH-4-2)	Residential	On the footbridge near Harbour Plaza Metropolis (1m from the footbridge parapet wall)
HUH-FN3	Harbourfront Horizon ⁽²⁾ (HUH-10-1 ⁽³⁾)	Residential	On the footbridge near HUH-10-1 (1.2m above the footbridge level in free-field condition)
HUH-FN4	University Student Halls of Residence (HUH-11-1) and Harbour Place Block 6 (HUH-12-1)	Residential	Rooftop of The Hong Kong Polytechnic University Student Halls of Residence (1m from building façade)
HUH-FN5	The Metropolis Residence Tower 2 ⁽¹⁾ (HUH-4-1 ⁽³⁾)	Residential	On the footbridge near The Metropolis Tower 2 (1m from the footbridge parapet wall)

Notes:

- (1) Metropolis Residence is a service apartment and shall not rely on openable windows for ventilation. Nonetheless, for conservative consideration that occupier might open window under special circumstances, this premise has been considered as an assessment point.
- (2) Harbourfront Horizon shall not rely on openable windows for ventilation. Nonetheless, for conservative consideration that occupier might open window under special circumstances, this premise has been considered as an assessment point.
- (3) NSR HH9b, HH4 and HH7 as identified in SCL(MKK-HUH) EIA Report is same as the NSR HUH-10-1, HUH-3-1 and HUH-4-1 respectively as identified in SCL(HHS) EIA Report. To avoid confusion, NSR ID following SCL(HHS) EIA Report has been adopted in this assessment.

Measurement Date and Time

- 3.2.6 For daytime/evening and night-time operation modes, noise measurement at representative NSRs was conducted during evening and night-time periods. The measurement schedule is presented in **Table 3.5**.

Table 3.5 Measurement Schedule

Measurement Location ID	Date
HUH-FN1, HUH-FN2, HUH-FN3, HUH-FN4 & HUH-FN5	10 & 11 June 2019

4 MEASUREMENT RESULTS

4.1 Noise Measurement to obtain the SWLs of Fixed Plant Noise Sources

4.1.1 The measured SWLs for daytime and evening, and night-time periods are presented in **Table 4.1**. Photographs showing the examples of noise measurement for fixed plant noise are shown in **Appendix B3**. Details of the measurement results are shown in **Appendix B4**.

Table 4.1 Summary of Measured SWLs for Fixed Plants

Plant Item ⁽⁴⁾	Measured SWL ⁽¹⁾⁽²⁾ , dB(A)		Maximum allowable SWL ⁽¹⁾ , dB(A)		Compliance (Y/N)	
	Day / Evening-time ⁽³⁾	Night-time ⁽³⁾	Day / Evening-time ⁽³⁾	Night-time ⁽³⁾	Day / Evening-time ⁽³⁾	Night-time ⁽³⁾
HHS-38	64	64	64	64	Y	Y
HHS-40	88	-	88	-	Y	Y
HHS-41-1	54	54	54	54	Y	Y
HHS-41-2	66	66	66	66	Y	Y
HHS-42-1	66	66	66	66	Y	Y
HHS-42-2	64	64	64	64	Y	Y
HHS-42-3	63	63	63	63	Y	Y
HHS-45-1	85	85	85	85	Y	Y
HHS-45-2	60	60	60	60	Y	Y
HHS-49-2	78	78	78	78	Y	Y
HHS-49-3	71	71	71	71	Y	Y
HHS-49-6	67	67	67	67	Y	Y
HHS-49-8	70	70	70	70	Y	Y
HHS-50-1	75	75	75	75	Y	Y
HHS-50-2	69	69	69	69	Y	Y
HHS-51	86	85	86	85	Y	Y
HHS-52-1	63	63	63	63	Y	Y
HHS-53-1	68	68	68	68	Y	Y
HHS-53-2	75	75	75	75	Y	Y
HHS-53-3	59	59	59	59	Y	Y
HHS-53-4	67	67	67	67	Y	Y
HHS-53-5	69	69	69	69	Y	Y
HHS-53-6	66	66	66	66	Y	Y
HHS-56	73	73	73	73	Y	Y
HHS-57-2	61	61	61	61	Y	Y
HHS-58-1	68	68	68	68	Y	Y
HHS-58-2	69	69	69	69	Y	Y
HHS-62-2	69	69	69	69	Y	Y
HHS-67-1	71	71	71	71	Y	Y
HHS-67-3	73	73	73	73	Y	Y
HHS-68-1	72	72	72	72	Y	Y
HHS-68-2	71	71	71	71	Y	Y
HHS-68-3	70	70	70	70	Y	Y
HHS-70-3	59	59	59	59	Y	Y
HHS-71-1	54	54	54	54	Y	Y
HHS-71-2	56	56	56	56	Y	Y

Plant Item ⁽⁴⁾	Measured SWL ⁽¹⁾⁽²⁾ , dB(A)		Maximum allowable SWL ⁽¹⁾ , dB(A)		Compliance (Y/N)	
	Day / Evening-time ⁽³⁾	Night-time ⁽³⁾	Day / Evening - time ⁽³⁾	Night-time ⁽³⁾	Day / Evening - time ⁽³⁾	Night-time ⁽³⁾
HHS-71-3	67	67	67	67	Y	Y
HHS-73	53	53	53	53	Y	Y
HHS-77-1	54	54	54	54	Y	Y
HHS-77-2	55	55	55	55	Y	Y
HHS-77-3	55	55	55	55	Y	Y
HHS-78	87	79	87	79	Y	Y
HHS-84	72	72	72	72	Y	Y
HHS-87-2	75	75	75	75	Y	Y
HHS-88-2	58	58	58	58	Y	Y
HHS-100-2	62	62	62	62	Y	Y
HHS-101-1	76	76	76	76	Y	Y
HHS-102-1	69	69	69	69	Y	Y
HHS-102-2	71	71	71	71	Y	Y
HHS-102-3	75	75	75	75	Y	Y
HHS-102-6	71	71	71	71	Y	Y
HHS-102-7	73	73	73	73	Y	Y
HHS-102-9	71	71	71	71	Y	Y
HHS-102-11	72	72	72	72	Y	Y
HHS-121	60	60	60	60	Y	Y

Notes:

- (1) As discussed in S3.1.4, some plants would be operated in different modes, namely daytime/evening and night-time operation modes. For those plants operating in the same mode during daytime/evening and night-time periods, the measured SWL is same for both daytime/evening and night-time periods.
- (2) As the louvre will not be under operation during night-time period, the maximum allowable SWL is presented as “-”.
- (3) Day: 0700 to 1900 hours, Evening: 1900 to 2300 hours, Night: 2300 to 0700 hours
- (4) For HUH, after the completion of HUH fixed plant noise measurements, the results and compliance status will be reported in a revised Fixed Plant Noise Audit Report to be deposited under both EP-437/2012/A and EP-438/2012/K.

4.2 Noise Measurement to Confirm any Tonal, Impulsive and Intermittent Characteristics from the Fixed Plant Noise Sources at NSRs

- 4.2.1 Noise measurement to confirm any characteristics of tonality, impulsiveness and intermittency at the representative NSRs were conducted during both evening and night-time periods. Measurement results are summarised in **Table 4.2** below. No characteristics of tonality, impulsiveness and intermittency was observed at the selected NSRs. Data analysis has been carried out to determine the characteristics of tonality, impulsiveness and intermittency by assessing the logged 1/3 octave band spectra and time history profile. Result of data analysis also indicated no characteristics of tonality, impulsiveness and intermittency is found at the representative NSRs. Detailed noise measurements results are presented in **Appendix C3**.

Table 4.2 Noise Measurement Results at Measurement Locations

Measurement Location ID	Representing NSRs	Time Period ^{(1)&(2)}	Measurement Results			Site Observation	Characteristics of Tonality, Impulsiveness and Intermittency at NSRs (Y/N)
			Measured Noise Level $L_{Aeq}(30mins)$, dB(A)	Background Noise Level $L_{Aeq}(5mins)$, dB(A)	Difference between Measured Noise Level and Background Level, dB(A) ⁽³⁾		
HUH-FN1	Royal Peninsula Block 2 (HUH-3-1)	Daytime & Evening	67.7	68.0	-0.3	Noise environment was dominated by traffic noise. Noise from SCL fixed plant was not noticeable at measurement locations	N
		Night-time	66.8	65.6	1.2		N
HUH-FN2	The Metropolis Residence Tower 1 (HUH-4-2)	Daytime & Evening	61.5	60.5	1.0		N
		Night-time	60.3	58.2	2.1		N
HUH-FN3	Harbourfront Horizon (HUH-10-1)	Daytime & Evening	64.3	63.0	1.3		N
		Night-time	62.3	60.7	1.6		N
HUH-FN4	University Student Halls of Residence (HUH-11-1) and Harbour Place Block 6 (HUH-12-1)	Daytime & Evening	65.8	65.7	0.1		N
		Night-time	64.4	62.4	2.0		N
HUH-FN5	The Metropolis Residence Tower 2 (HUH-4-1)	Daytime & Evening	69.5	69.9	-0.4		N
		Night-time	68.2	68.0	0.2		N

Notes:

(1) Day: 0700 to 1900 hours, Evening: 1900 to 2300 hours, Night: 2300 to 0700 hours

(2) Fixed plant noise operation during daytime/evening and night-time periods have been included according to corresponding fixed plant noise measurement.

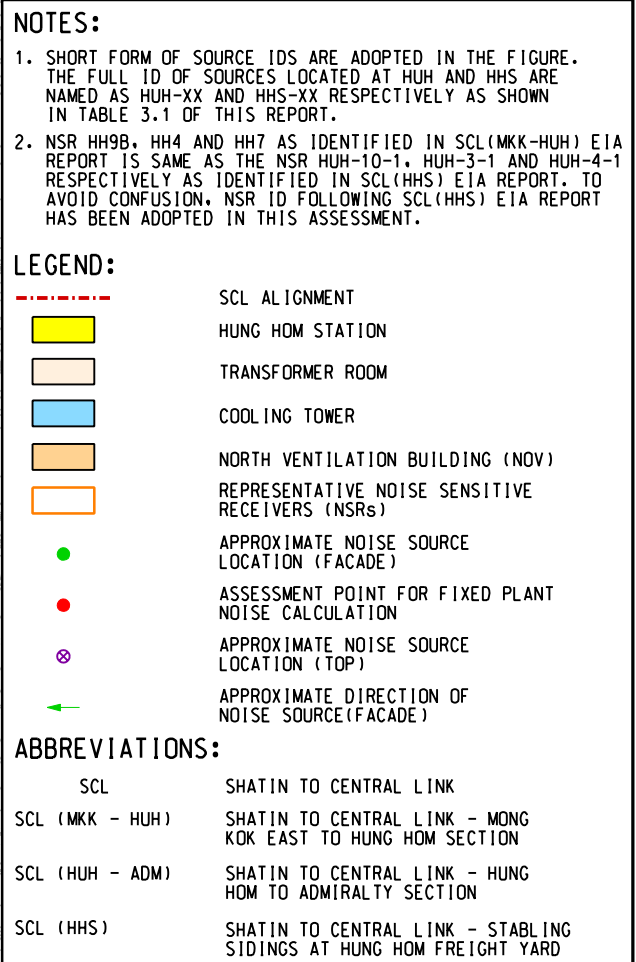
MTR Corporation Limited

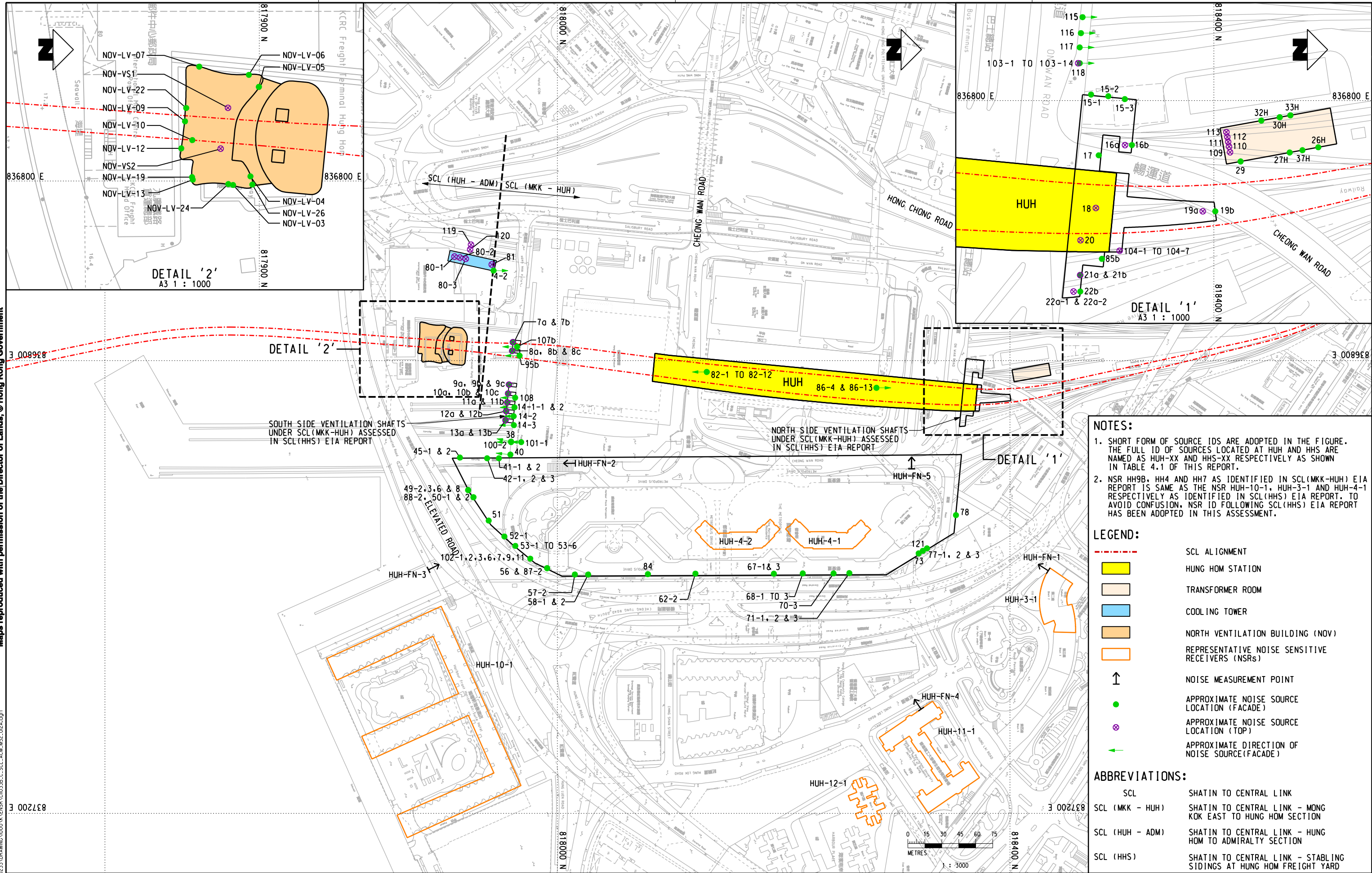
- (3) The measured noise levels were dominated by background noise (i.e. road traffic noise from major roads nearby). Since traffic noise fluctuated during the daytime & evening measurement periods, leading to higher background noise levels than the measured noise levels of the fixed sources at few measurement locations.

5 CONCLUSION

- 5.1.1 The fixed plant noise verification was undertaken and the measurement results indicated all the fixed plant noise levels in HHS comply with the updated maximum allowable SWLs. No characteristics of tonality, impulsiveness and intermittency was observed at the measurement locations. Result of data analysis also indicated no characteristics of tonality, impulsiveness and intermittency were found at the measurement locations.
- 5.1.2 For HUH, after the completion of HUH fixed plant noise measurements, the results and compliance status will be reported in a revised Fixed Plant Noise Audit Report to be deposited under both EP-437/2012/A and EP-438/2012/K.

Figures





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Appendix A

**Proposal for Updating Maximum Allowable Sound Power
Levels of Fixed Plant Sources (Hung Hom Station (HUH) and
Stabling Sidings at Hung Hom Freight Yard (HHS))**

MTR Corporation Limited

**Shatin to Central Link –
Tai Wai to Hung Hom Section and
Mong Kok East to Hung Hom Section**

Proposal for Updating Maximum Allowable

Sound Power Levels of Fixed Plant Sources

(Batch 7 –

Hung Hom Station and Hung Hom Siding (HUH& HHS))

(July 2019)

Certified by: Fredrick Leong 

Position: Independent Environmental Checker

Date: 26 July 2019

MTR Corporation Limited

**Shatin to Central Link –
Tai Wai to Hung Hom Section and
Mong Kok East to Hung Hom Section**

Proposal for Updating Maximum Allowable
Sound Power Levels of Fixed Plant Sources

(Batch 7 –

Hung Hom Station and Hung Hom Siding

(HUH& HHS))

(July 2019)

Certified by: Lisa Poon 

Position: Environmental Team Leader




Date: 26 July 2019

MTR Corporation Limited

Consultancy Agreement No. C11033B

**Shatin to Central Link – Mong Kok East
to Hung Hom [SCL(MKK – HUH)]****Proposal for Updating Maximum Allowable
Sound Power Levels of Fixed Plant Sources
(Hung Hom Station (HUH) and Stabling
Sidings at Hung Hom Freight Yard (HHS))**

July 2019

	Name	Signature
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Version: A Date: 22 July 2019

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1 INTRODUCTION

1.1 Background

- 1.1.1 The Shatin to Central Link (SCL) is a 17km extension of the existing Ma On Shan Line (MOL) and East Rail Line (EAL) comprising (i) The East-West Corridor which extends the MOL from Tai Wai to Hung Hom via East Kowloon to connect with the West Rail Line (WRL) at Hung Hom Station (HUH) and Stabling Sidings at Hung Hom Freight Yard (HHS); and (ii) The North-South Corridor which is an extension of the East Rail Line (EAL) at Hung Hom across the harbour to Admiralty Station (ADM).
- 1.1.2 The SCL Tai Wai to Hung Hom Section [SCL (TAW-HUH)] included a total of 7 stations, including Hin Keng Station (HIK), Diamond Hill Station (DIH), Kai Tak Station (KAT), Sung Wong Toi Station (SUW) (formerly named as To Kwa Wan Station (TKW) in SCL(TAW-HUH) EIA), To Kwa Wan Station (formerly named as Ma Tau Wai Station (MTW) in SCL (TAW-HUH) EIA Report), Ho Man Tin Station (HOM) and Hung Hom Station (HUH).
- 1.1.3 Following the cessation of the operations of various freight facilities at Hung Hom in April 2011, MTR Corporation Limited started a detailed study to investigate the feasibility and environmental acceptability of utilizing the former freight yard to accommodate the train stabling requirements for SCL (TAW-HUH). To allow Stabling Sidings at Hung Hom Freight Yard (HHS) feasible for the use of stabling, in addition to providing siding tracks underneath the existing podium structure covering the freight yard, and launching/retrieval and emergency tracks and shunt neck extending outside the podium, appropriate changes were made to the design of SCL (TAW-HUH) and SCL Mong Kok East to Hung Hom Section [SCL (MKK-HUH)] at HUH, Kai Tak Station (KAT) and Diamond Hill Station (DIH) and its associated alignment and facilities.
- 1.1.4 Environmental Impact Assessment (EIA) Reports for SCL – Tai Wai to Hung Hom Section [SCL (TAW-HUH)] (Register No. AEIAR-167/2012), SCL Stabling Sidings at Hung Hom Freight Yard [SCL (HHS)] (Register No. AEIAR-164/2012) and SCL - Mong Kok East to Hung Hom Section [SCL(MKK – HUH)] (Register No. AEIAR-165/2012) (hereinafter referred to as “the EIA Reports”) were approved on 17 February 2012 under the Environmental Impact Assessment Ordinance (EIAO). The alignment and associated facilities under SCL (TAW-HUH) at HUH, KAT and DIH, and SCL (MKK-HUH) at HUH were superseded by those proposed and assessed in SCL (HHS) EIA Report.
- 1.1.5 Following the approval of the EIA Reports, the Environmental Permits, EP-437/2012 and EP-438/2012 covering the construction of SCL (MKK-HUH), both SCL (TAW-HUH) and SCL (HHS) respectively (hereinafter referred to as “the SCL Project”) were granted on 22 March 2012. Variations of Environmental Permit (VEP) were subsequently applied for EP-437/2012 and EP-438/2012. EP-437/2012/A and EP-438/2012/K, which are the latest Environmental Permits, were issued by Director of Environmental Protection (DEP) on 27 November 2017 and 4 October 2016, respectively.
- 1.1.6 Pursuant to Condition 2.21 of EP No. EP-437/2012/A, at least one month before commencement of operation of the Project, the Permit Holder, MTR Corporation Ltd (MTR), shall carry out fixed plant noise audit and deposit with the Director four hardcopies and one electronic copy of an audit report showing the design of the fixed plant noise sources associated with the Project complies with the maximum sound power levels determined in the approved SCL(MKK-HUH) EIA Report and SCL(HHS) EIA Report, or otherwise approved by the Director in compliance with the requirements in Technical Memorandum on Environmental Impact Assessment Process (TM-EIAO) having due regard to the characteristics of tonality, impulsiveness and intermittency.
- 1.1.7 For EP No. EP-438/2012/K, according to Condition 2.32, at least one month before commencement of operation of the Project, the Permit Holder, MTR Corporation Ltd (MTR), shall carry out fixed plant noise audit and deposit with the Director four hardcopies and one

electronic copy of an audit report showing the design of the fixed plant noise sources associated with the Project complies with the maximum sound power levels determined in the approved SCL (TAW-HUH) EIA Report and SCL(HHS) EIA Report and all relevant documents in the Register, or otherwise approved by the Director in compliance with the requirements in Technical Memorandum on Environmental Impact Assessment Process (TM-EIAO) having due regard to the characteristics of tonality, impulsiveness and intermittency.

- 1.1.8 Based on the latest design information, the maximum allowable SWLs of fixed plant items has been updated to reflect the latest design of the Project, with consideration of cumulative noise impact from the fixed plant sources for HUH and HHS, a Proposal will be prepared to present the updated maximum allowable sound power levels (SWLs) of the fixed plant items at HUH and HHS for both EP-437/2012/A and EP-438/2012/K.

1.2 Purpose of This Proposal

- 1.2.1 As discussed in **Section 1.1.8**, the maximum allowable SWLs of fixed plant items has been updated to reflect the latest design of the Project. This Proposal (Hung Hom Station (HUH) and Stabling Sidings at Hung Hom Freight Yard (HHS)) presents the updated maximum allowable SWLs of the fixed plant noise sources at HUH and HHS.

2 NOISE CRITERIA AND NOISE SENSITIVE RECEIVERS

2.1 Environmental Legislation, Standard and Guidelines

2.1.1 The Noise Control Ordinance, Cap. 400 (NCO) and Environmental Impact Assessment Ordinance, Cap. 499 (EIAO) provide the statutory framework for noise control. Operational noise from fixed noise sources is controlled by Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites (IND-TM) under NCO. To plan for a better environment, the Technical Memorandum on Environmental Impact Assessment Process (TM-EIAO) under EIAO has specified the following requirements:

- 5 dB below the appropriate ANLs in the IND-TM; or
- the prevailing background noise levels (For quiet areas with level 5dB or more below the ANL).

2.1.2 The Acceptable Noise Levels (ANLs) for different Area Sensitivity Ratings (ASRs) during different periods are summarized in the **Table 2.1**.

Table 2.1 ANLs for Assessment of Noise from Fixed Sources

Time Period	ANL, dB(A)		
	ASR "A"	ASR "B"	ASR "C"
Day (0700 to 1900 hours)	60	65	70
Evening (1900 to 2300 hours)	60	65	70
Night (2300 to 0700 hours)	50	55	60

2.2 Representative Noise Sensitive Receivers

2.2.1 Table 8.8 of the approved SCL (HHS) EIA Report presents the identified Noise Sensitive Receivers (NSRs) and the adopted noise assessment criteria for fixed plant noise assessment. The assessment criteria at the NSRs selected for assessing the fixed plant noise impact from HUH and HHS are summarised in **Table 2.2**.

Table 2.2 Summary of noise criteria at representative NSRs for fixed noise sources (Reference from Table 8.8 of the approved EIA Report)

Area (NSR No.)	Time Period ⁽¹⁾	Prevailing Background Noise Levels, dB(A) ⁽²⁾	ASR	ANL-5, dB(A) ⁽³⁾	Criteria, dB(A) ⁽⁴⁾
Stabling Sidings at Hung Hom Freight Yard					
Royal Peninsula Block 2 (HUH-3-1 ⁽⁷⁾)	Day & evening	68	C	65	65
	Night	62	C	55	55
The Metropolis Residence ⁽⁵⁾ Tower 2 (HUH-4-1 ⁽⁷⁾)	Day & evening	72	B	60	60
	Night	65	B	50	50
The Metropolis Residence ⁽⁵⁾ Tower 1 (HUH-4-2)	Day & evening	72	B	60	60
	Night	65	B	50	50
Harbourfront Horizon ⁽⁶⁾ (HUH-10-1 ⁽⁷⁾)	Day & evening	64	B	60	60
	Night	64	B	50	50
University Student Halls of Residence (HUH-11-1)	Day & evening	65	C	65	65
	Night	61	C	55	55
Harbour Place Block 6	Day & evening	65	C	65	65

Area (NSR No.)	Time Period ⁽¹⁾	Prevailing Background Noise Levels, dB(A) ⁽²⁾	ASR	ANL-5, dB(A) ⁽³⁾	Criteria, dB(A) ⁽⁴⁾
(HUH-12-1)	Night	61	C	55	55

Notes:

- (1) Day: 0700 to 1900 hours, Evening: 1900 to 2300 hours, Night: 2300 to 0700 hours.
- (2) Prevailing background noise levels are extracted from Table 8.8 of SCL(HHS) EIA Report.
- (3) A 5 dB(A) has been deducted from ANL as specified in requirement of TM-EIAO.
- (4) The minimum of prevailing background noise level & ANL-5 is adopted.
- (5) Metropolis Residence is a service apartment and shall not rely on openable windows for ventilation. Nonetheless, for conservative consideration that occupier might open window under special circumstances, this premise has been considered as an assessment point.
- (6) Harbourfront Horizon shall not rely on openable windows for ventilation. Nonetheless, for conservative consideration that occupier might open window under special circumstances, this premise has been considered as an assessment point.
- (7) NSR HH9b, HH4 and HH7 as identified in SCL(MKK-HUH) EIA Report is same as the NSR HUH-10-1, HUH-3-1 and HUH-4-1 respectively as identified in SCL(HHS) EIA Report. To avoid confusion, NSR ID following SCL(HHS) EIA Report has been adopted in this assessment.

2.3 Review of Area Sensitivity Rating and Assessment Criteria

- 2.3.1 Area Sensitive Ratings (ASR) as defined in the approved EIA Reports were determined by the existence of any influencing factors (IFs) (e.g. major road, industrial area) according to IND-TM at the time of preparation of the EIA Reports. During the preparation of this Proposal, it is revealed that there was no major change on the land use in the vicinity of representative NSRs, and thus only the existence of any major road (i.e. annual average daily traffic flow in excess of 30,000) has been reviewed.
- 2.3.2 Based on best available information (i.e. The Annual Traffic Census 2017) during the preparation of this Proposal, two major roads (i.e. Influencing Factor) have been identified in the vicinity of the NSRs near HUH and HHS and are listed in **Table 2.3** below.

Table 2.3 Major Roads in the Vicinity of HUH and HHS

Area	Road Name	From	To	A.A.D.T. ⁽¹⁾ (2017)
HUH & HHS	Hung Hom Bypass	Mody Lane	Slip Roads to/from Princess Margaret Road Link	30,880
	Cross Harbour Tunnel N Approach	Toll Plaza	Hong Chong Road	115,770
	Hong Chong Road	Salisbury Road	Chatham Rd N	136,740
	Princess Margaret Rd Link	Hung Luen Road	Chatham Road South	31,740

Note:

- (1) Annual average daily traffic (A.A.D.T.) as extracted from The Annual Traffic Census 2017 (https://www.td.gov.hk/filemanager/en/content_4915/annual%20traffic%20census%202017.pdf).

- 2.3.3 Site inspection has also been conducted to determine the degree to which NSR is affected by IF. Based on site observation, it was revealed that HUH-10-1 is indirectly affected by the Hung Hom Bypass, Princess Margaret Rd Link, Cross Harbour Tunnel N Approach and Hong Chong Road, while HUH-4-1 and HUH-4-2 are directly affected by the Princess Margaret Rd Link and indirectly affected by Cross Harbour Tunnel N Approach and Hong Chong Road. As HUH-4-1, HUH-4-2 and HUH-10-1 are located in "Urban Area", the ASR for these NSRs is identified as ASR"C" in accordance with the IND-TM. The noise criteria for HUH-4-1 and HUH-4-2 are 65 dB(A) and 55 dB(A) for Day & Evening period and night-time period respectively. The noise criteria for HUH-10-1 is 64 dB(A) (i.e. the prevailing background noise level) and 55 dB(A) for Day & Evening period and night-time period respectively. A summary of updated ASR and the assessment criteria for each NSR are presented in **Table 2.4** below.

Table 2.4 Review of ASRs and Assessment Criteria

Area (NSR No.)	Type of Area ⁽¹⁾	Influencing Factor (IF)	Degree to which NSR is affected by IF	ASR	Time Period ⁽²⁾	Prevailing Background Noise Levels, dB(A) ⁽³⁾	ANL-5, dB(A) ⁽⁴⁾	Criteria, dB(A) ⁽⁵⁾
<i>Stabling Sidings at Hung Hum Freight Yard</i>								
Royal Peninsula Block 2 (HUH-3-1)	Urban Area	Princess Margaret Road Link	Directly Affected	C	Day & evening	68	65	65
					Night	62	55	55
The Metropolis Residence Tower 2 (HUH-4-1) ⁽⁶⁾	Urban Area	Princess Margaret Road Link, Cross Harbour Tunnel N Approach & Hong Chong Road	Directly Affected(Princess Margaret Road Link)	C	Day & evening	72	65	65
					Night	65	55	55
The Metropolis Residence Tower 1 (HUH-4-2) ⁽⁶⁾	Urban Area		Indirectly Affected (Cross Harbour Tunnel N Approach & Hong Chong Road)	C	Day & evening	72	65	65
					Night	65	55	55
Harbourfront Horizon (HUH-10-1)	Urban Area	Hung Hom Bypass & Princess Margaret Road Link	Indirectly Affected	C	Day & evening	64	65	64
					Night	64	55	55
University Student Halls of Residence (HUH-11-1)	Urban Area	Princess Margaret Road Link	Directly Affected	C	Day & evening	65	65	65
					Night	61	55	55
Harbour Place Block 6 (HUH-12-1)	Urban Area	Princess Margaret Road Link	Directly Affected	C	Day & evening	65	65	65
					Night	61	55	55

Notes:

(1) Reference is made from Appendix 8.2 of the approved SCL(HHS) EIA report.

(2) Day: 0700 to 1900 hours, Evening: 1900 to 2300 hours, Night: 2300 to 0700 hours.

(3) Prevailing background noise levels are extracted from Table 8.8 of SCL(HHS) EIA Report.

(4) A 5 dB(A) has been deducted from ANL as specified in requirement of TM-EIAO.

(5) The minimum of prevailing background noise level & ANL-5 is adopted.

(6) Cross Harbour Tunnel N Approach and Hong Chong Road are located less than 300m from HUH-4-2 and HUH-4-1. Based on the site observation at HUH-4-1 and HUH-4-2, they have direct line of sight to a section of Hong Chong Road and Cross Harbour Tunnel N Approach. The traffic noise was noticeable at these NSRs due to heavy traffic on these roads but is not a dominant feature of the noise climate of these NSRs.

3 UPDATE OF FIXED PLANT SOURCES AND PREDICTION OF FIXED PLANT NOISE LEVELS

3.1 Update of Fixed Plant Sources

- 3.1.1 The locations of updated fixed plant noise sources at HUH and HHS are shown in **Figure No. C11033B/C/SCL/ACM/M52/011**. Based on latest design information, the maximum allowable SWLs for ventilation louvers are updated and summarized in **Table 3.1**.

Table 3.1 Summary of Updated Maximum Allowable SWLs for Fixed Plant Sources

Location	Fixed Plant ID.	Fixed Plant Source	Maximum Allowable SWL, dB(A) ⁽¹⁾⁽²⁾⁽⁴⁾	
			Daytime & Evening ⁽³⁾	Night-time ⁽³⁾
HHS	HHS-38	Siding Ventilation Louvre	64	64
	HHS-40	Siding Ventilation Louvre	88	-
	HHS-41-1	Siding Ventilation Louvre	54	54
	HHS-41-2	Siding Ventilation Louvre	66	66
	HHS-42-1	Siding Ventilation Louvre	66	66
	HHS-42-2	Siding Ventilation Louvre	64	64
	HHS-42-3	Siding Ventilation Louvre	63	63
	HHS-45-1	Siding Ventilation Louvre	85	85
	HHS-45-2	Siding Ventilation Louvre	60	60
	HHS-49-2	Siding Ventilation Louvre	78	78
	HHS-49-3	Siding Ventilation Louvre	71	71
	HHS-49-6	Siding Ventilation Louvre	67	67
	HHS-49-8	Siding Ventilation Louvre	70	70
	HHS-50-1	Siding Ventilation Louvre	75	75
	HHS-50-2	Siding Ventilation Louvre	69	69
	HHS-51	Siding Ventilation Louvre	86	85
	HHS-52-1	Siding Ventilation Louvre	63	63
	HHS-53-1	Siding Ventilation Louvre	68	68
	HHS-53-2	Siding Ventilation Louvre	75	75
	HHS-53-3	Siding Ventilation Louvre	59	59
	HHS-53-4	Siding Ventilation Louvre	67	67
	HHS-53-5	Siding Ventilation Louvre	69	69
	HHS-53-6	Siding Ventilation Louvre	66	66
	HHS-56	Siding Ventilation Louvre	73	73
	HHS-57-2	Siding Ventilation Louvre	61	61
	HHS-58-1	Siding Ventilation Louvre	68	68
	HHS-58-2	Siding Ventilation Louvre	69	69
	HHS-62-2	Siding Ventilation Louvre	69	69
	HHS-67-1	Siding Ventilation Louvre	71	71
	HHS-67-3	Siding Ventilation Louvre	73	73
	HHS-68-1	Siding Ventilation Louvre	72	72
	HHS-68-2	Siding Ventilation Louvre	71	71
	HHS-68-3	Siding Ventilation Louvre	70	70
	HHS-70-3	Siding Ventilation Louvre	59	59

Location	Fixed Plant ID.	Fixed Plant Source	Maximum Allowable SWL, dB(A) ⁽¹⁾⁽²⁾⁽⁴⁾	
			Daytime & Evening ⁽³⁾	Night-time ⁽³⁾
	HHS-71-1	Siding Ventilation Louvre	54	54
	HHS-71-2	Siding Ventilation Louvre	56	56
	HHS-71-3	Siding Ventilation Louvre	67	67
	HHS-73	Siding Ventilation Louvre	53	53
	HHS-77-1	Siding Ventilation Louvre	54	54
	HHS-77-2	Siding Ventilation Louvre	55	55
	HHS-77-3	Siding Ventilation Louvre	55	55
	HHS-78	Siding Ventilation Louvre	87	79
	HHS-84	Siding Ventilation Louvre	72	72
	HHS-87-2	Siding Ventilation Louvre	75	75
	HHS-88-2	Siding Ventilation Louvre	58	58
	HHS-100-2	Siding Ventilation Louvre	62	62
	HHS-101-1	Siding Ventilation Louvre	76	76
	HHS-102-1	Siding Ventilation Louvre	69	69
	HHS-102-2	Siding Ventilation Louvre	71	71
	HHS-102-3	Siding Ventilation Louvre	75	75
	HHS-102-6	Siding Ventilation Louvre	71	71
	HHS-102-7	Siding Ventilation Louvre	73	73
	HHS-102-9	Siding Ventilation Louvre	71	71
	HHS-102-11	Siding Ventilation Louvre	72	72
	HHS-121	Siding Ventilation Louvre	60	60
HUH ⁽⁴⁾	HUH-4-2	Station Ventilation Louvre	103	93
	HUH-7a	Tunnel Ventilation Louvre	100	90
	HUH-7b	Tunnel Ventilation Louvre	100	90
	HUH-8a	Tunnel Ventilation Louvre	101	91
	HUH-8b	Tunnel Ventilation Louvre	100	90
	HUH-8c	Tunnel Ventilation Louvre	100	90
	HUH-9a	Tunnel Ventilation Louvre	101	91
	HUH-9b	Tunnel Ventilation Louvre	101	91
	HUH-9c	Tunnel Ventilation Louvre	101	91
	HUH-10a	Tunnel Ventilation Louvre	101	91
	HUH-10b	Tunnel Ventilation Louvre	101	91
	HUH-10c	Tunnel Ventilation Louvre	101	91
	HUH-11a	Tunnel Ventilation Louvre	101	91
	HUH-11b	Tunnel Ventilation Louvre	101	91
	HUH-12a	Tunnel Ventilation Louvre	101	91
	HUH-12b	Tunnel Ventilation Louvre	101	91
	HUH-13a	Station Ventilation Louvre	101	91
	HUH-13b	Station Ventilation Louvre	101	91
	HUH-14-1-1	Station Ventilation Louvre	101	91
	HUH-14-1-2	Station Ventilation Louvre	101	91
	HUH-14-2	Station Ventilation Louvre	101	91

Location	Fixed Plant ID.	Fixed Plant Source	Maximum Allowable SWL, dB(A) ⁽¹⁾⁽²⁾⁽⁴⁾	
			Daytime & Evening ⁽³⁾	Night-time ⁽³⁾
	HUH-14-3	Station Ventilation Louvre	101	91
	HUH-15-1	Tunnel Ventilation Louvre	101	91
	HUH-15-2	Tunnel Ventilation Louvre	101	91
	HUH-15-3	Tunnel Ventilation Louvre	101	91
	HUH-16a	Tunnel Ventilation Louvre	96	86
	HUH-16b	Tunnel Ventilation Louvre	96	86
	HUH-17	Tunnel Ventilation Louvre	101	91
	HUH-18	Tunnel Ventilation Louvre	97	87
	HUH-19a	Tunnel Ventilation Louvre	100	90
	HUH-19b	Tunnel Ventilation Louvre	103	93
	HUH-20	Station Ventilation Louvre	97	87
	HUH-21a	Tunnel Ventilation Louvre	100	90
	HUH-21b	Tunnel Ventilation Louvre	100	90
	HUH-22a-1	Station Ventilation Louvre	100	90
	HUH-22a-2	Station Ventilation Louvre	100	90
	HUH-22b	Station Ventilation Louvre	100	90
	HUH-26H	Station Ventilation Louvre	79	79
	HUH-27H	Station Ventilation Louvre	103	93
	HUH-29	Station Ventilation Louvre	103	93
	HUH-30H	Station Ventilation Louvre	79	79
	HUH-32H	Station Ventilation Louvre	80	80
	HUH-33H	Station Ventilation Louvre	103	93
	HUH-37H	Station Ventilation Louvre	83	83
	HUH-80-1	Station Ventilation Louvre	123	113
	HUH-80-2	Station Ventilation Louvre	123	113
	HUH-80-3	Station Ventilation Louvre	123	113
	HUH-81	Station Ventilation Louvre	103	93
	HUH-82-1	Station Ventilation Louvre	98	88
	HUH-82-2	Station Ventilation Louvre	98	88
	HUH-82-3	Station Ventilation Louvre	98	88
	HUH-82-4	Station Ventilation Louvre	98	88
	HUH-82-5	Station Ventilation Louvre	98	88
	HUH-82-6	Station Ventilation Louvre	98	88
	HUH-82-7	Station Ventilation Louvre	98	88
	HUH-82-8	Station Ventilation Louvre	98	88
	HUH-82-9	Station Ventilation Louvre	98	88
	HUH-82-10	Station Ventilation Louvre	98	88
	HUH-82-11	Station Ventilation Louvre	98	88
	HUH-82-12	Station Ventilation Louvre	98	88
	HUH-85b	Station Ventilation Louvre	101	91
	HUH-86-4	Station Ventilation Louvre	99	89
	HUH-86-13	Station Ventilation Louvre	99	89

Location	Fixed Plant ID.	Fixed Plant Source	Maximum Allowable SWL, dB(A) ⁽¹⁾⁽²⁾⁽⁴⁾	
			Daytime & Evening ⁽³⁾	Night-time ⁽³⁾
	HUH-95b	Station Ventilation Louvre	101	91
	HUH-103-1	Station Ventilation Louvre	101	91
	HUH-103-2	Station Ventilation Louvre	101	91
	HUH-103-3	Station Ventilation Louvre	101	91
	HUH-103-4	Station Ventilation Louvre	101	91
	HUH-103-5	Station Ventilation Louvre	101	91
	HUH-103-6	Station Ventilation Louvre	101	91
	HUH-103-7	Station Ventilation Louvre	101	91
	HUH-103-8	Station Ventilation Louvre	101	91
	HUH-103-9	Station Ventilation Louvre	101	91
	HUH-103-10	Station Ventilation Louvre	101	91
	HUH-103-11	Station Ventilation Louvre	101	91
	HUH-103-12	Station Ventilation Louvre	101	91
	HUH-103-13	Station Ventilation Louvre	101	91
	HUH-103-14	Station Ventilation Louvre	101	91
	HUH-104-1	Station Ventilation Louvre	98	88
	HUH-104-2	Station Ventilation Louvre	98	88
	HUH-104-3	Station Ventilation Louvre	98	88
	HUH-104-4	Station Ventilation Louvre	98	88
	HUH-104-5	Station Ventilation Louvre	98	88
	HUH-104-6	Station Ventilation Louvre	98	88
	HUH-104-7	Station Ventilation Louvre	98	88
	HUH-107b	Station Ventilation Louvre	98	88
	HUH-108	Station Ventilation Louvre	98	88
	HUH-109	Station Ventilation Louvre	98	88
	HUH-110	Station Ventilation Louvre	98	88
	HUH-111	Station Ventilation Louvre	98	88
	HUH-112	Station Ventilation Louvre	98	88
	HUH-113	Station Ventilation Louvre	98	88
	HUH-115	Station Ventilation Louvre	98	88
	HUH-116	Station Ventilation Louvre	98	88
	HUH-117	Station Ventilation Louvre	98	88
	HUH-118	Station Ventilation Louvre	98	88
	HUH-119	Station Ventilation Louvre	100	90
	HUH-120	Station Ventilation Louvre	100	90

Notes:

- (1) The maximum allowable sound power levels have due regard to the characteristics of tonality, intermittency and impulsiveness.
- (2) As the louvre will not be under operation during night-time period, the maximum allowable SWL is presented as “-”.
- (3) Day: 0700 to 1900 hours, Evening: 1900 to 2300 hours, Night: 2300 to 0700 hours.
- (4) Design of fixed plant noise sources for HUH are yet to be finalized and their maximum allowable SWLs are calculated based on the latest information. This proposal will be updated in case there are changes in the maximum allowable SWLs for HUH fixed plant noise sources.

3.2 Prediction of Fixed Plant Noise

3.2.1 With the updated maximum allowable SWLs presented in **Table 3.1**, the predicted noise levels at the representative NSRs comply with both daytime/evening and night-time criteria as presented in **Table 2.4**. The predicted noise levels from fixed plant noise sources for HUH and HHS are summarised in **Table 3.2** with details of calculation shown in **Annex A**.

Table 3.2 Predicted Fixed Plant Noise Levels at Representative NSRs

NSR ID	Description	Criteria, dB(A)		Predicted Sound Pressure Level, $L_{eq,30mins}$, dB(A) ⁽¹⁾	
		Daytime & Evening ⁽²⁾	Night-time ⁽²⁾	Daytime & Evening ⁽²⁾	Night-time ⁽²⁾
HUH-3-1	Royal Peninsula Block 2	65	55	65	55
HUH-4-1a	The Metropolis Residence Tower 2	65	55	65	55
HUH-4-1b	The Metropolis Residence Tower 2	65	55	57	47
HUH-4-2a	The Metropolis Residence Tower 1	65	55	65	55
HUH-4-2b	The Metropolis Residence Tower 1	65	55	57	47
HUH-10-1	Harbourfront Horizon	64	55	64	54
HUH-11-1	University Student Halls of Residence	65	55	59	49
HUH-12-1	Harbour Place Block 6	65	55	34	27

Notes:

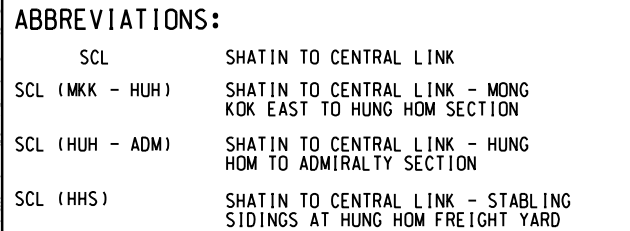
(1) The predicted fixed plant noise levels have due regard to the characteristics of tonality, intermittency and impulsiveness.



(2) Day: 0700 to 1900 hours, Evening: 1900 to 2300 hours, Night: 2300 to 0700 hours.

4 CONCLUSION

- 4.1.1 The maximum allowable SWLs of fixed plant noise sources at HUH & HHS has been updated based on the latest design information. The predicted noise levels at representative NSRs comply with the noise criteria based on the updated maximum allowable SWLs of fixed plant noise sources.
- 4.1.2 The measured SWLs at each fixed plant noise source during the fixed plant noise audit shall comply with the maximum allowable SWLs as stated in the **Table 3.1**. Appropriate corrections in tonal, impulsive or intermittent characteristics should be applied, where applicable, in accordance with the IND-TM during the commissioning test.

Figure



REV		DESCRIPTION		BY	DATE	APPROVED	REV	DESCRIPTION		BY	DATE	APPROVED	DRAWN ZFX DESIGNED --- CHECKED --- APPROVED --- DATE 11/JUN/2019 DO NOT SCALE DRAWINGS- ALL DIMENSIONS SHALL BE VERIFIED ON SITE. © MTR CORPORATION LIMITED 2008 COPYRIGHT IN RESPECT OF THIS DRAWING / DOCUMENT IS OWNED BY THE MTR CORPORATION LIMITED OF HONG KONG. NO REPRODUCTION OF THE DRAWING / DOCUMENT OR ANY PART OF WATERFALL MEANS IS PERMITTED WITHOUT THE PRIOR WRITTEN CONSENT OF THE MTR CORPORATION LIMITED.		 SHATIN TO CENTRAL LINK  ORIGINATOR CADD REF. C11033B-C_SCL_ACM_M52_011A.dgn		TITLE C11033B SCL (HUH - ADM) LOCATIONS OF NSRS AND FIXED PLANT NOISE SOURCES (HUNG HOM STATION AND STABLING SIDINGS AT HUNG HOM FREIGHT YARD)		SCALE 1 : 3000 (A3)	FIGURE NO. C11033B/C/SCL/ACM/M52/011	REV. A
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Annex A

Detail Calculation of Fixed Plant Noise Assessment

Annex A Detail Calculation of Fixed Plant Noise Assessment
Fixed Plant Noise Calculation - HUH-3-1

Noise Assessment Points	Description	Plant Item ^[1]	Direction Facing	Horizontal Distance , m	SWL, dB(A)	Correction for line of sight ^[1] , dB(A)	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Predicted SPL, dB(A) ^[2]	Total SPL, dB(A)	Daytime Noise Criteria, dB(A)
Stabling Sidings at Hung Hom Freight Yard											
HUH-3-1											
Daytime											
HUH-3-1	Royal Peninsula Block 2	HUH-4-2	North	557	103	0	-63	3	N/A		
		HUH-7a	Top	514	100	0	-62	3	N/A		
		HUH-7b	South	514	100	-10	-62	3	N/A		
		HUH-8a	Top	512	101	0	-62	3	N/A		
		HUH-8b	South	512	100	-10	-62	3	N/A		
		HUH-8c	East	512	100	-10	-62	3	N/A		
		HUH-9a	Top	504	101	0	-62	3	N/A		
		HUH-9b	South	504	101	-10	-62	3	N/A		
		HUH-9c	East	504	101	0	-62	3	N/A		
		HUH-10a	Top	502	101	0	-62	3	N/A		
		HUH-10b	South	502	101	-10	-62	3	N/A		
		HUH-10c	East	502	101	0	-62	3	N/A		
		HUH-11a	Top	501	101	0	-62	3	N/A		
		HUH-11b	South	501	101	-10	-62	3	N/A		
		HUH-12a	Top	499	101	0	-62	3	N/A		
		HUH-12b	South	499	101	-10	-62	3	N/A		
		HUH-13a	Top	498	101	0	-62	3	N/A		
		HUH-13b	South	498	101	-10	-62	3	N/A		
		HUH-14-1-1	South	493	101	-10	-62	3	N/A		
		HUH-14-1-2	South	493	101	-10	-62	3	N/A		
		HUH-14-2	South	492	101	-10	-62	3	N/A		
		HUH-14-3	South	489	101	-10	-62	3	N/A		
		HUH-15-1	West	200	101	-10	-54	3	40		
		HUH-15-2	West	198	101	-10	-54	3	40		
		HUH-15-3	West	195	101	-10	-54	3	40		
		HUH-16a	Top	183	96	0	-53	3	46		
		HUH-16b	East	183	96	0	-53	3	46		
		HUH-17	North	182	101	0	-53	3	51		
		HUH-18	Top	168	97	0	-53	3	47		
		HUH-19a	Top	157	100	0	-52	3	51		
		HUH-19b	North	157	103	0	-52	3	54		
		HUH-20	Top	162	97	0	-52	3	48		
		HUH-21a	Top	153	100	0	-52	3	51		
		HUH-21b	North	153	100	0	-52	3	51		
		HUH-22a-1	Top	149	100	0	-51	3	52		
		HUH-22a-2	North	149	100	0	-51	3	52		
		HUH-22b	North	149	100	0	-51	3	52		
		HUH-26H	East	172	79	0	-53	3	29		
		HUH-27H	East	171	103	0	-53	3	53		
		HUH-29	East	170	103	0	-53	3	53		
		HUH-30H	West	181	79	-10	-53	3	19		
		HUH-32H	West	181	80	-10	-53	3	20		
		HUH-33H	West	182	103	-10	-53	3	43		
		HUH-37H	East	171	83	0	-53	3	33		
		HHS-38	South	488	64	-10	-62	3	N/A		
		HHS-40	South	486	88	-10	-62	3	N/A		
		HHS-41-1	West	495	54	-10	-62	3	N/A		
		HHS-41-2	West	495	66	-10	-62	3	N/A		
		HHS-42-1	West	506	66	-10	-62	3	N/A		
		HHS-42-2	West	506	64	-10	-62	3	N/A		
		HHS-42-3	West	506	63	-10	-62	3	N/A		
		HHS-45-1	West	529	85	-10	-62	3	N/A		
		HHS-45-2	West	529	60	-10	-62	3	N/A		
		HHS-49-2	East	518	78	-10	-62	3	N/A		
		HHS-49-3	East	518	71	-10	-62	3	N/A		
		HHS-49-6	East	518	67	-10	-62	3	N/A		
		HHS-49-8	East	518	70	-10	-62	3	N/A		
		HHS-50-1	East	512	75	-10	-62	3	N/A		
		HHS-50-2	East	512	69	-10	-62	3	N/A		
		HHS-51	East	496	86	-10	-62	3	N/A		
		HHS-52-1	East	482	63	-10	-62	3	N/A		
		HHS-53-1	East	471	68	-10	-61	3	N/A		
		HHS-53-2	East	471	75	-10	-61	3	N/A		
		HHS-53-3	East	471	59	-10	-61	3	N/A		
		HHS-53-4	East	471	67	-10	-61	3	N/A		
		HHS-53-5	East	471	69	-10	-61	3	N/A		
		HHS-53-6	East	471	66	-10	-61	3	N/A		
		HHS-56	East	443	73	-10	-61	3	N/A		
		HHS-57-2	East	418	61	0	-60	3	N/A		
		HHS-58-1	East	407	68	0	-60	3	N/A		
		HHS-58-2	East	407	69	0	-60	3	N/A		
		HHS-62-2	East	312	69	0	-58	3	N/A		
		HHS-67-1	East	242	71	0	-56	3	18		
		HHS-67-3	East	242	73	0	-56	3	20		
		HHS-68-1	East	217	72	0	-55	3	20		
		HHS-68-2	East	217	71	0	-55	3	19		
		HHS-68-3	East	217	70	0	-55	3	18		
		HHS-70-3	East	190	59	0	-54	3	8		
		HHS-71-1	East	176	54	0	-53	3	4		
		HHS-71-2	East	176	56	0	-53	3	6		
		HHS-71-3	East	176	67	0	-53	3	17		
		HHS-73	East	115	53	0	-49	3	7		
		HHS-77-1	East	109	54	0	-49	3	8		
		HHS-77-2	East	109	55	0	-49	3	9		
		HHS-77-3	East	109	55	0	-49	3	9		
		HHS-78	North	95	87	0	-48	3	42		
		HUH-80-1	Top	594	123	0	-63	3	N/A		
		HUH-80-2	Top	589	123	0	-63	3	N/A		
		HUH-80-3	Top	584	123	0	-63	3	N/A		
		HUH-81	Top	561	103	0	-63	3	N/A		
		HUH-82-1	South	349	98	-10	-59	3	N/A		
		HUH-82-2	South	349	98	-10	-59	3	N/A		
		HUH-82-3	South	349	98	-10	-59	3	N/A		
		HUH-82-4	South	349	98	-10	-59	3	N/A		
		HUH-82-5	South	349	98	-10	-59	3	N/A		
		HUH-82-6	South	349	98	-10	-59	3	N/A		
		HUH-82-7	South	349	98	-10	-59	3	N/A		
		HUH-82-8	South	349	98	-10	-59	3	N/A		
		HUH-82-9	South	349	98	-10	-59	3	N/A		
		HUH-82-10	South	349	98	-10	-59	3	N/A		
		HUH-82-11	South	349	98	-10	-59	3	N/A		
		HUH-82-12	South	349	98	-10	-59	3	N/A		
		HHS-84	East	354	72	0	-59	3	N/A		
		HUH-85b	North	154	101	0	-52	3	52		
		HUH-86-4	North	222	99	0	-55	3	47		
		HUH-86-13	North	222	99	0	-55	3	47		
		HHS-87-2	East	443	75	-10	-61	3	N/A		
		HHS-88-2	East	512	58	-10	-62	3	N/A		
		HUH-95b	South	504	101	-10	-62	3	N/A		
		HHS-100-2	South	488	62	-10	-62	3	N/A		
		HHS-101-1	South	479	76	-10	-62	3	N/A		
		HHS-102-1	East	458	69	-10	-61	3	N/A		
		HHS-102-2	East	458	71	-10	-61	3	N/A		
		HHS-102-3	East	458	75	-10	-61	3	N/A		
		HHS-102-6	East	458	71	-10	-61	3	N/A		
		HHS-102-7	East	458	73	-10	-61	3	N/A		
		HHS-102-9	East	458	71	-10	-61	3	N/A		
		HHS-102-11	East	458	72	-10	-61	3	N/A		
		HUH-103-1	Top	210	101	-10	-54	3	40		
		HUH-103-2	Top	210	101	-10	-54	3	40		
		HUH-103-3	Top	210	101	-10	-54	3	40		
		HUH-103-4	Top	210	101	-10	-54	3	40		
		HUH-103-5	Top	210	101	-10	-54	3	40		
		HUH-103-6	Top	210	101	-10	-54	3	40		
		HUH-103-7	Top	210	101	-10	-54	3	40		
		HUH-103-8	Top	210	101	-10	-54	3	40		
		HUH-103-9	Top	210	101	-10	-54	3	40		
		HUH-103-10	Top	210	101	-10	-54	3	40		
		HUH-103-11	Top	210	101	-10	-54	3	40		
		HUH-103-12	Top	210	101	-10	-54	3	40		
		HUH-103-13	Top	210	101	-10	-54	3	40		
		HUH-103-14	Top	210	101	-10	-54	3	40		
		HUH-104-1	Top	154	98	0	-52	3	49		
		HUH-104-2	Top	154	98	0	-52	3	49		
		HUH-104-3	Top	154	98	0	-52	3	49		
		HUH-104-4	Top	154	98	0	-52	3	49		
		HUH-104-5	Top	154	98	0	-52	3	49		
HUH-104-6	Top	154	98	0	-52	3	49				
HUH-104-7	Top	154	98	0	-52	3	49				
HUH-107b	South	509	98	-10	-62	3	N/A				
HUH-108	South	495	98	-10	-62	3	N/A				
HUH-109	Top	173	98	0	-53	3	48				
HUH-110	Top	174	98	0	-53	3	48				
HUH-111	Top	176	98	0	-53	3	48				
HUH-112	Top	177	98	0	-53	3	48				
HUH-113	Top	179	98	0	-53	3	48				
HUH-115	North	222	98	0	-55	3	46				
HUH-116	North	218	98	0	-55	3	46				
HUH-117	North	214	98	0	-55	3	46				
HUH-118	North	210	98	0	-54	3	47				
HUH-119	Top	586	100	-10	-63	3	N/A				
HUH-120	Top	584	100	-10	-63	3	N/A				
HHS-121	East	112	80	0	-49	3	14				
NOV-VS1	Top	581	97	0	-63	3	N/A				
NOV-VS2											

Annex A Detail Calculation of Fixed Plant Noise Assessment
Fixed Plant Noise Calculation - HUH-3-1

Noise Assessment Points	Description	Plant Item ^[1]	Direction Facing	Horizontal Distance , m	SWL, dB(A)	Correction for line of sight ^[1] , dB(A)	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Predicted SPL, dB(A) ^[2]	Total SPL, dB(A)	Night-time Noise Criteria, dB(A)
Stabling Sidings at Hung Hom Freight Yard											
HUH-3-1											
Night-time											
HUH-3-1	Royal Peninsula Block 2	HUH-4-2	North	557	93	0	-63	3	N/A		
		HUH-7a	Top	514	90	0	-62	3	N/A		
		HUH-7b	South	514	90	-10	-62	3	N/A		
		HUH-8a	Top	512	91	0	-62	3	N/A		
		HUH-8b	South	512	90	-10	-62	3	N/A		
		HUH-8c	East	512	90	-10	-62	3	N/A		
		HUH-9a	Top	504	91	0	-62	3	N/A		
		HUH-9b	South	504	91	-10	-62	3	N/A		
		HUH-9c	East	504	91	0	-62	3	N/A		
		HUH-10a	Top	502	91	0	-62	3	N/A		
		HUH-10b	South	502	91	-10	-62	3	N/A		
		HUH-10c	East	502	91	0	-62	3	N/A		
		HUH-11a	Top	501	91	0	-62	3	N/A		
		HUH-11b	South	501	91	-10	-62	3	N/A		
		HUH-12a	Top	499	91	0	-62	3	N/A		
		HUH-12b	South	499	91	-10	-62	3	N/A		
		HUH-13a	Top	498	91	0	-62	3	N/A		
		HUH-13b	South	498	91	-10	-62	3	N/A		
		HUH-14-1-1	South	493	91	-10	-62	3	N/A		
		HUH-14-1-2	South	493	91	-10	-62	3	N/A		
		HUH-14-2	South	492	91	-10	-62	3	N/A		
		HUH-14-3	South	489	91	-10	-62	3	N/A		
		HUH-15-1	West	200	91	-10	-54	3	30		
		HUH-15-2	West	198	91	-10	-54	3	30		
		HUH-15-3	West	195	91	-10	-54	3	30		
		HUH-16a	Top	183	86	0	-53	3	36		
		HUH-16b	East	183	86	0	-53	3	36		
		HUH-17	North	182	91	0	-53	3	41		
		HUH-18	Top	168	87	0	-53	3	37		
		HUH-19a	Top	157	90	0	-52	3	41		
		HUH-19b	North	157	93	0	-52	3	44		
		HUH-20	Top	162	87	0	-52	3	38		
		HUH-21a	Top	153	90	0	-52	3	41		
		HUH-21b	North	153	90	0	-52	3	41		
		HUH-22a-1	Top	149	90	0	-51	3	42		
		HUH-22a-2	North	149	90	0	-51	3	42		
		HUH-22b	North	149	90	0	-51	3	42		
		HUH-26H	East	172	79	0	-53	3	29		
		HUH-27H	East	171	93	0	-53	3	43		
		HUH-29	East	170	93	0	-53	3	43		
		HUH-30H	West	181	79	-10	-53	3	19		
		HUH-32H	West	181	80	-10	-53	3	20		
		HUH-33H	West	182	93	-10	-53	3	33		
		HUH-37H	East	171	83	0	-53	3	33		
		HHS-38	South	488	64	-10	-62	3	N/A		
		HHS-40	South	486	-	-10	-62	3	-		
		HHS-41-1	West	495	54	-10	-62	3	N/A		
		HHS-41-2	West	495	66	-10	-62	3	N/A		
		HHS-42-1	West	506	66	-10	-62	3	N/A		
		HHS-42-2	West	506	64	-10	-62	3	N/A		
		HHS-42-3	West	506	63	-10	-62	3	N/A		
		HHS-45-1	West	529	85	-10	-62	3	N/A		
		HHS-45-2	West	529	60	-10	-62	3	N/A		
		HHS-49-2	East	518	78	-10	-62	3	N/A		
		HHS-49-3	East	518	71	-10	-62	3	N/A		
		HHS-49-6	East	518	67	-10	-62	3	N/A		
		HHS-49-8	East	518	70	-10	-62	3	N/A		
		HHS-50-1	East	512	75	-10	-62	3	N/A		
		HHS-50-2	East	512	69	-10	-62	3	N/A		
		HHS-51	East	496	85	-10	-62	3	N/A		
		HHS-52-1	East	482	63	-10	-62	3	N/A		
		HHS-53-1	East	471	68	-10	-61	3	N/A		
		HHS-53-2	East	471	75	-10	-61	3	N/A		
		HHS-53-3	East	471	59	-10	-61	3	N/A		
		HHS-53-4	East	471	67	-10	-61	3	N/A		
		HHS-53-5	East	471	69	-10	-61	3	N/A		
		HHS-53-6	East	471	66	-10	-61	3	N/A		
		HHS-56	East	443	73	-10	-61	3	N/A		
		HHS-57-2	East	418	61	0	-60	3	N/A		
		HHS-58-1	East	407	68	0	-60	3	N/A		
		HHS-58-2	East	407	69	0	-60	3	N/A		
		HHS-62-2	East	312	69	0	-58	3	N/A		
		HHS-67-1	East	242	71	0	-56	3	18		
		HHS-67-3	East	242	73	0	-56	3	20		
		HHS-68-1	East	217	72	0	-55	3	20		
		HHS-68-2	East	217	71	0	-55	3	19		
		HHS-68-3	East	217	70	0	-55	3	18		
		HHS-70-3	East	190	59	0	-54	3	8		
		HHS-71-1	East	176	54	0	-53	3	4		
		HHS-71-2	East	176	56	0	-53	3	6		
		HHS-71-3	East	176	67	0	-53	3	17		
		HHS-73	East	115	53	0	-49	3	7		
		HHS-77-1	East	109	54	0	-49	3	8		
		HHS-77-2	East	109	55	0	-49	3	9		
		HHS-77-3	East	109	55	0	-49	3	9		
		HHS-78	North	95	79	0	-48	3	34		
		HUH-80-1	Top	594	113	0	-63	3	N/A		
		HUH-80-2	Top	589	113	0	-63	3	N/A		
		HUH-80-3	Top	584	113	0	-63	3	N/A		
		HUH-81	Top	561	93	0	-63	3	N/A		
		HUH-82-1	South	349	88	-10	-59	3	N/A		
		HUH-82-2	South	349	88	-10	-59	3	N/A		
		HUH-82-3	South	349	88	-10	-59	3	N/A		
		HUH-82-4	South	349	88	-10	-59	3	N/A		
		HUH-82-5	South	349	88	-10	-59	3	N/A		
		HUH-82-6	South	349	88	-10	-59	3	N/A		
		HUH-82-7	South	349	88	-10	-59	3	N/A		
		HUH-82-8	South	349	88	-10	-59	3	N/A		
		HUH-82-9	South	349	88	-10	-59	3	N/A		
		HUH-82-10	South	349	88	-10	-59	3	N/A		
		HUH-82-11	South	349	88	-10	-59	3	N/A		
		HUH-82-12	South	349	88	-10	-59	3	N/A		
		HHS-84	East	354	72	0	-59	3	N/A		
		HUH-85b	North	154	91	0	-52	3	42		
		HUH-86-4	North	222	89	0	-55	3	37		
		HUH-86-13	North	222	89	0	-55	3	37		
		HHS-87-2	East	443	75	-10	-61	3	N/A		
		HHS-88-2	East	512	58	-10	-62	3	N/A		
		HUH-95b	South	504	91	-10	-62	3	N/A		
		HHS-100-2	South	488	62	-10	-62	3	N/A		
		HHS-101-1	South	479	76	-10	-62	3	N/A		
		HHS-102-1	East	458	69	-10	-61	3	N/A		
		HHS-102-2	East	458	71	-10	-61	3	N/A		
		HHS-102-3	East	458	75	-10	-61	3	N/A		
		HHS-102-6	East	458	71	-10	-61	3	N/A		
		HHS-102-7	East	458	73	-10	-61	3	N/A		
		HHS-102-9	East	458	71	-10	-61	3	N/A		
		HHS-102-11	East	458	72	-10	-61	3	N/A		
		HUH-103-1	Top	210	91	-10	-54	3	30		
		HUH-103-2	Top	210	91	-10	-54	3	30		
		HUH-103-3	Top	210	91	-10	-54	3	30		
		HUH-103-4	Top	210	91	-10	-54	3	30		
		HUH-103-5	Top	210	91	-10	-54	3	30		
		HUH-103-6	Top	210	91	-10	-54	3	30		
		HUH-103-7	Top	210	91	-10	-54	3	30		
		HUH-103-8	Top	210	91	-10	-54	3	30		
		HUH-103-9	Top	210	91	-10	-54	3	30		
		HUH-103-10	Top	210	91	-10	-54	3	30		
		HUH-103-11	Top	210	91	-10	-54	3	30		
		HUH-103-12	Top	210	91	-10	-54	3	30		
		HUH-103-13	Top	210	91	-10	-54	3	30		
		HUH-103-14	Top	210	91	-10	-54	3	30		
		HUH-104-1	Top	154	88	0	-52	3	39		
		HUH-104-2	Top	154	88	0	-52	3	39		
		HUH-104-3	Top	154	88	0	-52	3	39		
		HUH-104-4	Top	154	88	0	-52	3	39		
		HUH-104-5	Top	154	88	0	-52	3	39		
		HUH-104-6	Top	154	88	0	-52	3	39		
HUH-104-7	Top	154	88	0	-52	3	39				
HUH-107b	South	509	88	-10	-62	3	N/A				
HUH-108	South	495	88	-10	-62	3	N/A				
HUH-109	Top	173	88	0	-53	3	38				
HUH-110	Top	174	88	0	-53	3	38				
HUH-111	Top	176	88	0	-53	3	38				
HUH-112	Top	177	88	0	-53	3	38				
HUH-113	Top	179	88	0	-53	3	38				
HUH-115	North	222	88	0	-55	3	36				
HUH-116	North	218	88	0	-55	3	36				
HUH-117	North	214	88	0	-55	3	36				
HUH-118	North	210	88	0	-54	3	37				
HUH-119	Top	586	90	-10	-63	3	N/A				
HUH-120	Top	584	90	-10	-63	3	N/A				
HHS-121	East	112	60	0	-49	3	14				
NOV-VS1	Top	581	87	0	-63	3	N/A				
NOV-VS2	Top	579	87	0	-63	3	N/A				
NOV-LV-03											

Annex A Detail Calculation of Fixed Plant Noise Assessment

Fixed Plant Noise Calculation - HUH-4-1a

Noise Assessment Points	Description	Plant Item ^[2]	Direction Facing	Horizontal Distance , m	SWL, dB(A)	Correction for line of sight ^[1] , dB(A)	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Predicted SPL, dB(A) ^[2]	Total SPL, dB(A)	Daytime Noise Criteria, dB(A)
Stabling Sidings at Hung Hom Freight Yard											
HUH-4-1a											
Daytime											
HUH-4-1a	The Metropolis Residence Tower 2	HUH-4-2	North	397	103	-10	-60	3	N/A		
		HUH-7a	Top	350	100	-10	-59	3	N/A		
		HUH-7b	South	350	100	-10	-59	3	N/A		
		HUH-8a	Top	347	101	-10	-59	3	N/A		
		HUH-8b	South	347	100	-10	-59	3	N/A		
		HUH-8c	East	347	100	-10	-59	3	N/A		
		HUH-9a	Top	338	101	-10	-59	3	N/A		
		HUH-9b	South	338	101	-10	-59	3	N/A		
		HUH-9c	East	338	101	-10	-59	3	N/A		
		HUH-10a	Top	335	101	-10	-59	3	N/A		
		HUH-10b	South	335	101	-10	-59	3	N/A		
		HUH-10c	East	335	101	-10	-59	3	N/A		
		HUH-11a	Top	334	101	-10	-58	3	N/A		
		HUH-11b	South	334	101	-10	-58	3	N/A		
		HUH-12a	Top	332	101	-10	-58	3	N/A		
		HUH-12b	South	332	101	-10	-58	3	N/A		
		HUH-13a	Top	330	101	-10	-58	3	N/A		
		HUH-13b	South	330	101	-10	-58	3	N/A		
		HUH-14-1-1	South	326	101	-10	-58	3	N/A		
		HUH-14-1-2	South	326	101	-10	-58	3	N/A		
		HUH-14-2	South	324	101	-10	-58	3	N/A		
		HUH-14-3	South	322	101	-10	-58	3	N/A		
		HUH-15-1	West	172	101	-10	-53	3	41		
		HUH-15-2	West	175	101	-10	-53	3	41		
		HUH-15-3	West	177	101	-10	-53	3	41		
		HUH-16a	Top	166	96	0	-52	3	47		
		HUH-16b	East	166	96	0	-52	3	47		
		HUH-17	North	159	101	-10	-52	3	42		
		HUH-18	Top	146	97	0	-51	3	49		
		HUH-19a	Top	167	100	0	-52	3	51		
		HUH-19b	North	167	103	-10	-52	3	44		
		HUH-20	Top	136	97	0	-51	3	49		
		HUH-21a	Top	128	100	0	-50	3	53		
		HUH-21b	North	128	100	-10	-50	3	43		
		HUH-22a-1	Top	123	100	0	-50	3	53		
		HUH-22a-2	North	123	100	-10	-50	3	43		
		HUH-22b	North	123	100	-10	-50	3	43		
		HUH-26H	East	205	79	0	-54	3	28		
		HUH-27H	East	198	103	0	-54	3	52		
		HUH-29	East	185	103	0	-53	3	53		
		HUH-30H	West	203	79	-10	-54	3	18		
		HUH-32H	West	198	80	-10	-54	3	19		
		HUH-33H	West	205	103	-10	-54	3	42		
		HUH-37H	East	201	83	0	-54	3	32		
		HHS-38	South	321	64	-10	-58	3	N/A		
		HHS-40	South	319	88	-10	-58	3	N/A		
		HHS-41-1	West	328	54	-10	-58	3	N/A		
		HHS-41-2	West	328	66	-10	-58	3	N/A		
		HHS-42-1	West	339	66	-10	-59	3	N/A		
		HHS-42-2	West	339	64	-10	-59	3	N/A		
		HHS-42-3	West	339	63	-10	-59	3	N/A		
		HHS-45-1	West	362	85	-10	-59	3	N/A		
		HHS-45-2	West	362	60	-10	-59	3	N/A		
		HHS-49-2	East	352	78	-10	-59	3	N/A		
		HHS-49-3	East	352	71	-10	-59	3	N/A		
		HHS-49-6	East	352	67	-10	-59	3	N/A		
		HHS-49-8	East	352	70	-10	-59	3	N/A		
		HHS-50-1	East	347	75	-10	-59	3	N/A		
		HHS-50-2	East	347	69	-10	-59	3	N/A		
		HHS-51	East	332	86	-10	-58	3	N/A		
		HHS-52-1	East	319	63	-10	-58	3	N/A		
		HHS-53-1	East	309	68	-10	-58	3	N/A		
		HHS-53-2	East	309	75	-10	-58	3	N/A		
		HHS-53-3	East	309	59	-10	-58	3	N/A		
		HHS-53-4	East	309	67	-10	-58	3	N/A		
		HHS-53-5	East	309	69	-10	-58	3	N/A		
		HHS-53-6	East	309	66	-10	-58	3	N/A		
		HHS-56	East	284	73	-10	-57	3	9		
		HHS-57-2	East	260	61	-10	-56	3	negligible*		
		HHS-58-1	East	249	68	-10	-56	3	5		
		HHS-58-2	East	249	69	-10	-56	3	6		
		HHS-62-2	East	156	69	-10	-52	3	10		
		HHS-67-1	East	92	71	-10	-47	3	17		
		HHS-67-3	East	92	73	-10	-47	3	19		
		HHS-68-1	East	70	72	-10	-45	3	20		
		HHS-68-2	East	70	71	-10	-45	3	19		
		HHS-68-3	East	70	70	-10	-45	3	18		
		HHS-70-3	East	52	59	-10	-42	3	10		
		HHS-71-1	East	46	54	-10	-41	3	6		
		HHS-71-2	East	46	56	-10	-41	3	8		
		HHS-71-3	East	46	67	-10	-41	3	19		
		HHS-73	East	55	53	-10	-43	3	3		
		HHS-77-1	East	59	54	-10	-43	3	4		
		HHS-77-2	East	59	55	-10	-43	3	5		
		HHS-77-3	East	59	55	-10	-43	3	5		
		HHS-78	North	81	87	-10	-46	3	34		
		HUH-80-1	Top	433	123	0	-61	3	N/A		
		HUH-80-2	Top	428	123	0	-61	3	N/A		
		HUH-80-3	Top	423	123	0	-61	3	N/A		
		HUH-81	Top	401	103	0	-60	3	N/A		
		HUH-82-1	South	193	98	-10	-54	3	37		
		HUH-82-2	South	193	98	-10	-54	3	37		
		HUH-82-3	South	193	98	-10	-54	3	37		
		HUH-82-4	South	193	98	-10	-54	3	37		
		HUH-82-5	South	193	98	-10	-54	3	37		
		HUH-82-6	South	193	98	-10	-54	3	37		
		HUH-82-7	South	193	98	-10	-54	3	37		
		HUH-82-8	South	193	98	-10	-54	3	37		
		HUH-82-9	South	193	98	-10	-54	3	37		
		HUH-82-10	South	193	98	-10	-54	3	37		
		HUH-82-11	South	193	98	-10	-54	3	37		
		HUH-82-12	South	193	98	-10	-54	3	37		
		HHS-84	East	197	72	-10	-54	3	11		
		HUH-85b	North	136	101	-10	-51	3	43		
		HUH-86-4	North	120	99	0	-50	3	52		
		HUH-86-13	North	120	99	0	-50	3	52		
		HHS-87-2	East	284	75	-10	-57	3	11		
		HHS-88-2	East	347	58	-10	-59	3	N/A		
		HUH-95b	South	339	101	-10	-59	3	N/A		
		HHS-100-2	South	321	62	-10	-58	3	N/A		
		HHS-101-1	South	312	76	-10	-58	3	N/A		
		HHS-102-1	East	297	69	-10	-57	3	5		
		HHS-102-2	East	297	71	-10	-57	3	7		
		HHS-102-3	East	297	75	-10	-57	3	11		
		HHS-102-6	East	297	71	-10	-57	3	7		
		HHS-102-7	East	297	73	-10	-57	3	9		
		HHS-102-9	East	297	71	-10	-57	3	7		
		HHS-102-11	East	297	72	-10	-57	3	8		
		HUH-103-1	Top	178	101	-10	-53	3	41		
		HUH-103-2	Top	178	101	-10	-53	3	41		
		HUH-103-3	Top	178	101	-10	-53	3	41		
		HUH-103-4	Top	178	101	-10	-53	3	41		
		HUH-103-5	Top	178	101	-10	-53	3	41		
		HUH-103-6	Top	178	101	-10	-53	3	41		
		HUH-103-7	Top	178	101	-10	-53	3	41		
		HUH-103-8	Top	178	101	-10	-53	3	41		
		HUH-103-9	Top	178	101	-10	-53	3	41		
		HUH-103-10	Top	178	101	-10	-53	3	41		
		HUH-103-11	Top	178	101	-10	-53	3	41		
		HUH-103-12	Top	178	101	-10	-53	3	41		
		HUH-103-13	Top	178	101	-10	-53	3	41		
		HUH-103-14	Top	178	101	-10	-53	3	41		
		HUH-104-1	Top	141	98	0	-51	3	50		
		HUH-104-2	Top	141	98	0	-51	3	50		
		HUH-104-3	Top	141	98	0	-51	3	50		
		HUH-104-4	Top	141	98	0	-51	3	50		
		HUH-									

Annex A Detail Calculation of Fixed Plant Noise Assessment
Fixed Plant Noise Calculation - HUH-4-1a

Noise Assessment Points	Description	Plant Item ^[2]	Direction Facing	Horizontal Distance , m	SWL, dB(A)	Correction for line of sight ^[1] , dB(A)	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Predicted SPL, dB(A) ^[2]	Total SPL, dB(A)	Night-time Noise Criteria, dB(A)
Stabling Sidings at Hung Hom Freight Yard											
HUH-4-1a											
Night-time											
HUH-4-1a	The Metropolis Residence Tower 2	HUH-4-2	North	397	93	-10	-60	3	N/A		
		HUH-7a	Top	350	90	-10	-59	3	N/A		
		HUH-7b	South	350	90	-10	-59	3	N/A		
		HUH-8a	Top	347	91	-10	-59	3	N/A		
		HUH-8b	South	347	90	-10	-59	3	N/A		
		HUH-8c	East	347	90	-10	-59	3	N/A		
		HUH-9a	Top	338	91	-10	-59	3	N/A		
		HUH-9b	South	338	91	-10	-59	3	N/A		
		HUH-9c	East	338	91	-10	-59	3	N/A		
		HUH-10a	Top	335	91	-10	-59	3	N/A		
		HUH-10b	South	335	91	-10	-59	3	N/A		
		HUH-10c	East	335	91	-10	-59	3	N/A		
		HUH-11a	Top	334	91	-10	-58	3	N/A		
		HUH-11b	South	334	91	-10	-58	3	N/A		
		HUH-12a	Top	332	91	-10	-58	3	N/A		
		HUH-12b	South	332	91	-10	-58	3	N/A		
		HUH-13a	Top	330	91	-10	-58	3	N/A		
		HUH-13b	South	330	91	-10	-58	3	N/A		
		HUH-14-1-1	South	326	91	-10	-58	3	N/A		
		HUH-14-1-2	South	326	91	-10	-58	3	N/A		
		HUH-14-2	South	324	91	-10	-58	3	N/A		
		HUH-14-3	South	322	91	-10	-58	3	N/A		
		HUH-15-1	West	172	91	-10	-53	3	31		
		HUH-15-2	West	175	91	-10	-53	3	31		
		HUH-15-3	West	177	91	-10	-53	3	31		
		HUH-16a	Top	166	86	0	-52	3	37		
		HUH-16b	East	166	86	0	-52	3	37		
		HUH-17	North	159	91	-10	-52	3	32		
		HUH-18	Top	146	87	0	-51	3	39		
		HUH-19a	Top	167	90	0	-52	3	41		
		HUH-19b	North	167	93	-10	-52	3	34		
		HUH-20	Top	136	87	0	-51	3	39		
		HUH-21a	Top	128	90	0	-50	3	43		
		HUH-21b	North	128	90	-10	-50	3	33		
		HUH-22a-1	Top	123	90	0	-50	3	43		
		HUH-22a-2	North	123	90	-10	-50	3	33		
		HUH-22b	North	123	90	-10	-50	3	33		
		HUH-26H	East	205	79	0	-54	3	28		
		HUH-27H	East	198	93	0	-54	3	42		
		HUH-29	East	185	93	0	-53	3	43		
		HUH-30H	West	203	79	-10	-54	3	18		
		HUH-32H	West	198	80	-10	-54	3	19		
		HUH-33H	West	205	93	-10	-54	3	32		
		HUH-37H	East	201	83	0	-54	3	32		
		HHS-38	South	321	64	-10	-58	3	N/A		
		HHS-40	South	319	-	-10	-58	3	-		
		HHS-41-1	West	328	54	-10	-58	3	N/A		
		HHS-41-2	West	328	66	-10	-58	3	N/A		
		HHS-42-1	West	339	66	-10	-59	3	N/A		
		HHS-42-2	West	339	64	-10	-59	3	N/A		
		HHS-42-3	West	339	85	-10	-59	3	N/A		
		HHS-45-1	West	362	85	-10	-59	3	N/A		
		HHS-45-2	West	362	60	-10	-59	3	N/A		
		HHS-49-2	East	352	78	-10	-59	3	N/A		
		HHS-49-3	East	352	71	-10	-59	3	N/A		
		HHS-49-6	East	352	67	-10	-59	3	N/A		
		HHS-49-8	East	352	70	-10	-59	3	N/A		
		HHS-50-1	East	347	75	-10	-59	3	N/A		
		HHS-50-2	East	347	69	-10	-59	3	N/A		
		HHS-51	East	332	85	-10	-58	3	N/A		
		HHS-52-1	East	319	63	-10	-58	3	N/A		
		HHS-53-1	East	309	68	-10	-58	3	N/A		
		HHS-53-2	East	309	75	-10	-58	3	N/A		
		HHS-53-3	East	309	59	-10	-58	3	N/A		
		HHS-53-4	East	309	67	-10	-58	3	N/A		
		HHS-53-5	East	309	69	-10	-58	3	N/A		
		HHS-53-6	East	309	66	-10	-58	3	N/A		
		HHS-56	East	284	73	-10	-57	3	9		
		HHS-57-2	East	260	61	-10	-56	3	negligible*		
		HHS-58-1	East	249	68	-10	-56	3	5		
		HHS-58-2	East	249	69	-10	-56	3	6		
		HHS-62-2	East	156	69	-10	-52	3	10		
		HHS-67-1	East	92	71	-10	-47	3	17		
		HHS-67-3	East	92	73	-10	-47	3	19		
		HHS-68-1	East	70	72	-10	-46	3	20		
		HHS-68-2	East	70	71	-10	-46	3	19		
		HHS-68-3	East	70	70	-10	-46	3	18		
		HHS-70-3	East	52	59	-10	-42	3	10		
		HHS-71-1	East	46	54	-10	-41	3	6		
		HHS-71-2	East	46	56	-10	-41	3	8		
		HHS-71-3	East	46	67	-10	-41	3	19		
		HHS-73	East	55	53	-10	-43	3	3		
		HHS-77-1	East	59	54	-10	-43	3	4		
		HHS-77-2	East	59	55	-10	-43	3	5		
		HHS-77-3	East	59	55	-10	-43	3	5		
		HHS-78	North	81	79	-10	-46	3	26		
		HUH-80-1	Top	433	113	0	-61	3	N/A		
		HUH-80-2	Top	428	113	0	-61	3	N/A		
		HUH-80-3	Top	423	113	0	-61	3	N/A		
		HUH-81	Top	401	93	0	-60	3	N/A		
		HUH-82-1	South	193	88	-10	-54	3	27		
		HUH-82-2	South	193	88	-10	-54	3	27		
		HUH-82-3	South	193	88	-10	-54	3	27		
		HUH-82-4	South	193	88	-10	-54	3	27		
		HUH-82-5	South	193	88	-10	-54	3	27		
		HUH-82-6	South	193	88	-10	-54	3	27		
		HUH-82-7	South	193	88	-10	-54	3	27		
		HUH-82-8	South	193	88	-10	-54	3	27		
		HUH-82-9	South	193	88	-10	-54	3	27		
		HUH-82-10	South	193	88	-10	-54	3	27		
		HUH-82-11	South	193	88	-10	-54	3	27		
		HUH-82-12	South	193	88	-10	-54	3	27		
		HHS-84	East	197	72	-10	-54	3	11		
		HUH-85b	North	136	91	-10	-51	3	33		
		HUH-86-4	North	120	89	0	-50	3	42		
		HUH-86-13	North	120	89	0	-50	3	42		
		HHS-87-2	East	284	75	-10	-57	3	11		
		HHS-88-2	East	347	58	-10	-59	3	N/A		
		HUH-95b	South	339	91	-10	-59	3	N/A		
		HHS-100-2	South	321	62	-10	-58	3	N/A		
		HHS-101-1	South	312	76	-10	-58	3	N/A		
		HHS-102-1	East	297	69	-10	-57	3	5		
		HHS-102-2	East	297	71	-10	-57	3	7		
		HHS-102-3	East	297	75	-10	-57	3	11		
		HHS-102-6	East	297	71	-10	-57	3	7		
		HHS-102-7	East	297	73	-10	-57	3	9		
		HHS-102-9	East	297	71	-10	-57	3	7		
		HHS-102-11	East	297	72	-10	-57	3	8		
		HUH-103-1	Top	178	91	-10	-53	3	31		
		HUH-103-2	Top	178	91	-10	-53	3	31		
		HUH-103-3	Top	178	91	-10	-53	3	31		
		HUH-103-4	Top	178	91	-10	-53	3	31		
		HUH-103-5	Top	178	91	-10	-53	3	31		
		HUH-103-6	Top	178	91	-10	-53	3	31		
		HUH-103-7	Top	178	91	-10	-53	3	31		
		HUH-103-8	Top	178	91	-10	-53	3	31		
		HUH-103-9	Top	178	91	-10	-53	3	31		
		HUH-103-10	Top	178	91	-10	-53	3	31		
		HUH-103-11	Top	178	91	-10	-53	3	31		
		HUH-103-12	Top	178	91	-10	-53	3	31		
		HUH-103-13	Top	178	91	-10	-53	3	31		
		HUH-103-14	Top	178	91	-10	-53	3	31		
		HUH-104-1	Top	141	88	0	-51	3	40		
		HUH-104-2	Top	141	88	0	-51	3	40		
		HUH-104-3	Top	141	88	0	-51	3	40		
		HUH-104-4	Top	141	88	0	-51	3	40		
		HUH-104-5	Top	141	88	0	-51	3	40		</

Annex A Detail Calculation of Fixed Plant Noise Assessment
Fixed Plant Noise Calculation - HUH-4-1b

Noise Assessment Points	Description	Plant Item ^[1]	Direction Facing	Horizontal Distance , m	SWL, dB(A)	Correction for line of sight ^[1] , dB(A)	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Predicted SPL, dB(A) ^[2]	Total SPL, dB(A)	Daytime Noise Criteria, dB(A)
Stabling Sidings at Hung Hom Freight Yard											
HUH-4-1b											
Daytime											
HUH-4-1b	The Metropolis Residence Tower 2	HUH-4-2	North	384	103	-10	-60	3	N/A		
		HUH-7a	Top	333	100	-10	-58	3	N/A		
		HUH-7b	South	333	100	-10	-58	3	N/A		
		HUH-8a	Top	329	101	-10	-58	3	N/A		
		HUH-8b	South	329	100	-10	-58	3	N/A		
		HUH-8c	East	329	100	-10	-58	3	N/A		
		HUH-9a	Top	317	101	-10	-58	3	N/A		
		HUH-9b	South	317	101	-10	-58	3	N/A		
		HUH-9c	East	317	101	-10	-58	3	N/A		
		HUH-10a	Top	314	101	-10	-58	3	N/A		
		HUH-10b	South	314	101	-10	-58	3	N/A		
		HUH-10c	East	314	101	-10	-58	3	N/A		
		HUH-11a	Top	312	101	-10	-58	3	N/A		
		HUH-11b	South	312	101	-10	-58	3	N/A		
		HUH-12a	Top	309	101	-10	-58	3	N/A		
		HUH-12b	South	309	101	-10	-58	3	N/A		
		HUH-13a	Top	307	101	-10	-58	3	N/A		
		HUH-13b	South	307	101	-10	-58	3	N/A		
		HUH-14-1-1	South	304	101	-10	-58	3	N/A		
		HUH-14-1-2	South	304	101	-10	-58	3	N/A		
		HUH-14-2	South	301	101	-10	-58	3	N/A		
		HUH-14-3	South	298	101	-10	-57	3	37		
		HUH-15-1	West	209	101	-10	-54	3	40		
		HUH-15-2	West	212	101	-10	-55	3	39		
		HUH-15-3	West	214	101	-10	-55	3	39		
		HUH-16a	Top	204	96	-10	-54	3	35		
		HUH-16b	East	204	96	-10	-54	3	35		
		HUH-17	North	197	101	-10	-54	3	40		
		HUH-18	Top	185	97	-10	-53	3	37		
		HUH-19a	Top	207	100	-10	-54	3	39		
		HUH-19b	North	207	103	-10	-54	3	42		
		HUH-20	Top	175	97	-10	-53	3	37		
		HUH-21a	Top	167	100	-10	-52	3	41		
		HUH-21b	North	167	100	-10	-52	3	41		
		HUH-22a-1	Top	163	100	-10	-52	3	41		
		HUH-22a-2	North	163	100	-10	-52	3	41		
		HUH-22b	North	163	100	-10	-52	3	41		
		HUH-26H	East	245	79	-10	-56	3	16		
		HUH-27H	East	237	103	-10	-56	3	40		
		HUH-29	East	225	103	-10	-55	3	41		
		HUH-30H	West	242	79	-10	-56	3	16		
		HUH-32H	West	237	80	-10	-56	3	17		
		HUH-33H	West	245	103	-10	-56	3	40		
		HUH-37H	East	241	83	-10	-56	3	20		
		HHS-38	South	296	64	-10	-57	3	negligible*		
		HHS-40	South	293	88	-10	-57	3	24		
		HHS-41-1	West	302	54	-10	-58	3	N/A		
		HHS-41-2	West	302	66	-10	-58	3	N/A		
		HHS-42-1	West	312	66	-10	-58	3	N/A		
		HHS-42-2	West	312	64	-10	-58	3	N/A		
		HHS-42-3	West	312	63	-10	-58	3	N/A		
		HHS-45-1	West	335	85	-10	-59	3	N/A		
		HHS-45-2	West	335	60	-10	-59	3	N/A		
		HHS-49-2	East	322	78	-10	-58	3	N/A		
		HHS-49-3	East	322	71	-10	-58	3	N/A		
		HHS-49-6	East	322	67	-10	-58	3	N/A		
		HHS-49-8	East	322	70	-10	-58	3	N/A		
		HHS-50-1	East	317	75	-10	-58	3	N/A		
		HHS-50-2	East	317	69	-10	-58	3	N/A		
		HHS-51	East	301	86	-10	-58	3	N/A		
		HHS-52-1	East	286	63	-10	-57	3	negligible*		
		HHS-53-1	East	276	68	-10	-57	3	4		
		HHS-53-2	East	276	75	-10	-57	3	11		
		HHS-53-3	East	276	59	-10	-57	3	negligible*		
		HHS-53-4	East	276	67	-10	-57	3	3		
		HHS-53-5	East	276	69	-10	-57	3	5		
		HHS-53-6	East	276	66	-10	-57	3	2		
		HHS-56	East	249	73	-10	-56	3	10		
		HHS-57-2	East	225	61	-10	-55	3	negligible*		
		HHS-58-1	East	213	68	-10	-55	3	6		
		HHS-58-2	East	213	69	-10	-55	3	7		
		HHS-62-2	East	119	69	-10	-50	3	12		
		HHS-67-1	East	53	71	-10	-42	3	22		
		HHS-67-3	East	53	73	-10	-42	3	24		
		HHS-68-1	East	31	72	-10	-38	3	27		
		HHS-68-2	East	31	71	-10	-38	3	26		
		HHS-68-3	East	31	70	-10	-38	3	25		
		HHS-70-3	East	22	59	-10	-35	3	17		
		HHS-71-1	East	29	54	-10	-37	3	10		
		HHS-71-2	East	29	56	-10	-37	3	12		
		HHS-71-3	East	29	67	-10	-37	3	23		
		HHS-73	East	80	53	-10	-46	3	negligible*		
		HHS-77-1	East	88	54	-10	-47	3	0		
		HHS-77-2	East	88	55	-10	-47	3	1		
		HHS-77-3	East	88	55	-10	-47	3	1		
		HHS-78	North	117	87	-10	-49	3	31		
		HUH-80-1	Top	419	123	-10	-60	3	N/A		
		HUH-80-2	Top	415	123	-10	-60	3	N/A		
		HUH-80-3	Top	410	123	-10	-60	3	N/A		
		HUH-81	Top	389	103	-10	-60	3	N/A		
		HUH-82-1	South	190	98	-10	-54	3	37		
		HUH-82-2	South	190	98	-10	-54	3	37		
		HUH-82-3	South	190	98	-10	-54	3	37		
		HUH-82-4	South	190	98	-10	-54	3	37		
		HUH-82-5	South	190	98	-10	-54	3	37		
		HUH-82-6	South	190	98	-10	-54	3	37		
		HUH-82-7	South	190	98	-10	-54	3	37		
		HUH-82-8	South	190	98	-10	-54	3	37		
		HUH-82-9	South	190	98	-10	-54	3	37		
		HUH-82-10	South	190	98	-10	-54	3	37		
		HUH-82-11	South	190	98	-10	-54	3	37		
		HUH-82-12	South	190	98	-10	-54	3	37		
		HHS-84	East	161	72	-10	-52	3	13		
		HUH-85b	North	175	101	-10	-53	3	41		
		HUH-86-4	North	149	99	-10	-51	3	41		
		HUH-86-13	North	149	99	-10	-51	3	41		
		HHS-87-2	East	249	75	-10	-56	3	12		
		HHS-88-2	East	317	58	-10	-58	3	N/A		
		HUH-95b	South	321	101	-10	-58	3	N/A		
		HHS-100-2	South	296	62	-10	-57	3	negligible*		
		HHS-101-1	South	287	76	-10	-57	3	12		
		HHS-102-1	East	263	69	-10	-56	3	6		
		HHS-102-2	East	263	71	-10	-56	3	8		
		HHS-102-3	East	263	75	-10	-56	3	12		
		HHS-102-6	East	263	71	-10	-56	3	8		
		HHS-102-7	East	263	73	-10	-56	3	10		
		HHS-102-9	East	263	71	-10	-56	3	8		
		HHS-102-11	East	263	72	-10	-56	3	9		
		HUH-103-1	Top	215	101	-10	-55	3	39		
		HUH-103-2	Top	215	101	-10	-55	3	39		
		HUH-103-3	Top	215	101	-10	-55	3	39		
		HUH-103-4	Top	215	101	-10	-55	3	39		
		HUH-103-5	Top	215	101	-10	-55	3	39		
		HUH-103-6	Top	215	101	-10	-55	3	39		
		HUH-103-7	Top	215	101	-10	-55	3	39		
		HUH-103-8	Top	215	101	-10	-55	3	39		
		HUH-103-9	Top	215	101	-10	-55	3	39		
		HUH-103-10	Top	215	101	-10	-55	3	39		
		HUH-103-11	Top	215	101	-10	-55	3	39		
		HUH-103-12	Top	215	101	-10	-55	3	39		
		HUH-103-13	Top	215	101	-10	-55	3	39		
		HUH-103-14	Top	215	101	-10	-55	3	39		
		HUH-104-1	Top	181	98	-10	-53	3	38		
		HUH-104-2	Top	181	98	-10	-53	3	38		
		HUH-104-3	Top	181	98	-10	-53	3	38		
		HUH-104-4	Top	181	98	-10	-53	3	38		

Annex A Detail Calculation of Fixed Plant Noise Assessment
Fixed Plant Noise Calculation - HUH-4-1b

Noise Assessment Points	Description	Plant Item ^[2]	Direction Facing	Horizontal Distance , m	SWL, dB(A)	Correction for line of sight ^[1] , dB(A)	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Predicted SPL, dB(A) ^[2]	Total SPL, dB(A)	Night-time Noise Criteria, dB(A)
Stabling Sidings at Hung Hom Freight Yard											
HUH-4-1b											
Night-time											
HUH-4-1b	The Metropolis Residence Tower 2	HUH-4-2	North	384	93	-10	-60	3	N/A		
		HUH-7a	Top	333	90	-10	-58	3	N/A		
		HUH-7b	South	333	90	-10	-58	3	N/A		
		HUH-8a	Top	329	91	-10	-58	3	N/A		
		HUH-8b	South	329	90	-10	-58	3	N/A		
		HUH-8c	East	329	90	-10	-58	3	N/A		
		HUH-9a	Top	317	91	-10	-58	3	N/A		
		HUH-9b	South	317	91	-10	-58	3	N/A		
		HUH-9c	East	317	91	-10	-58	3	N/A		
		HUH-10a	Top	314	91	-10	-58	3	N/A		
		HUH-10b	South	314	91	-10	-58	3	N/A		
		HUH-10c	East	314	91	-10	-58	3	N/A		
		HUH-11a	Top	312	91	-10	-58	3	N/A		
		HUH-11b	South	312	91	-10	-58	3	N/A		
		HUH-12a	Top	309	91	-10	-58	3	N/A		
		HUH-12b	South	309	91	-10	-58	3	N/A		
		HUH-13a	Top	307	91	-10	-58	3	N/A		
		HUH-13b	South	307	91	-10	-58	3	N/A		
		HUH-14-1-1	South	304	91	-10	-58	3	N/A		
		HUH-14-1-2	South	304	91	-10	-58	3	N/A		
		HUH-14-2	South	301	91	-10	-58	3	N/A		
		HUH-14-3	South	298	91	-10	-57	3	27		
		HUH-15-1	West	209	91	-10	-54	3	30		
		HUH-15-2	West	212	91	-10	-55	3	29		
		HUH-15-3	West	214	91	-10	-55	3	29		
		HUH-16a	Top	204	86	-10	-54	3	25		
		HUH-16b	East	204	86	-10	-54	3	25		
		HUH-17	North	197	91	-10	-54	3	30		
		HUH-18	Top	185	87	-10	-53	3	27		
		HUH-19a	Top	207	90	-10	-54	3	29		
		HUH-19b	North	207	93	-10	-54	3	32		
		HUH-20	Top	175	87	-10	-53	3	27		
		HUH-21a	Top	167	90	-10	-52	3	31		
		HUH-21b	North	167	90	-10	-52	3	31		
		HUH-22a-1	Top	163	90	-10	-52	3	31		
		HUH-22a-2	North	163	90	-10	-52	3	31		
		HUH-22b	North	163	90	-10	-52	3	31		
		HUH-26H	East	245	79	-10	-56	3	16		
		HUH-27H	East	237	93	-10	-56	3	30		
		HUH-29	East	225	93	-10	-55	3	31		
		HUH-30H	West	242	79	-10	-56	3	16		
		HUH-32H	West	237	80	-10	-56	3	17		
		HUH-33H	West	245	93	-10	-56	3	30		
		HUH-37H	East	241	83	-10	-56	3	20		
		HHS-38	South	296	64	-10	-57	3	negligible*		
		HHS-40	South	293	-	-10	-57	3	-		
		HHS-41-1	West	302	54	-10	-58	3	N/A		
		HHS-41-2	West	302	66	-10	-58	3	N/A		
		HHS-42-1	West	312	66	-10	-58	3	N/A		
		HHS-42-2	West	312	64	-10	-58	3	N/A		
		HHS-42-3	West	312	63	-10	-58	3	N/A		
		HHS-45-1	West	335	85	-10	-59	3	N/A		
		HHS-45-2	West	335	60	-10	-59	3	N/A		
		HHS-49-2	East	322	78	-10	-58	3	N/A		
		HHS-49-3	East	322	71	-10	-58	3	N/A		
		HHS-49-6	East	322	67	-10	-58	3	N/A		
		HHS-49-8	East	322	70	-10	-58	3	N/A		
		HHS-50-1	East	317	75	-10	-58	3	N/A		
		HHS-50-2	East	317	69	-10	-58	3	N/A		
		HHS-51	East	301	85	-10	-58	3	N/A		
		HHS-52-1	East	286	63	-10	-57	3	negligible*		
		HHS-53-1	East	276	68	-10	-57	3	4		
		HHS-53-2	East	276	75	-10	-57	3	11		
		HHS-53-3	East	276	59	-10	-57	3	negligible*		
		HHS-53-4	East	276	67	-10	-57	3	3		
		HHS-53-5	East	276	69	-10	-57	3	5		
		HHS-53-6	East	276	66	-10	-57	3	2		
		HHS-56	East	249	73	-10	-56	3	10		
		HHS-57-2	East	225	61	-10	-55	3	negligible*		
		HHS-58-1	East	213	68	-10	-55	3	6		
		HHS-58-2	East	213	69	-10	-55	3	7		
		HHS-62-2	East	119	69	-10	-50	3	12		
		HHS-67-1	East	53	71	-10	-42	3	22		
		HHS-67-3	East	53	73	-10	-42	3	24		
		HHS-68-1	East	31	72	-10	-38	3	27		
		HHS-68-2	East	31	71	-10	-38	3	26		
		HHS-68-3	East	31	70	-10	-38	3	25		
		HHS-70-3	East	22	59	-10	-35	3	17		
		HHS-71-1	East	29	54	-10	-37	3	10		
		HHS-71-2	East	29	56	-10	-37	3	12		
		HHS-71-3	East	29	67	-10	-37	3	23		
		HHS-73	East	80	53	-10	-46	3	negligible*		
		HHS-77-1	East	88	54	-10	-47	3	0		
		HHS-77-2	East	88	55	-10	-47	3	1		
		HHS-77-3	East	88	55	-10	-47	3	1		
		HHS-78	North	117	79	-10	-49	3	23		
		HUH-80-1	Top	419	113	-10	-60	3	N/A		
		HUH-80-2	Top	415	113	-10	-60	3	N/A		
		HUH-80-3	Top	410	113	-10	-60	3	N/A		
		HUH-81	Top	389	93	-10	-60	3	N/A		
		HUH-82-1	South	190	88	-10	-54	3	27		
		HUH-82-2	South	190	88	-10	-54	3	27		
		HUH-82-3	South	190	88	-10	-54	3	27		
		HUH-82-4	South	190	88	-10	-54	3	27		
		HUH-82-5	South	190	88	-10	-54	3	27		
		HUH-82-6	South	190	88	-10	-54	3	27		
		HUH-82-7	South	190	88	-10	-54	3	27		
		HUH-82-8	South	190	88	-10	-54	3	27		
		HUH-82-9	South	190	88	-10	-54	3	27		
		HUH-82-10	South	190	88	-10	-54	3	27		
		HUH-82-11	South	190	88	-10	-54	3	27		
		HUH-82-12	South	190	88	-10	-54	3	27		
		HHS-84	East	161	72	-10	-52	3	13		
		HUH-85b	North	175	91	-10	-53	3	31		
		HUH-86-4	North	149	89	-10	-51	3	31		
		HUH-86-13	North	149	89	-10	-51	3	31		
		HHS-87-2	East	249	75	-10	-56	3	12		
		HHS-88-2	East	317	58	-10	-58	3	N/A		
		HUH-95b	South	321	91	-10	-58	3	N/A		
		HHS-100-2	South	296	62	-10	-57	3	negligible*		
		HHS-101-1	South	287	76	-10	-57	3	12		
		HHS-102-1	East	263	69	-10	-56	3	6		
		HHS-102-2	East	263	71	-10	-56	3	8		
		HHS-102-3	East	263	75	-10	-56	3	12		
		HHS-102-6	East	263	71	-10	-56	3	8		
		HHS-102-7	East	263	73	-10	-56	3	10		
		HHS-102-9	East	263	71	-10	-56	3	8		
		HHS-102-11	East	263	72	-10	-56	3	9		
		HUH-103-1	Top	215	91	-10	-55	3	29		
		HUH-103-2	Top	215	91	-10	-55	3	29		
		HUH-103-3	Top	215	91	-10	-55	3	29		
		HUH-103-4	Top	215	91	-10	-55	3	29		
		HUH-103-5	Top	215	91	-10	-55	3	29		
		HUH-103-6	Top	215	91	-10	-55	3	29		
		HUH-103-7	Top	215	91	-10	-55	3	29		
		HUH-103-8	Top	215	91	-10	-55	3	29		
		HUH-103-9	Top	215	91	-10	-55	3	29		
		HUH-103-10	Top	215	91	-10	-55	3	29		
		HUH-103-11	Top	215	91	-10	-55	3	29		
		HUH-103-12	Top	215	91	-10	-55	3	29		
		HUH-103-13	Top	215	91	-10	-55	3	29		
		HUH-103-14	Top	215	91	-10	-55	3	29		
		HUH-104-1	Top	181	88	-10	-53	3	28		
		HUH-104-2	Top	181	88	-10	-53	3	28		
		HUH-104-3	Top	181	88	-10	-53	3	28		
		HUH-104-4	Top	181	88	-10	-53	3	28		
		HUH-104-5	Top	181							

Annex A Detail Calculation of Fixed Plant Noise Assessment
Fixed Plant Noise Calculation - HUH-4-2a

Noise Assessment Points	Description	Plant Item ^[1]	Direction Facing	Horizontal Distance , m	SWL, dB(A)	Correction for line of sight ^[1] , dB(A)	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Predicted SPL, dB(A) ^[2]	Total SPL, dB(A)	Daytime Noise Criteria, dB(A)
Stabling Sidings at Hung Hom Freight Yard											
HUH-4-2a											
Daytime											
HUH-4-2a	The Metropolis Residence Tower 1	HUH-4-2	North	287	103	0	-57	3	49		
		HUH-7a	Top	229	100	0	-55	3	48		
		HUH-7b	South	229	100	-10	-55	3	38		
		HUH-8a	Top	224	101	0	-55	3	49		
		HUH-8b	South	224	100	-10	-55	3	38		
		HUH-8c	East	224	100	0	-55	3	48		
		HUH-9a	Top	207	101	0	-54	3	50		
		HUH-9b	South	207	101	-10	-54	3	40		
		HUH-9c	East	207	101	0	-54	3	50		
		HUH-10a	Top	203	101	0	-54	3	50		
		HUH-10b	South	203	101	-10	-54	3	40		
		HUH-10c	East	203	101	0	-54	3	50		
		HUH-11a	Top	200	101	0	-54	3	50		
		HUH-11b	South	200	101	-10	-54	3	40		
		HUH-12a	Top	197	101	0	-54	3	50		
		HUH-12b	South	197	101	-10	-54	3	40		
		HUH-13a	Top	193	101	0	-54	3	50		
		HUH-13b	South	193	101	-10	-54	3	40		
		HUH-14-1-1	South	192	101	-10	-54	3	40		
		HUH-14-1-2	South	192	101	-10	-54	3	40		
		HUH-14-2	South	189	101	-10	-54	3	40		
		HUH-14-3	South	185	101	-10	-53	3	41		
		HUH-15-1	West	278	101	-10	-57	3	37		
		HUH-15-2	West	283	101	-10	-57	3	37		
		HUH-15-3	West	286	101	-10	-57	3	37		
		HUH-16a	Top	280	96	-10	-57	3	32		
		HUH-16b	East	280	96	-10	-57	3	32		
		HUH-17	North	272	101	-10	-57	3	37		
		HUH-18	Top	264	97	-10	-56	3	34		
		HUH-19a	Top	293	100	-10	-57	3	36		
		HUH-19b	North	293	103	-10	-57	3	39		
		HUH-20	Top	256	97	-10	-56	3	34		
		HUH-21a	Top	252	100	-10	-56	3	37		
		HUH-21b	North	252	100	-10	-56	3	37		
		HUH-22a-1	Top	248	100	-10	-56	3	37		
		HUH-22a-2	North	248	100	-10	-56	3	37		
		HUH-22b	North	248	100	-10	-56	3	37		
		HUH-26H	East	331	79	-10	-58	3	N/A		
		HUH-27H	East	323	103	-10	-58	3	N/A		
		HUH-29	East	308	103	-10	-58	3	N/A		
		HUH-30H	West	324	79	-10	-58	3	N/A		
		HUH-32H	West	319	80	-10	-58	3	N/A		
		HUH-33H	West	327	103	-10	-58	3	N/A		
		HUH-37H	East	327	83	-10	-58	3	N/A		
		HHS-38	South	181	64	-10	-53	3	4		
		HHS-40	South	177	88	-10	-53	3	28		
		HHS-41-1	West	186	54	-10	-53	3	negligible*		
		HHS-41-2	West	186	66	-10	-53	3	6		
		HHS-42-1	West	196	66	-10	-54	3	5		
		HHS-42-2	West	196	64	-10	-54	3	3		
		HHS-42-3	West	196	63	-10	-54	3	2		
		HHS-45-1	West	219	85	-10	-55	3	23		
		HHS-45-2	West	219	60	-10	-55	3	negligible*		
		HHS-49-2	East	206	78	-10	-54	3	17		
		HHS-49-3	East	206	71	-10	-54	3	10		
		HHS-49-6	East	206	67	-10	-54	3	6		
		HHS-49-8	East	206	70	-10	-54	3	9		
		HHS-50-1	East	201	75	-10	-54	3	14		
		HHS-50-2	East	201	69	-10	-54	3	8		
		HHS-51	East	186	86	-10	-53	3	26		
		HHS-52-1	East	173	63	-10	-53	3	3		
		HHS-53-1	East	164	68	-10	-52	3	9		
		HHS-53-2	East	164	75	-10	-52	3	16		
		HHS-53-3	East	164	59	-10	-52	3	negligible*		
		HHS-53-4	East	164	67	-10	-52	3	8		
		HHS-53-5	East	164	69	-10	-52	3	10		
		HHS-53-6	East	164	66	-10	-52	3	7		
		HHS-56	East	141	73	-10	-51	3	15		
		HHS-57-2	East	120	61	-10	-50	3	4		
		HHS-58-1	East	109	68	-10	-49	3	12		
		HHS-58-2	East	109	69	-10	-49	3	13		
		HHS-62-2	East	46	69	-10	-41	3	21		
		HHS-67-1	East	80	71	-10	-46	3	18		
		HHS-67-3	East	80	73	-10	-46	3	20		
		HHS-68-1	East	102	72	-10	-48	3	17		
		HHS-68-2	East	102	71	-10	-48	3	16		
		HHS-68-3	East	102	70	-10	-48	3	15		
		HHS-70-3	East	127	59	-10	-50	3	2		
		HHS-71-1	East	140	54	-10	-51	3	negligible*		
		HHS-71-2	East	140	56	-10	-51	3	negligible*		
		HHS-71-3	East	140	67	-10	-51	3	9		
		HHS-73	East	196	53	-10	-54	3	negligible*		
		HHS-77-1	East	203	54	-10	-54	3	negligible*		
		HHS-77-2	East	203	55	-10	-54	3	negligible*		
		HHS-77-3	East	203	55	-10	-54	3	negligible*		
		HHS-78	North	227	87	-10	-55	3	25		
		HUH-80-1	Top	319	123	0	-58	3	N/A		
		HUH-80-2	Top	315	123	0	-58	3	N/A		
		HUH-80-3	Top	311	123	0	-58	3	N/A		
		HUH-81	Top	292	103	0	-57	3	49		
		HUH-82-1	South	132	98	0	-50	3	51		
		HUH-82-2	South	132	98	0	-50	3	51		
		HUH-82-3	South	132	98	0	-50	3	51		
		HUH-82-4	South	132	98	0	-50	3	51		
		HUH-82-5	South	132	98	0	-50	3	51		
		HUH-82-6	South	132	98	0	-50	3	51		
		HUH-82-7	South	132	98	0	-50	3	51		
		HUH-82-9	South	132	98	0	-50	3	51		
		HUH-82-9	South	132	98	0	-50	3	51		
		HUH-82-10	South	132	98	0	-50	3	51		
		HUH-82-11	South	132	98	0	-50	3	51		
		HUH-82-12	South	132	98	0	-50	3	51		
		HHS-84	East	65	72	-10	-44	3	21		
		HUH-85b	North	260	101	-10	-56	3	38		
		HUH-86-4	North	196	99	-10	-54	3	38		
		HUH-86-13	North	196	99	-10	-54	3	38		
		HHS-87-2	East	141	75	-10	-51	3	17		
		HHS-88-2	East	201	58	-10	-54	3	negligible*		
		HUH-95b	South	216	101	-10	-55	3	39		
		HHS-100-2	South	181	62	-10	-53	3	2		
		HHS-101-1	South	172	76	-10	-53	3	16		
		HHS-102-1	East	153	69	-10	-52	3	10		
		HHS-102-2	East	153	71	-10	-52	3	12		
		HHS-102-3	East	153	75	-10	-52	3	16		
		HHS-102-6	East	153	71	-10	-52	3	12		
		HHS-102-7	East	153	73	-10	-52	3	14		
		HHS-102-9	East	153	71	-10	-52	3	12		
		HHS-102-11	East	153	72	-10	-52	3	13		
		HUH-103-1	Top	280	101	-10	-57	3	37		
		HUH-103-2	Top	280	101	-10	-57	3	37		
		HUH-103-3	Top	280	101	-10	-57	3	37		
		HUH-103-4	Top	280	101	-10	-57	3	37		
		HUH-103-5	Top	280	101	-10	-57	3	37		
		HUH-103-6	Top	280	101	-10	-57	3	37		
		HUH-103-7	Top	280	101	-10	-57	3	37		
		HUH-103-8	Top	280	101	-10	-57	3	37		
		HUH-103-9	Top	280	101	-10	-57	3	37		
		HUH-103-10	Top	280	101	-10	-57	3	37		
		HUH-103-11	Top	280	101	-10	-57	3	37		
		HUH-103-12	Top	280	101	-10	-57	3	37		
		HUH-103-13	Top	280	101	-10	-57	3	37		
		HUH-103-14	Top	280	101	-10	-57	3	37		
		HUH-104-1	Top	265	98	-10	-56	3	35		
		HUH-104-2	Top	265	98	-10	-56	3	35		
		HUH-104-3	Top	265	98	-10	-56	3	35		
		HUH-104-4	Top	265	98	-10	-				

Annex A Detail Calculation of Fixed Plant Noise Assessment
Fixed Plant Noise Calculation - HUH-4-2a

Noise Assessment Points	Description	Plant Item ^[2]	Direction Facing	Horizontal Distance , m	SWL, dB(A)	Correction for line of sight ^[1] , dB(A)	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Predicted SPL, dB(A) ^[2]	Total SPL, dB(A)	Night-time Noise Criteria, dB(A)
Stabling Sidings at Hung Hom Freight Yard											
HUH-4-2a											
Night-time											
HUH-4-2a	The Metropolis Residence Tower 1	HUH-4-2	North	287	93	0	-57	3	39		
		HUH-7a	Top	229	90	0	-55	3	38		
		HUH-7b	South	229	90	-10	-55	3	28		
		HUH-8a	Top	224	91	0	-55	3	39		
		HUH-8b	South	224	90	-10	-55	3	28		
		HUH-8c	East	224	90	0	-55	3	38		
		HUH-9a	Top	207	91	0	-54	3	40		
		HUH-9b	South	207	91	-10	-54	3	30		
		HUH-9c	East	207	91	0	-54	3	40		
		HUH-10a	Top	203	91	0	-54	3	40		
		HUH-10b	South	203	91	-10	-54	3	30		
		HUH-10c	East	203	91	0	-54	3	40		
		HUH-11a	Top	200	91	0	-54	3	40		
		HUH-11b	South	200	91	-10	-54	3	30		
		HUH-12a	Top	197	91	0	-54	3	40		
		HUH-12b	South	197	91	-10	-54	3	30		
		HUH-13a	Top	193	91	0	-54	3	40		
		HUH-13b	South	193	91	-10	-54	3	30		
		HUH-14-1-1	South	192	91	-10	-54	3	30		
		HUH-14-1-2	South	192	91	-10	-54	3	30		
		HUH-14-2	South	189	91	-10	-54	3	30		
		HUH-14-3	South	185	91	-10	-53	3	31		
		HUH-15-1	West	278	91	-10	-57	3	27		
		HUH-15-2	West	283	91	-10	-57	3	27		
		HUH-15-3	West	286	91	-10	-57	3	27		
		HUH-16a	Top	280	86	-10	-57	3	22		
		HUH-16b	East	280	86	-10	-57	3	22		
		HUH-17	North	272	91	-10	-57	3	27		
		HUH-18	Top	264	87	-10	-56	3	24		
		HUH-19a	Top	293	90	-10	-57	3	26		
		HUH-19b	North	293	93	-10	-57	3	29		
		HUH-20	Top	256	87	-10	-56	3	24		
		HUH-21a	Top	252	90	-10	-56	3	27		
		HUH-21b	North	252	90	-10	-56	3	27		
		HUH-22a-1	Top	248	90	-10	-56	3	27		
		HUH-22a-2	North	248	90	-10	-56	3	27		
		HUH-22b	North	248	90	-10	-56	3	27		
		HUH-26H	East	331	79	-10	-58	3	N/A		
		HUH-27H	East	323	93	-10	-58	3	N/A		
		HUH-29	East	308	93	-10	-58	3	N/A		
		HUH-30H	West	324	79	-10	-58	3	N/A		
		HUH-32H	West	319	80	-10	-58	3	N/A		
		HUH-33H	West	327	93	-10	-58	3	N/A		
		HUH-37H	East	327	83	-10	-58	3	N/A		
		HHS-38	South	181	64	-10	-53	3	4		
		HHS-40	South	177	-	-10	-53	3	-		
		HHS-41-1	West	186	54	-10	-53	3	negligible*		
		HHS-41-2	West	186	66	-10	-53	3	6		
		HHS-42-1	West	196	66	-10	-54	3	5		
		HHS-42-2	West	196	64	-10	-54	3	3		
		HHS-42-3	West	196	63	-10	-54	3	2		
		HHS-45-1	West	219	85	-10	-55	3	23		
		HHS-45-2	West	219	60	-10	-55	3	negligible*		
		HHS-49-2	East	206	78	-10	-54	3	17		
		HHS-49-3	East	206	71	-10	-54	3	10		
		HHS-49-6	East	206	67	-10	-54	3	6		
		HHS-49-8	East	206	70	-10	-54	3	9		
		HHS-50-1	East	201	75	-10	-54	3	14		
		HHS-50-2	East	201	69	-10	-54	3	8		
		HHS-51	East	186	85	-10	-53	3	25		
		HHS-52-1	East	173	63	-10	-53	3	3		
		HHS-53-1	East	164	68	-10	-52	3	9		
		HHS-53-2	East	164	75	-10	-52	3	16		
		HHS-53-3	East	164	59	-10	-52	3	negligible*		
		HHS-53-4	East	164	67	-10	-52	3	8		
		HHS-53-5	East	164	69	-10	-52	3	10		
		HHS-53-6	East	164	66	-10	-52	3	7		
		HHS-56	East	141	73	-10	-51	3	15		
		HHS-57-2	East	120	61	-10	-50	3	4		
		HHS-58-1	East	109	68	-10	-49	3	12		
		HHS-58-2	East	109	69	-10	-49	3	13		
		HHS-62-2	East	46	69	-10	-41	3	21		
		HHS-67-1	East	80	71	-10	-46	3	18		
		HHS-67-3	East	80	73	-10	-46	3	20		
		HHS-68-1	East	102	72	-10	-48	3	17		
		HHS-68-2	East	102	71	-10	-48	3	16		
		HHS-68-3	East	102	70	-10	-48	3	15		
		HHS-70-3	East	127	59	-10	-50	3	2		
		HHS-71-1	East	140	54	-10	-51	3	negligible*		
		HHS-71-2	East	140	56	-10	-51	3	negligible*		
		HHS-71-3	East	140	67	-10	-51	3	9		
		HHS-73	East	196	53	-10	-54	3	negligible*		
		HHS-77-1	East	203	54	-10	-54	3	negligible*		
		HHS-77-2	East	203	55	-10	-54	3	negligible*		
		HHS-77-3	East	203	55	-10	-54	3	negligible*		
		HHS-78	North	227	79	-10	-55	3	17		
		HUH-80-1	Top	319	113	0	-58	3	N/A		
		HUH-80-2	Top	315	113	0	-58	3	N/A		
		HUH-80-3	Top	311	113	0	-58	3	N/A		
		HUH-81	Top	292	93	0	-57	3	39		
		HUH-82-1	South	132	88	0	-50	3	41		
		HUH-82-2	South	132	88	0	-50	3	41		
		HUH-82-3	South	132	88	0	-50	3	41		
		HUH-82-4	South	132	88	0	-50	3	41		
		HUH-82-5	South	132	88	0	-50	3	41		
		HUH-82-6	South	132	88	0	-50	3	41		
		HUH-82-7	South	132	88	0	-50	3	41		
		HUH-82-8	South	132	88	0	-50	3	41		
		HUH-82-9	South	132	88	0	-50	3	41		
		HUH-82-10	South	132	88	0	-50	3	41		
		HUH-82-11	South	132	88	0	-50	3	41		
		HUH-82-12	South	132	88	0	-50	3	41		
		HHS-84	East	65	72	-10	-44	3	21		
		HUH-85b	North	260	91	-10	-56	3	28		
		HUH-86-4	North	196	89	-10	-54	3	28		
		HUH-86-13	North	196	89	-10	-54	3	28		
		HHS-87-2	East	141	75	-10	-51	3	17		
		HHS-88-2	East	201	58	-10	-54	3	negligible*		
		HUH-95b	South	216	91	-10	-55	3	29		
		HHS-100-2	South	181	62	-10	-53	3	2		
		HHS-101-1	South	172	76	-10	-53	3	16		
		HHS-102-1	East	153	69	-10	-52	3	10		
		HHS-102-2	East	153	71	-10	-52	3	12		
		HHS-102-3	East	153	75	-10	-52	3	16		
		HHS-102-6	East	153	71	-10	-52	3	12		
		HHS-102-7	East	153	73	-10	-52	3	14		
		HHS-102-9	East	153	71	-10	-52	3	12		
		HHS-102-11	East	153	72	-10	-52	3	13		
		HUH-103-1	Top	280	91	-10	-57	3	27		
		HUH-103-2	Top	280	91	-10	-57	3	27		
		HUH-103-3	Top	280	91	-10	-57	3	27		
		HUH-103-4	Top	280	91	-10	-57	3	27		
		HUH-103-5	Top	280	91	-10	-57	3	27		
		HUH-103-6	Top	280	91	-10	-57	3	27		
		HUH-103-7	Top	280	91	-10	-57	3	27		
		HUH-103-8	Top	280	91	-10	-57	3	27		
		HUH-103-9	Top	280	91	-10	-57	3	27		
		HUH-103-10	Top	280	91	-10	-57	3	27		
		HUH-103-11	Top	280	91	-10	-57	3	27		
		HUH-103-12	Top	280	91	-10	-57	3	27		
		HUH-103-13	Top	280	91	-10	-57	3	27		
		HUH-103-14	Top	280	91	-10	-57	3	27		
		HUH-104-1	Top	265	88	-10	-56	3	25		
		HUH-104-2	Top	265	88	-10	-56	3	25		
		HUH-104-3	Top	265	88	-10	-56	3	25		
		HUH-104-4	Top	265	88	-10	-56	3	25		
		HUH-104-5									

Annex A Detail Calculation of Fixed Plant Noise Assessment
Fixed Plant Noise Calculation - HUH-4-2b

Noise Assessment Points	Description	Plant Item ^[1]	Direction Facing	Horizontal Distance , m	SWL, dB(A)	Correction for line of sight ^[1] , dB(A)	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Predicted SPL, dB(A) ^[2]	Total SPL, dB(A)	Daytime Noise Criteria, dB(A)
Stabling Sidings at Hung Hom Freight Yard											
HUH-4-2b											
Daytime											
HUH-4-2b	The Metropolis Residence Tower 1	HUH-4-2	North	326	103	-10	-58	3	N/A		
		HUH-7a	Top	269	100	-10	-57	3	36		
		HUH-7b	South	269	100	-10	-57	3	36		
		HUH-8a	Top	264	101	-10	-56	3	38		
		HUH-8b	South	264	100	-10	-56	3	37		
		HUH-8c	East	264	100	-10	-56	3	37		
		HUH-9a	Top	248	101	-10	-56	3	38		
		HUH-9b	South	248	101	-10	-56	3	38		
		HUH-9c	East	248	101	-10	-56	3	38		
		HUH-10a	Top	244	101	-10	-56	3	38		
		HUH-10b	South	244	101	-10	-56	3	38		
		HUH-10c	East	244	101	-10	-56	3	38		
		HUH-11a	Top	240	101	-10	-56	3	38		
		HUH-11b	South	240	101	-10	-56	3	38		
		HUH-12a	Top	237	101	-10	-55	3	39		
		HUH-12b	South	237	101	-10	-55	3	39		
		HUH-13a	Top	233	101	-10	-55	3	39		
		HUH-13b	South	233	101	-10	-55	3	39		
		HUH-14-1-1	South	232	101	-10	-55	3	39		
		HUH-14-1-2	South	232	101	-10	-55	3	39		
		HUH-14-2	South	229	101	-10	-55	3	39		
		HUH-14-3	South	225	101	-10	-55	3	39		
		HUH-15-1	West	266	101	-10	-56	3	38		
		HUH-15-2	West	270	101	-10	-57	3	37		
		HUH-15-3	West	273	101	-10	-57	3	37		
		HUH-16a	Top	265	96	-10	-56	3	33		
		HUH-16b	East	265	96	-10	-56	3	33		
		HUH-17	North	257	101	-10	-56	3	38		
		HUH-18	Top	247	97	-10	-56	3	34		
		HUH-19a	Top	274	100	-10	-57	3	36		
		HUH-19b	North	274	103	-10	-57	3	39		
		HUH-20	Top	238	97	-10	-56	3	34		
		HUH-21a	Top	233	100	-10	-55	3	38		
		HUH-21b	North	233	100	-10	-55	3	38		
		HUH-22a-1	Top	229	100	-10	-55	3	38		
		HUH-22a-2	North	229	100	-10	-55	3	38		
		HUH-22b	North	229	100	-10	-55	3	38		
		HUH-26H	East	313	79	-10	-58	3	N/A		
		HUH-27H	East	305	103	-10	-58	3	N/A		
		HUH-29	East	291	103	-10	-57	3	39		
		HUH-30H	West	307	79	-10	-58	3	N/A		
		HUH-32H	West	302	80	-10	-58	3	N/A		
		HUH-33H	West	310	103	-10	-58	3	N/A		
		HUH-37H	East	308	83	-10	-58	3	N/A		
		HHS-38	South	220	64	-10	-55	3	2		
		HHS-40	South	216	88	-10	-55	3	26		
		HHS-41-1	West	224	54	-10	-55	3	negligible*		
		HHS-41-2	West	224	66	-10	-55	3	4		
		HHS-42-1	West	234	66	-10	-55	3	4		
		HHS-42-2	West	234	64	-10	-55	3	2		
		HHS-42-3	West	234	63	-10	-55	3	1		
		HHS-45-1	West	257	85	-10	-56	3	22		
		HHS-45-2	West	257	60	-10	-56	3	negligible*		
		HHS-49-2	East	242	78	-10	-56	3	15		
		HHS-49-3	East	242	71	-10	-56	3	8		
		HHS-49-6	East	242	67	-10	-56	3	4		
		HHS-49-8	East	242	70	-10	-56	3	7		
		HHS-50-1	East	236	75	-10	-55	3	13		
		HHS-50-2	East	236	69	-10	-55	3	7		
		HHS-51	East	220	86	-10	-55	3	24		
		HHS-52-1	East	205	63	-10	-54	3	2		
		HHS-53-1	East	195	68	-10	-54	3	7		
		HHS-53-2	East	195	75	-10	-54	3	14		
		HHS-53-3	East	195	59	-10	-54	3	negligible*		
		HHS-53-4	East	195	67	-10	-54	3	6		
		HHS-53-5	East	195	69	-10	-54	3	8		
		HHS-53-6	East	195	66	-10	-54	3	5		
		HHS-56	East	168	73	-10	-52	3	14		
		HHS-57-2	East	144	61	-10	-51	3	3		
		HHS-58-1	East	133	68	-10	-50	3	11		
		HHS-58-2	East	133	69	-10	-50	3	12		
		HHS-62-2	East	42	69	-10	-40	3	22		
		HHS-67-1	East	40	71	-10	-40	3	24		
		HHS-67-3	East	40	73	-10	-40	3	26		
		HHS-68-1	East	63	72	-10	-44	3	21		
		HHS-68-2	East	63	71	-10	-44	3	20		
		HHS-68-3	East	63	70	-10	-44	3	19		
		HHS-70-3	East	89	59	-10	-47	3	5		
		HHS-71-1	East	102	54	-10	-48	3	negligible*		
		HHS-71-2	East	102	56	-10	-48	3			
		HHS-71-3	East	102	67	-10	-48	3	12		
		HHS-73	East	162	53	-10	-52	3	negligible*		
		HHS-77-1	East	169	54	-10	-53	3	negligible*		
		HHS-77-2	East	169	55	-10	-53	3	negligible*		
		HHS-77-3	East	169	55	-10	-53	3	negligible*		
		HHS-78	North	197	87	-10	-54	3	26		
		HUH-80-1	Top	359	123	-10	-59	3	N/A		
		HUH-80-2	Top	355	123	-10	-59	3	N/A		
		HUH-80-3	Top	350	123	-10	-59	3	N/A		
		HUH-81	Top	331	103	-10	-58	3	N/A		
		HUH-82-1	South	159	98	-10	-52	3	39		
		HUH-82-2	South	159	98	-10	-52	3	39		
		HUH-82-3	South	159	98	-10	-52	3	39		
		HUH-82-4	South	159	98	-10	-52	3	39		
		HUH-82-5	South	159	98	-10	-52	3	39		
		HUH-82-6	South	159	98	-10	-52	3	39		
		HUH-82-7	South	159	98	-10	-52	3	39		
		HUH-82-9	South	159	98	-10	-52	3	39		
		HUH-82-9	South	159	98	-10	-52	3	39		
		HUH-82-10	South	159	98	-10	-52	3	39		
		HUH-82-11	South	159	98	-10	-52	3	39		
		HUH-82-12	South	159	98	-10	-52	3	39		
		HHS-84	East	81	72	-10	-46	3	19		
		HUH-85b	North	241	101	-10	-56	3	38		
		HUH-86-4	North	189	99	-10	-54	3	38		
		HUH-86-13	North	189	99	-10	-54	3	38		
		HHS-87-2	East	168	75	-10	-52	3	16		
		HHS-88-2	East	236	58	-10	-55	3	negligible*		
		HUH-95b	South	256	101	-10	-56	3	38		
		HHS-100-2	South	220	62	-10	-55	3	0		
		HHS-101-1	South	212	76	-10	-55	3	14		
		HHS-102-1	East	182	69	-10	-53	3	9		
		HHS-102-2	East	182	71	-10	-53	3	11		
		HHS-102-3	East	182	75	-10	-53	3	15		
		HHS-102-6	East	182	71	-10	-53	3	11		
		HHS-102-7	East	182	73	-10	-53	3	13		
		HHS-102-9	East	182	71	-10	-53	3	11		
		HHS-102-11	East	182	72	-10	-53	3	12		
		HUH-103-1	Top	269	101	-10	-57	3	37		
		HUH-103-2	Top	269	101	-10	-57	3	37		
		HUH-103-3	Top	269	101	-10	-57	3	37		
		HUH-103-4	Top	269	101	-10	-57	3	37		
		HUH-103-5	Top	269	101	-10	-57	3	37		
		HUH-103-6	Top	269	101	-10	-57	3	37		
		HUH-103-7	Top	269	101	-10	-57	3	37		
		HUH-103-8	Top	269	101	-10	-57	3	37		
		HUH-103-9	Top	269	101	-10	-57	3	37		
		HUH-103-10	Top	269	101	-10	-57	3	37		
		HUH-103-11	Top	269	101	-10	-57	3	37		
		HUH-103-12	Top	269	101	-10	-57	3	37		
		HUH-103-13	Top	269	101	-10	-57	3	37		
		HUH-103-14	Top	269	101	-10	-57	3	37		
		HUH-104-1	Top	247	98	-10	-56	3	35		
		HUH-104-2	Top	247	98	-10	-56	3	35		
		HUH-104-3	Top	247	98	-10	-56	3	35		
		HUH-104-4	Top	247							

Annex A Detail Calculation of Fixed Plant Noise Assessment
Fixed Plant Noise Calculation - HUH-4-2b

Noise Assessment Points	Description	Plant Item ^[2]	Direction Facing	Horizontal Distance , m	SWL, dB(A)	Correction for line of sight ^[1] , dB(A)	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Predicted SPL, dB(A) ^[2]	Total SPL, dB(A)	Night-time Noise Criteria, dB(A)
Stabling Sidings at Hung Hom Freight Yard											
HUH-4-2b											
Night-time											
HUH-4-2b	The Metropolis Residence Tower 1	HUH-4-2	North	326	93	-10	-58	3	N/A		
		HUH-7a	Top	269	90	-10	-57	3	26		
		HUH-7b	South	269	90	-10	-57	3	26		
		HUH-8a	Top	264	91	-10	-56	3	28		
		HUH-8b	South	264	90	-10	-56	3	27		
		HUH-8c	East	264	90	-10	-56	3	27		
		HUH-9a	Top	248	91	-10	-56	3	28		
		HUH-9b	South	248	91	-10	-56	3	28		
		HUH-9c	East	248	91	-10	-56	3	28		
		HUH-10a	Top	244	91	-10	-56	3	28		
		HUH-10b	South	244	91	-10	-56	3	28		
		HUH-10c	East	244	91	-10	-56	3	28		
		HUH-11a	Top	240	91	-10	-56	3	28		
		HUH-11b	South	240	91	-10	-56	3	28		
		HUH-12a	Top	237	91	-10	-55	3	29		
		HUH-12b	South	237	91	-10	-55	3	29		
		HUH-13a	Top	233	91	-10	-55	3	29		
		HUH-13b	South	233	91	-10	-55	3	29		
		HUH-14-1-1	South	232	91	-10	-55	3	29		
		HUH-14-1-2	South	232	91	-10	-55	3	29		
		HUH-14-2	South	229	91	-10	-55	3	29		
		HUH-14-3	South	225	91	-10	-55	3	29		
		HUH-15-1	West	266	91	-10	-56	3	28		
		HUH-15-2	West	270	91	-10	-57	3	27		
		HUH-15-3	West	273	91	-10	-57	3	27		
		HUH-16a	Top	265	86	-10	-56	3	23		
		HUH-16b	East	265	86	-10	-56	3	23		
		HUH-17	North	257	91	-10	-56	3	28		
		HUH-18	Top	247	87	-10	-56	3	24		
		HUH-19a	Top	274	90	-10	-57	3	26		
		HUH-19b	North	274	93	-10	-57	3	29		
		HUH-20	Top	238	87	-10	-56	3	24		
		HUH-21a	Top	233	90	-10	-55	3	28		
		HUH-21b	North	233	90	-10	-55	3	28		
		HUH-22a-1	Top	229	90	-10	-55	3	28		
		HUH-22a-2	North	229	90	-10	-55	3	28		
		HUH-22b	North	229	90	-10	-55	3	28		
		HUH-26H	East	313	79	-10	-58	3	N/A		
		HUH-27H	East	305	93	-10	-58	3	N/A		
		HUH-29	East	291	93	-10	-57	3	29		
		HUH-30H	West	307	79	-10	-58	3	N/A		
		HUH-32H	West	302	80	-10	-58	3	N/A		
		HUH-33H	West	310	93	-10	-58	3	N/A		
		HUH-37H	East	308	83	-10	-58	3	N/A		
		HHS-38	South	220	64	-10	-55	3	2		
		HHS-40	South	216	-	-10	-55	3	-		
		HHS-41-1	West	224	54	-10	-55	3	negligible*		
		HHS-41-2	West	224	66	-10	-55	3	4		
		HHS-42-1	West	234	66	-10	-55	3	4		
		HHS-42-2	West	234	64	-10	-55	3	2		
		HHS-42-3	West	234	63	-10	-55	3	1		
		HHS-45-1	West	257	85	-10	-56	3	22		
		HHS-45-2	West	257	60	-10	-56	3	negligible*		
		HHS-49-2	East	242	78	-10	-56	3	15		
		HHS-49-3	East	242	71	-10	-56	3	8		
		HHS-49-6	East	242	67	-10	-56	3	4		
		HHS-49-8	East	242	70	-10	-56	3	7		
		HHS-50-1	East	236	75	-10	-55	3	13		
		HHS-50-2	East	236	69	-10	-55	3	7		
		HHS-51	East	220	85	-10	-55	3	23		
		HHS-52-1	East	205	63	-10	-54	3	2		
		HHS-53-1	East	195	68	-10	-54	3	7		
		HHS-53-2	East	195	75	-10	-54	3	14		
		HHS-53-3	East	195	59	-10	-54	3	negligible*		
		HHS-53-4	East	195	67	-10	-54	3	6		
		HHS-53-5	East	195	69	-10	-54	3	8		
		HHS-53-6	East	195	66	-10	-54	3	5		
		HHS-56	East	168	73	-10	-52	3	14		
		HHS-57-2	East	144	61	-10	-51	3	3		
		HHS-58-1	East	133	68	-10	-50	3	11		
		HHS-58-2	East	133	69	-10	-50	3	12		
		HHS-62-2	East	42	69	-10	-40	3	22		
		HHS-67-1	East	40	71	-10	-40	3	24		
		HHS-67-3	East	40	73	-10	-40	3	26		
		HHS-68-1	East	63	72	-10	-44	3	21		
		HHS-68-2	East	63	71	-10	-44	3	20		
		HHS-68-3	East	63	70	-10	-44	3	19		
		HHS-70-3	East	89	59	-10	-47	3	5		
		HHS-71-1	East	102	54	-10	-48	3	negligible*		
		HHS-71-2	East	102	56	-10	-48	3	1		
		HHS-71-3	East	102	67	-10	-48	3	12		
		HHS-73	East	162	53	-10	-52	3	negligible*		
		HHS-77-1	East	169	54	-10	-53	3	negligible*		
		HHS-77-2	East	169	55	-10	-53	3	negligible*		
		HHS-77-3	East	169	55	-10	-53	3	negligible*		
		HHS-78	North	197	79	-10	-54	3	18		
		HUH-80-1	Top	359	113	-10	-59	3	N/A		
		HUH-80-2	Top	355	113	-10	-59	3	N/A		
		HUH-80-3	Top	350	113	-10	-59	3	N/A		
		HUH-81	Top	331	93	-10	-58	3	N/A		
		HUH-82-1	South	159	88	-10	-52	3	29		
		HUH-82-2	South	159	88	-10	-52	3	29		
		HUH-82-3	South	159	88	-10	-52	3	29		
		HUH-82-4	South	159	88	-10	-52	3	29		
		HUH-82-5	South	159	88	-10	-52	3	29		
		HUH-82-6	South	159	88	-10	-52	3	29		
		HUH-82-7	South	159	88	-10	-52	3	29		
		HUH-82-8	South	159	88	-10	-52	3	29		
		HUH-82-9	South	159	88	-10	-52	3	29		
		HUH-82-10	South	159	88	-10	-52	3	29		
		HUH-82-11	South	159	88	-10	-52	3	29		
		HUH-82-12	South	159	88	-10	-52	3	29		
		HHS-84	East	81	72	-10	-46	3	19		
		HUH-85b	North	241	91	-10	-56	3	28		
		HUH-86-4	North	189	89	-10	-54	3	28		
		HUH-86-13	North	189	89	-10	-54	3	28		
		HHS-87-2	East	168	75	-10	-52	3	16		
		HHS-88-2	East	236	58	-10	-55	3	negligible*		
		HUH-95b	South	256	91	-10	-56	3	28		
		HHS-100-2	South	220	62	-10	-55	3	0		
		HHS-101-1	South	212	76	-10	-55	3	14		
		HHS-102-1	East	182	69	-10	-53	3	9		
		HHS-102-2	East	182	71	-10	-53	3	11		
		HHS-102-3	East	182	75	-10	-53	3	15		
		HHS-102-6	East	182	71	-10	-53	3	11		
		HHS-102-7	East	182	73	-10	-53	3	13		
		HHS-102-9	East	182	71	-10	-53	3	11		
		HHS-102-11	East	182	72	-10	-53	3	12		
		HUH-103-1	Top	269	91	-10	-57	3	27		
		HUH-103-2	Top	269	91	-10	-57	3	27		
		HUH-103-3	Top	269	91	-10	-57	3	27		
		HUH-103-4	Top	269	91	-10	-57	3	27		
		HUH-103-5	Top	269	91	-10	-57	3	27		
		HUH-103-6	Top	269	91	-10	-57	3	27		
		HUH-103-7	Top	269	91	-10	-57	3	27		
		HUH-103-8	Top	269	91	-10	-57	3	27		
		HUH-103-9	Top	269	91	-10	-57	3	27		
		HUH-103-10	Top	269	91	-10	-57	3	27		
		HUH-103-11	Top	269	91	-10	-57	3	27		
		HUH-103-12	Top	269	91	-10	-57	3	27		
		HUH-103-13	Top	269	91	-10	-57	3	27		
		HUH-103-14	Top	269	91	-10	-57	3	27		
		HUH-104-1	Top	247	88	-10	-56	3	25		
		HUH-104-2	Top	247	88	-10	-56	3	25		
		HUH-104-3	Top	247	88	-10	-56	3	25		
		HUH-104-4	Top	247	88	-10	-56	3	25		

Annex A Detail Calculation of Fixed Plant Noise Assessment
Fixed Plant Noise Calculation - HUH-10-1

Noise Assessment Points	Description	Plant Item ^[1]	Direction Facing	Horizontal Distance , m	SWL, dB(A)	Correction for line of sight ^[1] , dB(A)	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Predicted SPL, dB(A) ^[2]	Total SPL, dB(A)	Daytime Noise Criteria, dB(A)
Stabling Sidings at Hung Hom Freight Yard											
HUH-10-1											
Daytime											
HUH-10-1	Harbourfront Horizon	HUH-4-2	North	304	103	0	-58	3	N/A		
		HUH-7a	Top	246	100	0	-56	3	47		
		HUH-7b	South	246	100	0	-56	3	47		
		HUH-8a	Top	238	101	0	-56	3	48		
		HUH-8b	South	238	100	0	-56	3	47		
		HUH-8c	East	238	100	0	-56	3	47		
		HUH-9a	Top	209	101	0	-54	3	50		
		HUH-9b	South	209	101	0	-54	3	50		
		HUH-9c	East	209	101	0	-54	3	50		
		HUH-10a	Top	201	101	0	-54	3	50		
		HUH-10b	South	201	101	0	-54	3	50		
		HUH-10c	East	201	101	0	-54	3	50		
		HUH-11a	Top	194	101	0	-54	3	50		
		HUH-11b	South	194	101	0	-54	3	50		
		HUH-12a	Top	186	101	0	-53	3	51		
		HUH-12b	South	186	101	0	-53	3	51		
		HUH-13a	Top	178	101	0	-53	3	51		
		HUH-13b	South	178	101	0	-53	3	51		
		HUH-14-1-1	South	192	101	0	-54	3	50		
		HUH-14-1-2	South	192	101	0	-54	3	50		
		HUH-14-2	South	184	101	0	-53	3	51		
		HUH-14-3	South	177	101	0	-53	3	51		
		HUH-15-1	West	523	101	-10	-62	3	N/A		
		HUH-15-2	West	528	101	-10	-62	3	N/A		
		HUH-15-3	West	532	101	-10	-63	3	N/A		
		HUH-16a	Top	526	96	-10	-62	3	N/A		
		HUH-16b	East	526	96	-10	-62	3	N/A		
		HUH-17	North	518	101	-10	-62	3	N/A		
		HUH-18	Top	511	97	-10	-62	3	N/A		
		HUH-19a	Top	540	100	-10	-63	3	N/A		
		HUH-19b	North	540	103	-10	-63	3	N/A		
		HUH-20	Top	504	97	-10	-62	3	N/A		
		HUH-21a	Top	500	100	-10	-62	3	N/A		
		HUH-21b	North	500	100	-10	-62	3	N/A		
		HUH-22a-1	Top	497	100	-10	-62	3	N/A		
		HUH-22a-2	North	497	100	-10	-62	3	N/A		
		HUH-22b	North	497	100	-10	-62	3	N/A		
		HUH-26H	East	579	79	-10	-63	3	N/A		
		HUH-27H	East	570	103	-10	-63	3	N/A		
		HUH-29	East	556	103	-10	-63	3	N/A		
		HUH-30H	West	571	79	-10	-63	3	N/A		
		HUH-32H	West	566	80	-10	-63	3	N/A		
		HUH-33H	West	575	103	-10	-63	3	N/A		
		HUH-37H	East	574	83	-10	-63	3	N/A		
		HHS-38	South	163	64	0	-52	3	15		
		HHS-40	South	152	88	-10	-52	3	29		
		HHS-41-1	West	145	54	-10	-51	3	negligible*		
		HHS-41-2	West	145	66	-10	-51	3	8		
		HHS-42-1	West	141	66	-10	-51	3	8		
		HHS-42-2	West	141	64	-10	-51	3	6		
		HHS-42-3	West	141	63	-10	-51	3	5		
		HHS-45-1	West	135	85	-10	-51	3	27		
		HHS-45-2	West	135	60	-10	-51	3	2		
		HHS-49-2	East	109	78	0	-49	3	32		
		HHS-49-3	East	109	71	0	-49	3	25		
		HHS-49-6	East	109	67	0	-49	3	21		
		HHS-49-8	East	109	70	0	-49	3	24		
		HHS-50-1	East	105	75	0	-48	3	30		
		HHS-50-2	East	105	69	0	-48	3	24		
		HHS-51	East	92	86	0	-47	3	42		
		HHS-52-1	East	90	63	0	-47	3	19		
		HHS-53-1	East	92	68	0	-47	3	24		
		HHS-53-2	East	92	75	0	-47	3	31		
		HHS-53-3	East	92	59	0	-47	3	15		
		HHS-53-4	East	92	67	0	-47	3	23		
		HHS-53-5	East	92	69	0	-47	3	25		
		HHS-53-6	East	92	66	0	-47	3	22		
		HHS-56	East	107	73	0	-49	3	27		
		HHS-57-2	East	129	61	0	-50	3	14		
		HHS-58-1	East	141	68	0	-51	3	20		
		HHS-58-2	East	141	69	0	-51	3	21		
		HHS-62-2	East	234	69	0	-55	3	17		
		HHS-67-1	East	303	71	0	-58	3	N/A		
		HHS-67-3	East	303	73	0	-58	3	N/A		
		HHS-68-1	East	329	72	0	-58	3	N/A		
		HHS-68-2	East	329	71	0	-58	3	N/A		
		HHS-68-3	East	329	70	0	-58	3	N/A		
		HHS-70-3	East	356	59	0	-59	3	N/A		
		HHS-71-1	East	370	54	0	-59	3	N/A		
		HHS-71-2	East	370	56	0	-59	3	N/A		
		HHS-71-3	East	370	67	0	-59	3	N/A		
		HHS-73	East	433	53	-10	-61	3	N/A		
		HHS-77-1	East	440	54	-10	-61	3	N/A		
		HHS-77-2	East	440	55	-10	-61	3	N/A		
		HHS-77-3	East	440	55	-10	-61	3	N/A		
		HHS-78	North	470	87	-10	-61	3	N/A		
		HUH-80-1	Top	311	123	0	-58	3	N/A		
		HUH-80-2	Top	311	123	0	-58	3	N/A		
		HUH-80-3	Top	310	123	0	-58	3	N/A		
		HUH-81	Top	308	103	0	-58	3	N/A		
		HUH-82-1	South	320	98	0	-58	3	N/A		
		HUH-82-2	South	320	98	0	-58	3	N/A		
		HUH-82-3	South	320	98	0	-58	3	N/A		
		HUH-82-4	South	320	98	0	-58	3	N/A		
		HUH-82-5	South	320	98	0	-58	3	N/A		
		HUH-82-6	South	320	98	0	-58	3	N/A		
		HUH-82-7	South	320	98	0	-58	3	N/A		
		HUH-82-8	South	320	98	0	-58	3	N/A		
		HUH-82-9	South	320	98	0	-58	3	N/A		
		HUH-82-10	South	320	98	0	-58	3	N/A		
		HUH-82-11	South	320	98	0	-58	3	N/A		
		HUH-82-12	South	320	98	0	-58	3	N/A		
		HHS-84	East	193	72	0	-54	3	21		
		HUH-85b	North	508	101	-10	-62	3	N/A		
		HUH-86-4	North	438	99	-10	-61	3	N/A		
		HUH-86-13	North	438	99	-10	-61	3	N/A		
		HHS-87-2	East	107	75	0	-49	3	29		
		HHS-88-2	East	105	58	0	-48	3	13		
		HUH-95b	South	236	101	0	-55	3	49		
		HHS-100-2	South	162	62	-10	-52	3	3		
		HHS-101-1	South	166	76	-10	-52	3	17		
		HHS-102-1	East	97	69	0	-48	3	24		
		HHS-102-2	East	97	71	0	-48	3	26		
		HHS-102-3	East	97	75	0	-48	3	30		
		HHS-102-6	East	97	71	0	-48	3	26		
		HHS-102-7	East	97	73	0	-48	3	28		
		HHS-102-9	East	97	71	0	-48	3	26		
		HHS-102-11	East	97	72	0	-48	3	27		
		HUH-103-1	Top	524	101	-10	-62	3	N/A		
		HUH-103-2	Top	524	101	-10	-62	3	N/A		
		HUH-103-3	Top	524	101	-10	-62	3	N/A		
		HUH-103-4	Top	524	101	-10	-62	3	N/A		
		HUH-103-5	Top	524	101	-10	-62	3	N/A		
		HUH-103-6	Top	524	101	-10	-62	3	N/A		
		HUH-103-7	Top	524	101	-10	-62	3	N/A		
		HUH-103-8	Top	524	101	-10	-62	3	N/A		
		HUH-103-9	Top	524	101	-10	-62	3	N/A		
		HUH-103-10	Top	524	101	-10	-62	3	N/A		
		HUH-103-11	Top	524	101	-10	-62	3	N/A		
		HUH-103-12	Top	524	101	-10	-62	3	N/A		
		HUH-103-13	Top	524	101	-10	-62	3	N/A		
		HUH-103-14	Top	524	101	-10	-62	3	N/A		
		HUH-104-1	Top	513	98	-10	-62	3	N/A		
		HUH-104-2	Top	513	98	-10	-62	3	N/A		
		HUH-104-3	Top	513	98	-10	-62	3	N/A		
		HUH-104-4	Top	513	98	-10	-62	3	N/A		
		HUH-104-5	Top	513	98	-10	-62	3	N/A		
	HUH-104-6	Top	513	98	-10	-62	3	N/A			
HUH-104-7	Top	513	98	-10	-62	3	N/A				
HUH-107b	South	243	98	0	-56	3	45				
HUH-108	South	200	98	0	-54	3	47				
HUH-109	Top	554	98	-10	-63	3	N/A				
HUH-110	Top	554	98	-10	-63	3	N/A				
HUH-111	Top	555	98	-10	-63	3	N/A				
HUH-112	Top	555	98	-10	-63	3	N/A				
HUH-113	Top	555	98	-10	-63	3	N/A				
HUH-115	North	531	98	-10	-62	3	N/A				
HUH-116	North	528	98	-10	-62	3	N/A				
HUH-117	North	526	98	-10	-62	3	N/A				
HUH-118	North	524	98	-10	-62	3	N/A				
HUH-119	Top	323	100	-10	-58	3	N/A				
HUH-120	Top	319	100	-10	-58	3	N/A				
HHS-121	East	436	80	-10	-61	3	N/A				
NOV-VS1	Top	240	97	0	-56	3	44				
NOV-VS2	Top	228	97	0	-55	3					

Annex A Detail Calculation of Fixed Plant Noise Assessment
Fixed Plant Noise Calculation - HUH-10-1

Noise Assessment Points	Description	Plant Item ^[1]	Direction Facing	Horizontal Distance , m	SWL, dB(A)	Correction for line of sight ^[1] , dB(A)	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Predicted SPL, dB(A) ^[2]	Total SPL, dB(A)	Night-time Noise Criteria, dB(A)
Stabling Sidings at Hung Hom Freight Yard											
HUH-10-1											
Night-time											
HUH-10-1	Harbourfront Horizon	HUH-4-2	North	304	93	0	-58	3	N/A		
		HUH-7a	Top	246	90	0	-56	3	37		
		HUH-7b	South	246	90	0	-56	3	37		
		HUH-8a	Top	238	91	0	-56	3	38		
		HUH-8b	South	238	90	0	-56	3	37		
		HUH-8c	East	238	90	0	-56	3	37		
		HUH-9a	Top	209	91	0	-54	3	40		
		HUH-9b	South	209	91	0	-54	3	40		
		HUH-9c	East	209	91	0	-54	3	40		
		HUH-10a	Top	201	91	0	-54	3	40		
		HUH-10b	South	201	91	0	-54	3	40		
		HUH-10c	East	201	91	0	-54	3	40		
		HUH-11a	Top	194	91	0	-54	3	40		
		HUH-11b	South	194	91	0	-54	3	40		
		HUH-12a	Top	186	91	0	-53	3	41		
		HUH-12b	South	186	91	0	-53	3	41		
		HUH-13a	Top	178	91	0	-53	3	41		
		HUH-13b	South	178	91	0	-53	3	41		
		HUH-14-1-1	South	192	91	0	-54	3	40		
		HUH-14-1-2	South	192	91	0	-54	3	40		
		HUH-14-2	South	184	91	0	-53	3	41		
		HUH-14-3	South	177	91	0	-53	3	41		
		HUH-15-1	West	523	91	-10	-62	3	N/A		
		HUH-15-2	West	528	91	-10	-62	3	N/A		
		HUH-15-3	West	532	91	-10	-63	3	N/A		
		HUH-16a	Top	526	86	-10	-62	3	N/A		
		HUH-16b	East	526	86	-10	-62	3	N/A		
		HUH-17	North	518	91	-10	-62	3	N/A		
		HUH-18	Top	511	87	-10	-62	3	N/A		
		HUH-19a	Top	540	90	-10	-63	3	N/A		
		HUH-19b	North	540	93	-10	-63	3	N/A		
		HUH-20	Top	504	87	-10	-62	3	N/A		
		HUH-21a	Top	500	90	-10	-62	3	N/A		
		HUH-21b	North	500	90	-10	-62	3	N/A		
		HUH-22a-1	Top	497	90	-10	-62	3	N/A		
		HUH-22a-2	North	497	90	-10	-62	3	N/A		
		HUH-22b	North	497	90	-10	-62	3	N/A		
		HUH-26H	East	579	79	-10	-63	3	N/A		
		HUH-27H	East	570	93	-10	-63	3	N/A		
		HUH-29	East	556	93	-10	-63	3	N/A		
		HUH-30H	West	571	79	-10	-63	3	N/A		
		HUH-32H	West	566	80	-10	-63	3	N/A		
		HUH-33H	West	575	93	-10	-63	3	N/A		
		HUH-37H	East	574	83	-10	-63	3	N/A		
		HHS-38	South	163	64	0	-52	3	15		
		HHS-40	South	152	-	-10	-52	3	-		
		HHS-41-1	West	145	54	-10	-51	3	negligible*		
		HHS-41-2	West	145	66	-10	-51	3	8		
		HHS-42-1	West	141	66	-10	-51	3	8		
		HHS-42-2	West	141	64	-10	-51	3	6		
		HHS-42-3	West	141	63	-10	-51	3	5		
		HHS-45-1	West	135	85	-10	-51	3	27		
		HHS-45-2	West	135	60	-10	-51	3	2		
		HHS-49-2	East	109	78	0	-49	3	32		
		HHS-49-3	East	109	71	0	-49	3	25		
		HHS-49-6	East	109	67	0	-49	3	21		
		HHS-49-8	East	109	70	0	-49	3	24		
		HHS-50-1	East	105	75	0	-48	3	30		
		HHS-50-2	East	105	69	0	-48	3	24		
		HHS-51	East	92	85	0	-47	3	41		
		HHS-52-1	East	90	63	0	-47	3	19		
		HHS-53-1	East	92	68	0	-47	3	24		
		HHS-53-2	East	92	75	0	-47	3	31		
		HHS-53-3	East	92	59	0	-47	3	15		
		HHS-53-4	East	92	67	0	-47	3	23		
		HHS-53-5	East	92	69	0	-47	3	25		
		HHS-53-6	East	92	66	0	-47	3	22		
		HHS-56	East	107	73	0	-49	3	27		
		HHS-57-2	East	129	61	0	-50	3	14		
		HHS-58-1	East	141	68	0	-51	3	20		
		HHS-58-2	East	141	69	0	-51	3	21		
		HHS-62-2	East	234	69	0	-55	3	17		
		HHS-67-1	East	303	71	0	-58	3	N/A		
		HHS-67-3	East	303	73	0	-58	3	N/A		
		HHS-68-1	East	329	72	0	-58	3	N/A		
		HHS-68-2	East	329	71	0	-58	3	N/A		
		HHS-68-3	East	329	70	0	-58	3	N/A		
		HHS-70-3	East	356	59	0	-59	3	N/A		
		HHS-71-1	East	370	54	0	-59	3	N/A		
		HHS-71-2	East	370	56	0	-59	3	N/A		
		HHS-71-3	East	370	67	0	-59	3	N/A		
		HHS-73	East	433	53	-10	-61	3	N/A		
		HHS-77-1	East	440	54	-10	-61	3	N/A		
		HHS-77-2	East	440	55	-10	-61	3	N/A		
		HHS-77-3	East	440	55	-10	-61	3	N/A		
		HHS-78	North	470	79	-10	-61	3	N/A		
		HUH-80-1	Top	311	113	0	-58	3	N/A		
		HUH-80-2	Top	311	113	0	-58	3	N/A		
		HUH-80-3	Top	310	113	0	-58	3	N/A		
		HUH-81	Top	308	93	0	-58	3	N/A		
		HUH-82-1	South	320	88	0	-58	3	N/A		
		HUH-82-2	South	320	88	0	-58	3	N/A		
		HUH-82-3	South	320	88	0	-58	3	N/A		
		HUH-82-4	South	320	88	0	-58	3	N/A		
		HUH-82-5	South	320	88	0	-58	3	N/A		
		HUH-82-6	South	320	88	0	-58	3	N/A		
		HUH-82-7	South	320	88	0	-58	3	N/A		
		HUH-82-8	South	320	88	0	-58	3	N/A		
		HUH-82-9	South	320	88	0	-58	3	N/A		
		HUH-82-10	South	320	88	0	-58	3	N/A		
		HUH-82-11	South	320	88	0	-58	3	N/A		
		HUH-82-12	South	320	88	0	-58	3	N/A		
		HHS-84	East	193	72	0	-54	3	21		
		HUH-85b	North	508	91	-10	-62	3	N/A		
		HUH-86-4	North	438	89	-10	-61	3	N/A		
		HUH-86-13	North	438	89	-10	-61	3	N/A		
		HHS-87-2	East	107	75	0	-49	3	29		
		HHS-88-2	East	105	58	0	-48	3	13		
		HUH-95b	South	236	91	0	-55	3	39		
		HHS-100-2	South	162	62	-10	-52	3	3		
		HHS-101-1	South	166	76	-10	-52	3	17		
		HHS-102-1	East	97	69	0	-48	3	24		
		HHS-102-2	East	97	71	0	-48	3	26		
		HHS-102-3	East	97	75	0	-48	3	30		
		HHS-102-6	East	97	71	0	-48	3	26		
		HHS-102-7	East	97	73	0	-48	3	28		
		HHS-102-9	East	97	71	0	-48	3	26		
		HHS-102-11	East	97	72	0	-48	3	27		
		HUH-103-1	Top	524	91	-10	-62	3	N/A		
		HUH-103-2	Top	524	91	-10	-62	3	N/A		
		HUH-103-3	Top	524	91	-10	-62	3	N/A		
		HUH-103-4	Top	524	91	-10	-62	3	N/A		
		HUH-103-5	Top	524	91	-10	-62	3	N/A		
		HUH-103-6	Top	524	91	-10	-62	3	N/A		
		HUH-103-7	Top	524	91	-10	-62	3	N/A		
		HUH-103-8	Top	524	91	-10	-62	3	N/A		
		HUH-103-9	Top	524	91	-10	-62	3	N/A		
		HUH-103-10	Top	524	91	-10	-62	3	N/A		
		HUH-103-11	Top	524	91	-10	-62	3	N/A		
		HUH-103-12	Top	524	91	-10	-62	3	N/A		
		HUH-103-13	Top	524	91	-10	-62	3	N/A		
		HUH-103-14	Top	524	91	-10	-62	3	N/A		
		HUH-104-1	Top	513	88	-10	-62	3	N/A		
		HUH-104-2	Top	513	88	-10	-62	3	N/A		
		HUH-104-3	Top	513	88	-10	-62	3	N/A		
		HUH-104-4	Top	513	88	-10	-62	3	N/A		
		HUH-104-5	Top	513	88	-10	-62	3	N/A		
		HUH-104-6	Top	513	88	-10	-62	3	N/A		
HUH-104-7	Top	513	88	-10	-62	3	N/A				
HUH-107b	South	243	88	0	-56	3	35				
HUH-108	South	200	88	0	-54	3	37				
HUH-109	Top	554	88	-10	-63	3	N/A				
HUH-110	Top	554	88	-10	-63	3	N/A				
HUH-111	Top	555	88	-10	-63	3	N/A				
HUH-112	Top	555	88	-10	-63	3	N/A				
HUH-113	Top	555	88	-10	-63	3	N/A				
HUH-115	North	531	88	-10	-62	3	N/A				
HUH-116	North	528	88	-10	-62	3	N/A				
HUH-117	North	526	88	-10	-62	3	N/A				
HUH-118	North	524	88	-10	-62	3	N/A				
HUH-119	Top	323	90	-10	-58	3	N/A				
HUH-120	Top	319	90	-10	-58	3	N/A				
HHS-121	East	436	60	-10	-61	3	N/A				
NOV-VS1	Top	240	87	0	-56	3	34				
NOV-VS2	Top	228	87	0	-55	3	35				
NOV-LV-03	East	218	85	0	-55						

Annex A Detail Calculation of Fixed Plant Noise Assessment
Fixed Plant Noise Calculation - HUH-11-1

Noise Assessment Points	Description	Plant Item ^[1]	Direction Facing	Horizontal Distance , m	SWL, dB(A)	Correction for line of sight ^[1] , dB(A)	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Predicted SPL, dB(A) ^[2]	Total SPL, dB(A)	Daytime Noise Criteria, dB(A)
Stabling Sidings at Hung Hom Freight Yard											
HUH-11-1											
Daytime											
HUH-11-1	University Student Halls of Residence	HUH-4-2	North	541	103	-10	-63	3	N/A		
		HUH-7a	Top	485	100	-10	-62	3	N/A		
		HUH-7b	South	485	100	-10	-62	3	N/A		
		HUH-8a	Top	480	101	-10	-62	3	N/A		
		HUH-8b	South	480	100	-10	-62	3	N/A		
		HUH-8c	East	480	100	-10	-62	3	N/A		
		HUH-9a	Top	464	101	-10	-61	3	N/A		
		HUH-9b	South	464	101	-10	-61	3	N/A		
		HUH-9c	East	464	101	-10	-61	3	N/A		
		HUH-10a	Top	459	101	-10	-61	3	N/A		
		HUH-10b	South	459	101	-10	-61	3	N/A		
		HUH-10c	East	459	101	-10	-61	3	N/A		
		HUH-11a	Top	455	101	-10	-61	3	N/A		
		HUH-11b	South	455	101	-10	-61	3	N/A		
		HUH-12a	Top	451	101	-10	-61	3	N/A		
		HUH-12b	South	451	101	-10	-61	3	N/A		
		HUH-13a	Top	447	101	-10	-61	3	N/A		
		HUH-13b	South	447	101	-10	-61	3	N/A		
		HUH-14-1-1	South	448	101	-10	-61	3	N/A		
		HUH-14-1-2	South	448	101	-10	-61	3	N/A		
		HUH-14-2	South	443	101	-10	-61	3	N/A		
		HUH-14-3	South	439	101	-10	-61	3	N/A		
		HUH-15-1	West	313	101	-10	-58	3	N/A		
		HUH-15-2	West	313	101	-10	-58	3	N/A		
		HUH-15-3	West	313	101	-10	-58	3	N/A		
		HUH-16a	Top	299	96	0	-58	3	41		
		HUH-16b	East	299	96	0	-58	3	41		
		HUH-17	North	295	101	0	-57	3	47		
		HUH-18	Top	280	97	0	-57	3	43		
		HUH-19a	Top	285	100	0	-57	3	46		
		HUH-19b	North	285	103	0	-57	3	49		
		HUH-20	Top	270	97	0	-57	3	43		
		HUH-21a	Top	259	100	0	-56	3	47		
		HUH-21b	North	259	100	0	-56	3	47		
		HUH-22a-1	Top	254	100	0	-56	3	47		
		HUH-22a-2	North	254	100	0	-56	3	47		
		HUH-22b	North	254	100	0	-56	3	47		
		HUH-26H	East	314	79	0	-58	3	N/A		
		HUH-27H	East	309	103	0	-58	3	N/A		
		HUH-29	East	303	103	0	-58	3	N/A		
		HUH-30H	West	318	79	-10	-58	3	N/A		
		HUH-32H	West	316	80	-10	-58	3	N/A		
		HUH-33H	West	320	103	-10	-58	3	N/A		
		HUH-37H	East	311	83	0	-58	3	N/A		
		HHS-38	South	433	64	-10	-61	3	N/A		
		HHS-40	South	427	88	-10	-61	3	N/A		
		HHS-41-1	West	434	54	-10	-61	3	N/A		
		HHS-41-2	West	434	66	-10	-61	3	N/A		
		HHS-42-1	West	443	66	-10	-61	3	N/A		
		HHS-42-2	West	443	64	-10	-61	3	N/A		
		HHS-42-3	West	443	63	-10	-61	3	N/A		
		HHS-45-1	West	464	85	-10	-61	3	N/A		
		HHS-45-2	West	464	60	-10	-61	3	N/A		
		HHS-49-2	East	445	78	-10	-61	3	N/A		
		HHS-49-3	East	445	71	-10	-61	3	N/A		
		HHS-49-6	East	445	67	-10	-61	3	N/A		
		HHS-49-8	East	445	70	-10	-61	3	N/A		
		HHS-50-1	East	438	75	-10	-61	3	N/A		
		HHS-50-2	East	438	69	-10	-61	3	N/A		
		HHS-51	East	417	86	-10	-60	3	N/A		
		HHS-52-1	East	399	63	-10	-60	3	N/A		
		HHS-53-1	East	387	68	-10	-60	3	N/A		
		HHS-53-2	East	387	75	-10	-60	3	N/A		
		HHS-53-3	East	387	59	-10	-60	3	N/A		
		HHS-53-4	East	387	67	-10	-60	3	N/A		
		HHS-53-5	East	387	69	-10	-60	3	N/A		
		HHS-53-6	East	387	66	-10	-60	3	N/A		
		HHS-56	East	353	73	-10	-59	3	N/A		
		HHS-57-2	East	328	61	-10	-58	3	N/A		
		HHS-58-1	East	317	68	-10	-58	3	N/A		
		HHS-58-2	East	317	69	-10	-58	3	N/A		
		HHS-62-2	East	233	69	0	-55	3	17		
		HHS-67-1	East	177	71	0	-53	3	21		
		HHS-67-3	East	177	73	0	-53	3	23		
		HHS-68-1	East	159	72	0	-52	3	23		
		HHS-68-2	East	159	71	0	-52	3	22		
		HHS-68-3	East	159	70	0	-52	3	21		
		HHS-70-3	East	143	59	0	-51	3	11		
		HHS-71-1	East	136	54	0	-51	3	6		
		HHS-71-2	East	136	56	0	-51	3	8		
		HHS-71-3	East	136	67	0	-51	3	19		
		HHS-73	East	138	53	0	-51	3	5		
		HHS-77-1	East	142	54	0	-51	3	6		
		HHS-77-2	East	142	55	0	-51	3	7		
		HHS-77-3	East	142	55	0	-51	3	7		
		HHS-78	North	174	87	0	-53	3	37		
		HUH-80-1	Top	574	123	-10	-63	3	N/A		
		HUH-80-2	Top	570	123	-10	-63	3	N/A		
		HUH-80-3	Top	566	123	-10	-63	3	N/A		
		HUH-81	Top	546	103	-10	-63	3	N/A		
		HUH-82-1	South	353	98	-10	-59	3	N/A		
		HUH-82-2	South	353	98	-10	-59	3	N/A		
		HUH-82-3	South	353	98	-10	-59	3	N/A		
		HUH-82-4	South	353	98	-10	-59	3	N/A		
		HUH-82-5	South	353	98	-10	-59	3	N/A		
		HUH-82-6	South	353	98	-10	-59	3	N/A		
		HUH-82-7	South	353	98	-10	-59	3	N/A		
		HUH-82-8	South	353	98	-10	-59	3	N/A		
		HUH-82-9	South	353	98	-10	-59	3	N/A		
		HUH-82-10	South	353	98	-10	-59	3	N/A		
HUH-82-11	South	353	98	-10	-59	3	N/A				
HUH-82-12	South	353	98	-10	-59	3	N/A				
HHS-84	East	269	72	-10	-57	3	8				
HUH-85b	North	265	101	0	-56	3	48				
HUH-86-4	North	287	99	-10	-57	3	35				
HUH-86-13	North	287	99	-10	-57	3	35				
HHS-87-2	East	353	75	-10	-59	3	N/A				
HHS-88-2	East	438	58	-10	-61	3	N/A				
HUH-95b	South	473	101	-10	-61	3	N/A				
HHS-100-2	South	432	62	-10	-61	3	N/A				
HHS-101-1	South	425	76	-10	-61	3	N/A				
HHS-102-1	East	370	69	-10	-59	3	N/A				
HHS-102-2	East	370	71	-10	-59	3	N/A				
HHS-102-3	East	370	75	-10	-59	3	N/A				
HHS-102-6	East	370	71	-10	-59	3	N/A				
HHS-102-7	East	370	73	-10	-59	3	N/A				
HHS-102-9	East	370	71	-10	-59	3	N/A				
HHS-102-11	East	370	72	-10	-59	3	N/A				
HUH-103-1	Top	321	101	-10	-58	3	N/A				
HUH-103-2	Top	321	101	-10	-58	3	N/A				
HUH-103-3	Top	321	101	-10	-58	3	N/A				
HUH-103-4	Top	321	101	-10	-58	3	N/A				
HUH-103-5	Top	321	101	-10	-58	3	N/A				
HUH-103-6	Top	321	101	-10	-58	3	N/A				
HUH-103-7	Top	321	101	-10	-58	3	N/A				
HUH-103-8	Top	321	101	-10	-58	3	N/A				
HUH-103-9	Top	321	101	-10	-58	3	N/A				
HUH-103-10	Top	321	101	-10	-58	3	N/A				
HUH-103-11	Top	321	101	-10	-58	3	N/A				
HUH-103-12	Top	321	101	-10	-58	3	N/A				
HUH-103-13	Top	321	101	-10	-58	3	N/A				
HUH-103-14	Top	321	101	-10	-58	3	N/A				
HUH-104-1	Top	269	98	0	-57	3	44				
HUH-104-2	Top	269	98	0	-57	3	44				
HUH-104-3	Top	269	98	0	-57	3	44				
HUH-104-4	Top	269	98	0	-57	3	44				
HUH-104-5	Top	269	98	0	-57	3	44				
HUH-104-6	Top	269	98	0	-57	3	44				
HUH-104-7	Top	269	98	0	-57	3	44				
HUH-107											

Annex A Detail Calculation of Fixed Plant Noise Assessment
Fixed Plant Noise Calculation - HUH-11-1

Noise Assessment Points	Description	Plant Item ^[1]	Direction Facing	Horizontal Distance , m	SWL, dB(A)	Correction for line of sight ^[1] , dB(A)	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Predicted SPL, dB(A) ^[2]	Total SPL, dB(A)	Night-time Noise Criteria, dB(A)
Stabling Sidings at Hung Hom Freight Yard											
HUH-11-1											
Night-time											
HUH-11-1	University Student Halls of Residence	HUH-4-2	North	541	93	-10	-63	3	N/A		
		HUH-7a	Top	485	90	-10	-62	3	N/A		
		HUH-7b	South	485	90	-10	-62	3	N/A		
		HUH-8a	Top	480	91	-10	-62	3	N/A		
		HUH-8b	South	480	90	-10	-62	3	N/A		
		HUH-8c	East	480	90	-10	-62	3	N/A		
		HUH-9a	Top	464	91	-10	-61	3	N/A		
		HUH-9b	South	464	91	-10	-61	3	N/A		
		HUH-9c	East	464	91	-10	-61	3	N/A		
		HUH-10a	Top	459	91	-10	-61	3	N/A		
		HUH-10b	South	459	91	-10	-61	3	N/A		
		HUH-10c	East	459	91	-10	-61	3	N/A		
		HUH-11a	Top	455	91	-10	-61	3	N/A		
		HUH-11b	South	455	91	-10	-61	3	N/A		
		HUH-12a	Top	451	91	-10	-61	3	N/A		
		HUH-12b	South	451	91	-10	-61	3	N/A		
		HUH-13a	Top	447	91	-10	-61	3	N/A		
		HUH-13b	South	447	91	-10	-61	3	N/A		
		HUH-14-1-1	South	448	91	-10	-61	3	N/A		
		HUH-14-1-2	South	448	91	-10	-61	3	N/A		
		HUH-14-2	South	443	91	-10	-61	3	N/A		
		HUH-14-3	South	439	91	-10	-61	3	N/A		
		HUH-15-1	West	313	91	-10	-58	3	N/A		
		HUH-15-2	West	313	91	-10	-58	3	N/A		
		HUH-15-3	West	313	91	-10	-58	3	N/A		
		HUH-16a	Top	299	86	0	-58	3	31		
		HUH-16b	East	299	86	0	-58	3	31		
		HUH-17	North	295	91	0	-57	3	37		
		HUH-18	Top	280	87	0	-57	3	33		
		HUH-19a	Top	285	90	0	-57	3	36		
		HUH-19b	North	285	93	0	-57	3	39		
		HUH-20	Top	270	87	0	-57	3	33		
		HUH-21a	Top	259	90	0	-56	3	37		
		HUH-21b	North	259	90	0	-56	3	37		
		HUH-22a-1	Top	254	90	0	-56	3	37		
		HUH-22a-2	North	254	90	0	-56	3	37		
		HUH-22b	North	254	90	0	-56	3	37		
		HUH-26H	East	314	79	0	-58	3	N/A		
		HUH-27H	East	309	93	0	-58	3	N/A		
		HUH-29	East	303	93	0	-58	3	N/A		
		HUH-30H	West	318	79	-10	-58	3	N/A		
		HUH-32H	West	316	80	-10	-58	3	N/A		
		HUH-33H	West	320	93	-10	-58	3	N/A		
		HUH-37H	East	311	83	0	-58	3	N/A		
		HHS-38	South	433	64	-10	-61	3	N/A		
		HHS-40	South	427	-	-10	-61	3	-		
		HHS-41-1	West	434	54	-10	-61	3	N/A		
		HHS-41-2	West	434	66	-10	-61	3	N/A		
		HHS-42-1	West	443	66	-10	-61	3	N/A		
		HHS-42-2	West	443	64	-10	-61	3	N/A		
		HHS-42-3	West	443	63	-10	-61	3	N/A		
		HHS-45-1	West	464	85	-10	-61	3	N/A		
		HHS-45-2	West	464	60	-10	-61	3	N/A		
		HHS-49-2	East	445	78	-10	-61	3	N/A		
		HHS-49-3	East	445	71	-10	-61	3	N/A		
		HHS-49-6	East	445	67	-10	-61	3	N/A		
		HHS-49-8	East	445	70	-10	-61	3	N/A		
		HHS-50-1	East	438	75	-10	-61	3	N/A		
		HHS-50-2	East	438	69	-10	-61	3	N/A		
		HHS-51	East	417	85	-10	-60	3	N/A		
		HHS-52-1	East	399	63	-10	-60	3	N/A		
		HHS-53-1	East	387	68	-10	-60	3	N/A		
		HHS-53-2	East	387	75	-10	-60	3	N/A		
		HHS-53-3	East	387	59	-10	-60	3	N/A		
		HHS-53-4	East	387	67	-10	-60	3	N/A		
		HHS-53-5	East	387	69	-10	-60	3	N/A		
		HHS-53-6	East	387	66	-10	-60	3	N/A		
		HHS-56	East	353	73	-10	-59	3	N/A		
		HHS-57-2	East	328	61	-10	-58	3	N/A		
		HHS-58-1	East	317	68	-10	-58	3	N/A		
		HHS-58-2	East	317	69	-10	-58	3	N/A		
		HHS-62-2	East	233	69	0	-55	3	17		
		HHS-67-1	East	177	71	0	-53	3	21		
		HHS-67-3	East	177	73	0	-53	3	23		
		HHS-68-1	East	159	72	0	-52	3	23		
		HHS-68-2	East	159	71	0	-52	3	22		
		HHS-68-3	East	159	70	0	-52	3	21		
		HHS-70-3	East	143	59	0	-51	3	11		
		HHS-71-1	East	136	54	0	-51	3	6		
		HHS-71-2	East	136	56	0	-51	3	8		
		HHS-71-3	East	136	67	0	-51	3	19		
		HHS-73	East	138	53	0	-51	3	5		
		HHS-77-1	East	142	54	0	-51	3	6		
		HHS-77-2	East	142	55	0	-51	3	7		
		HHS-77-3	East	142	55	0	-51	3	7		
		HHS-78	North	174	79	0	-53	3	29		
		HUH-80-1	Top	574	113	-10	-63	3	N/A		
		HUH-80-2	Top	570	113	-10	-63	3	N/A		
		HUH-80-3	Top	566	113	-10	-63	3	N/A		
		HUH-81	Top	546	93	-10	-63	3	N/A		
		HUH-82-1	South	353	88	-10	-59	3	N/A		
		HUH-82-2	South	353	88	-10	-59	3	N/A		
		HUH-82-3	South	353	88	-10	-59	3	N/A		
		HUH-82-4	South	353	88	-10	-59	3	N/A		
		HUH-82-5	South	353	88	-10	-59	3	N/A		
		HUH-82-6	South	353	88	-10	-59	3	N/A		
		HUH-82-7	South	353	88	-10	-59	3	N/A		
		HUH-82-8	South	353	88	-10	-59	3	N/A		
		HUH-82-9	South	353	88	-10	-59	3	N/A		
		HUH-82-10	South	353	88	-10	-59	3	N/A		
		HUH-82-11	South	353	88	-10	-59	3	N/A		
		HUH-82-12	South	353	88	-10	-59	3	N/A		
		HHS-84	East	269	72	-10	-57	3	8		
		HUH-85b	North	265	91	0	-56	3	38		
		HUH-86-4	North	287	89	-10	-57	3	25		
		HUH-86-13	North	287	89	-10	-57	3	25		
		HHS-87-2	East	353	75	-10	-59	3	N/A		
		HHS-88-2	East	438	58	-10	-61	3	N/A		
		HUH-95b	South	473	91	-10	-61	3	N/A		
		HHS-100-2	South	432	62	-10	-61	3	N/A		
		HHS-101-1	South	425	76	-10	-61	3	N/A		
		HHS-102-1	East	370	69	-10	-59	3	N/A		
		HHS-102-2	East	370	71	-10	-59	3	N/A		
		HHS-102-3	East	370	75	-10	-59	3	N/A		
		HHS-102-6	East	370	71	-10	-59	3	N/A		
		HHS-102-7	East	370	73	-10	-59	3	N/A		
		HHS-102-9	East	370	71	-10	-59	3	N/A		
		HHS-102-11	East	370	72	-10	-59	3	N/A		
		HUH-103-1	Top	321	91	-10	-58	3	N/A		
		HUH-103-2	Top	321	91	-10	-58	3	N/A		
		HUH-103-3	Top	321	91	-10	-58	3	N/A		
		HUH-103-4	Top	321	91	-10	-58	3	N/A		
		HUH-103-5	Top	321	91	-10	-58	3	N/A		
		HUH-103-6	Top	321	91	-10	-58	3	N/A		
		HUH-103-7	Top	321	91	-10	-58	3	N/A		
		HUH-103-8	Top	321	91	-10	-58	3	N/A		
		HUH-103-9	Top	321	91	-10	-58	3	N/A		
		HUH-103-10	Top	321	91	-10	-58	3	N/A		
		HUH-103-11	Top	321	91	-10	-58	3	N/A		
		HUH-103-12	Top	321	91	-10	-58	3	N/A		
		HUH-103-13	Top	321	91	-10	-58	3	N/A		
		HUH-103-14	Top	321	91	-10	-58	3	N/A		
		HUH-104-1	Top	269	88	0	-57	3	34		
		HUH-104-2	Top	269	88	0	-57	3	34		
		HUH-104-3	Top	269	88	0	-57	3	34		
		HUH-104-4	Top	269	88	0	-57	3	34		
		HUH-104-5	Top	269	88	0	-57	3	34		
		HUH-104-6	Top	269	88	0	-57	3	34		
HUH-104-7	Top	269	88	0	-57	3	34				
HUH-107b	South	480	88	-10	-62	3	N/A				
HUH-108	South	452	88	-10	-61	3	N/A				
HUH-109	Top	304	88	0	-58	3	N/A				
HUH-110	Top	306	88	0	-58	3	N/A				
HUH-111	Top	307	88	0	-58	3	N/A				
HUH-112	Top	308	88	0	-58	3	N/A				
HUH-113	Top	310	88	0	-58	3	N/A				
HUH-115	North	335	88	0	-58	3	N/A				
HUH-116	North	330	88	0	-58	3	N/A				
HUH-117	North	326	88	0	-58	3	N/A				
HUH-118	North	321	88	0	-58	3	N/A				
HUH-119	Top	572	90	-10	-63	3	N/A				
HUH-120	Top	569	90	-10	-63	3	N/A				
HHS-121	East	140	60	0	-51	3	12				
NOV-VS1	Top	542	87	-10	-63	3	N/A				
NOV-VS2	Top	537	87	-10	-63	3	N/A				
NOV-LV-03	East										

Annex A Detail Calculation of Fixed Plant Noise Assessment
Fixed Plant Noise Calculation - HUH-12-1

Noise Assessment Points	Description	Plant Item ^[1]	Direction Facing	Horizontal Distance , m	SWL, dB(A)	Correction for line of sight ^[1] , dB(A)	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Predicted SPL, dB(A) ^[2]	Total SPL, dB(A)	Daytime Noise Criteria, dB(A)
Stabling Sidings at Hung Hom Freight Yard											
HUH-12-1											
Daytime											
HUH-12-1	Harbour Place Block 6	HUH-4-2	North	553	103	-10	-63	3	N/A		
		HUH-7a	Top	492	100	-10	-62	3	N/A		
		HUH-7b	South	492	100	-10	-62	3	N/A		
		HUH-8a	Top	487	101	-10	-62	3	N/A		
		HUH-8b	South	487	100	-10	-62	3	N/A		
		HUH-8c	East	487	100	-10	-62	3	N/A		
		HUH-9a	Top	466	101	-10	-61	3	N/A		
		HUH-9b	South	466	101	-10	-61	3	N/A		
		HUH-9c	East	466	101	-10	-61	3	N/A		
		HUH-10a	Top	461	101	-10	-61	3	N/A		
		HUH-10b	South	461	101	-10	-61	3	N/A		
		HUH-10c	East	461	101	-10	-61	3	N/A		
		HUH-11a	Top	455	101	-10	-61	3	N/A		
		HUH-11b	South	455	101	-10	-61	3	N/A		
		HUH-12a	Top	450	101	-10	-61	3	N/A		
		HUH-12b	South	450	101	-10	-61	3	N/A		
		HUH-13a	Top	445	101	-10	-61	3	N/A		
		HUH-13b	South	445	101	-10	-61	3	N/A		
		HUH-14-1-1	South	448	101	-10	-61	3	N/A		
		HUH-14-1-2	South	448	101	-10	-61	3	N/A		
		HUH-14-2	South	443	101	-10	-61	3	N/A		
		HUH-14-3	South	437	101	-10	-61	3	N/A		
		HUH-15-1	West	383	101	-10	-60	3	N/A		
		HUH-15-2	West	384	101	-10	-60	3	N/A		
		HUH-15-3	West	384	101	-10	-60	3	N/A		
		HUH-16a	Top	371	96	0	-59	3	N/A		
		HUH-16b	East	371	96	0	-59	3	N/A		
		HUH-17	North	366	101	0	-59	3	N/A		
		HUH-18	Top	351	97	0	-59	3	N/A		
		HUH-19a	Top	360	100	0	-59	3	N/A		
		HUH-19b	North	360	103	0	-59	3	N/A		
		HUH-20	Top	341	97	0	-59	3	N/A		
		HUH-21a	Top	331	100	0	-58	3	N/A		
		HUH-21b	North	331	100	0	-58	3	N/A		
		HUH-22a-1	Top	325	100	0	-58	3	N/A		
		HUH-22a-2	North	325	100	0	-58	3	N/A		
		HUH-22b	North	325	100	0	-58	3	N/A		
		HUH-26H	East	391	79	0	-60	3	N/A		
		HUH-27H	East	386	103	0	-60	3	N/A		
		HUH-29	East	378	103	0	-60	3	N/A		
		HUH-30H	West	394	79	-10	-60	3	N/A		
		HUH-32H	West	391	80	-10	-60	3	N/A		
		HUH-33H	West	396	103	-10	-60	3	N/A		
		HUH-37H	East	388	83	0	-60	3	N/A		
		HHS-38	South	428	64	-10	-61	3	N/A		
		HHS-40	South	421	88	-10	-60	3	N/A		
		HHS-41-1	West	426	54	-10	-61	3	N/A		
		HHS-41-2	West	426	66	-10	-61	3	N/A		
		HHS-42-1	West	434	66	-10	-61	3	N/A		
		HHS-42-2	West	434	64	-10	-61	3	N/A		
		HHS-42-3	West	434	63	-10	-61	3	N/A		
		HHS-45-1	West	453	85	-10	-61	3	N/A		
		HHS-45-2	West	453	60	-10	-61	3	N/A		
		HHS-49-2	East	430	78	-10	-61	3	N/A		
		HHS-49-3	East	430	71	-10	-61	3	N/A		
		HHS-49-6	East	430	67	-10	-61	3	N/A		
		HHS-49-8	East	430	70	-10	-61	3	N/A		
		HHS-50-1	East	422	75	-10	-61	3	N/A		
		HHS-50-2	East	422	69	-10	-61	3	N/A		
		HHS-51	East	399	86	-10	-60	3	N/A		
		HHS-52-1	East	380	63	-10	-60	3	N/A		
		HHS-53-1	East	367	68	-10	-59	3	N/A		
		HHS-53-2	East	367	75	-10	-59	3	N/A		
		HHS-53-3	East	367	59	-10	-59	3	N/A		
		HHS-53-4	East	367	67	-10	-59	3	N/A		
		HHS-53-5	East	367	69	-10	-59	3	N/A		
		HHS-53-6	East	367	66	-10	-59	3	N/A		
		HHS-56	East	333	73	-10	-58	3	N/A		
		HHS-57-2	East	310	61	-10	-58	3	N/A		
		HHS-58-1	East	300	68	-10	-58	3	N/A		
		HHS-58-2	East	300	69	-10	-58	3	N/A		
		HHS-62-2	East	232	69	-10	-55	3	7		
		HHS-67-1	East	196	71	-10	-54	3	10		
		HHS-67-3	East	196	73	-10	-54	3	12		
		HHS-68-1	East	188	72	-10	-53	3	12		
		HHS-68-2	East	188	71	-10	-53	3	11		
		HHS-68-3	East	188	70	-10	-53	3	10		
		HHS-70-3	East	182	59	-10	-53	3	negligible*		
		HHS-71-1	East	181	54	-10	-53	3	negligible*		
		HHS-71-2	East	181	56	-10	-53	3	negligible*		
		HHS-71-3	East	181	67	-10	-53	3	7		
		HHS-73	East	205	53	0	-54	3	2		
		HHS-77-1	East	211	54	0	-54	3	3		
		HHS-77-2	East	211	55	0	-54	3	4		
		HHS-77-3	East	211	55	0	-54	3	4		
		HHS-78	North	247	87	0	-56	3	34		
		HUH-80-1	Top	584	123	-10	-63	3	N/A		
		HUH-80-2	Top	580	123	-10	-63	3	N/A		
		HUH-80-3	Top	576	123	-10	-63	3	N/A		
		HUH-81	Top	558	103	-10	-63	3	N/A		
		HUH-82-1	South	383	98	-10	-60	3	N/A		
		HUH-82-2	South	383	98	-10	-60	3	N/A		
		HUH-82-3	South	383	98	-10	-60	3	N/A		
		HUH-82-4	South	383	98	-10	-60	3	N/A		
		HUH-82-5	South	383	98	-10	-60	3	N/A		
		HUH-82-6	South	383	98	-10	-60	3	N/A		
		HUH-82-7	South	383	98	-10	-60	3	N/A		
		HUH-82-8	South	383	98	-10	-60	3	N/A		
		HUH-82-9	South	383	98	-10	-60	3	N/A		
		HUH-82-10	South	383	98	-10	-60	3	N/A		
		HUH-82-11	South	383	98	-10	-60	3	N/A		
		HUH-82-12	South	383	98	-10	-60	3	N/A		
		HHS-84	East	260	72	-10	-56	3	9		
		HUH-85b	North	337	101	0	-59	3	N/A		
		HUH-86-4	North	345	99	-10	-59	3	N/A		
		HUH-86-13	North	345	99	-10	-59	3	N/A		
		HHS-87-2	East	333	75	-10	-58	3	N/A		
		HHS-88-2	East	422	58	-10	-61	3	N/A		
		HUH-95b	South	479	101	-10	-62	3	N/A		
		HHS-100-2	South	428	62	-10	-61	3	N/A		
		HHS-101-1	South	422	76	-10	-60	3	N/A		
		HHS-102-1	East	350	69	-10	-59	3	N/A		
		HHS-102-2	East	350	71	-10	-59	3	N/A		
		HHS-102-3	East	350	75	-10	-59	3	N/A		
		HHS-102-6	East	350	71	-10	-59	3	N/A		
		HHS-102-7	East	350	73	-10	-59	3	N/A		
		HHS-102-9	East	350	71	-10	-59	3	N/A		
		HHS-102-11	East	350	72	-10	-59	3	N/A		
		HUH-103-1	Top	391	101	-10	-60	3	N/A		
		HUH-103-2	Top	391	101	-10	-60	3	N/A		
		HUH-103-3	Top	391	101	-10	-60	3	N/A		
		HUH-103-4	Top	391	101	-10	-60	3	N/A		
		HUH-103-5	Top	391	101	-10	-60	3	N/A		
		HUH-103-6	Top	391	101	-10	-60	3	N/A		
		HUH-103-7	Top	391	101	-10	-60	3	N/A		
		HUH-103-8	Top	391	101	-10	-60	3	N/A		
		HUH-103-9	Top	391	101	-10	-60	3	N/A		
		HUH-103-10	Top	391	101	-10	-60	3	N/A		
		HUH-103-11	Top	391	101	-10	-60	3	N/A		
		HUH-103-12	Top	391	101	-10	-60	3	N/A		
		HUH-103-13	Top	391	101	-10	-60	3	N/A		
		HUH-103-14	Top	391	101	-10	-60	3	N/A		
		HUH-104-1	Top	341	98	0	-59	3	N/A		
		HUH-104-2	Top	341	98	0	-59	3	N/A		
		HUH-104-3	Top	341	98	0	-59	3	N/A		
		HUH-104-4	Top	341	98	0	-59	3	N/A		
		HUH-104-5	Top	341	98	0	-59	3	N/A		
HUH-104-6	Top	341	98	0	-59	3	N/A				
HUH-104-7	Top	341	98	0	-59	3	N/A				
HUH-107b	South	487	98	-10	-62	3	N/A				
HUH-108	South	454	98	-10	-61	3	N/A				
HUH-109	Top	379	98	0	-60	3	N/A				
HUH-110	Top	381	98	0	-60	3	N/A				
HUH-111	Top	382	98	0	-60	3	N/A				
HUH-112	Top	383	98	0	-60	3	N/A				
HUH-113	Top	384	98	0	-60	3	N/A				
HUH-115	North	404	98	0	-60	3	N/A				
HUH-116	North	400	98	0	-60	3	N/A				
HUH-117	North	395	98	0	-60	3	N/A				
HUH-118	North	391	98	0	-60	3	N/A				
HUH-119	Top	583	100	-10	-63	3	N/A				
HUH-120	Top	580	100	-10	-63	3	N/A				
HHS-121	East	208	80	0	-54	3	9				
NOV-VS1	Top	542	97	-10	-63	3	N/A				
NOV-VS2	Top	535	9								

Annex A Detail Calculation of Fixed Plant Noise Assessment
Fixed Plant Noise Calculation - HUH-12-1

Noise Assessment Points	Description	Plant Item ^[1]	Direction Facing	Horizontal Distance , m	SWL, dB(A)	Correction for line of sight ^[1] , dB(A)	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Predicted SPL, dB(A) ^[2]	Total SPL, dB(A)	Night-time Noise Criteria, dB(A)
Stabling Sidings at Hung Hom Freight Yard											
HUH-12-1											
Night-time											
HUH-12-1	Harbour Place Block 6	HUH-4-2	North	553	93	-10	-63	3	N/A		
		HUH-7a	Top	492	90	-10	-62	3	N/A		
		HUH-7b	South	492	90	-10	-62	3	N/A		
		HUH-8a	Top	487	91	-10	-62	3	N/A		
		HUH-8b	South	487	90	-10	-62	3	N/A		
		HUH-8c	East	487	90	-10	-62	3	N/A		
		HUH-9a	Top	466	91	-10	-61	3	N/A		
		HUH-9b	South	466	91	-10	-61	3	N/A		
		HUH-9c	East	466	91	-10	-61	3	N/A		
		HUH-10a	Top	461	91	-10	-61	3	N/A		
		HUH-10b	South	461	91	-10	-61	3	N/A		
		HUH-10c	East	461	91	-10	-61	3	N/A		
		HUH-11a	Top	455	91	-10	-61	3	N/A		
		HUH-11b	South	455	91	-10	-61	3	N/A		
		HUH-12a	Top	450	91	-10	-61	3	N/A		
		HUH-12b	South	450	91	-10	-61	3	N/A		
		HUH-13a	Top	445	91	-10	-61	3	N/A		
		HUH-13b	South	445	91	-10	-61	3	N/A		
		HUH-14-1-1	South	448	91	-10	-61	3	N/A		
		HUH-14-1-2	South	448	91	-10	-61	3	N/A		
		HUH-14-2	South	443	91	-10	-61	3	N/A		
		HUH-14-3	South	437	91	-10	-61	3	N/A		
		HUH-15-1	West	383	91	-10	-60	3	N/A		
		HUH-15-2	West	384	91	-10	-60	3	N/A		
		HUH-15-3	West	384	91	-10	-60	3	N/A		
		HUH-16a	Top	371	86	0	-59	3	N/A		
		HUH-16b	East	371	86	0	-59	3	N/A		
		HUH-17	North	366	91	0	-59	3	N/A		
		HUH-18	Top	351	87	0	-59	3	N/A		
		HUH-19a	Top	360	90	0	-59	3	N/A		
		HUH-19b	North	360	93	0	-59	3	N/A		
		HUH-20	Top	341	87	0	-59	3	N/A		
		HUH-21a	Top	331	90	0	-58	3	N/A		
		HUH-21b	North	331	90	0	-58	3	N/A		
		HUH-22a-1	Top	325	90	0	-58	3	N/A		
		HUH-22a-2	North	325	90	0	-58	3	N/A		
		HUH-22b	North	325	90	0	-58	3	N/A		
		HUH-26H	East	391	79	0	-60	3	N/A		
		HUH-27H	East	386	93	0	-60	3	N/A		
		HUH-29	East	378	93	0	-60	3	N/A		
		HUH-30H	West	394	79	-10	-60	3	N/A		
		HUH-32H	West	391	80	-10	-60	3	N/A		
		HUH-33H	West	396	93	-10	-60	3	N/A		
		HUH-37H	East	388	83	0	-60	3	N/A		
		HHS-38	South	428	64	-10	-61	3	N/A		
		HHS-40	South	421	-	-10	-60	3	-		
		HHS-41-1	West	426	54	-10	-61	3	N/A		
		HHS-41-2	West	426	66	-10	-61	3	N/A		
		HHS-42-1	West	434	66	-10	-61	3	N/A		
		HHS-42-2	West	434	64	-10	-61	3	N/A		
		HHS-42-3	West	434	63	-10	-61	3	N/A		
		HHS-45-1	West	453	85	-10	-61	3	N/A		
		HHS-45-2	West	453	60	-10	-61	3	N/A		
		HHS-49-2	East	430	78	-10	-61	3	N/A		
		HHS-49-3	East	430	71	-10	-61	3	N/A		
		HHS-49-6	East	430	67	-10	-61	3	N/A		
		HHS-49-8	East	430	70	-10	-61	3	N/A		
		HHS-50-1	East	422	75	-10	-61	3	N/A		
		HHS-50-2	East	422	69	-10	-61	3	N/A		
		HHS-51	East	399	85	-10	-60	3	N/A		
		HHS-52-1	East	380	63	-10	-60	3	N/A		
		HHS-53-1	East	367	68	-10	-59	3	N/A		
		HHS-53-2	East	367	75	-10	-59	3	N/A		
		HHS-53-3	East	367	59	-10	-59	3	N/A		
		HHS-53-4	East	367	67	-10	-59	3	N/A		
		HHS-53-5	East	367	69	-10	-59	3	N/A		
		HHS-53-6	East	367	66	-10	-59	3	N/A		
		HHS-56	East	333	73	-10	-58	3	N/A		
		HHS-57-2	East	310	61	-10	-58	3	N/A		
		HHS-58-1	East	300	68	-10	-58	3	N/A		
		HHS-58-2	East	300	69	-10	-58	3	N/A		
		HHS-62-2	East	232	69	-10	-55	3	7		
		HHS-67-1	East	196	71	-10	-54	3	10		
		HHS-67-3	East	196	73	-10	-54	3	12		
		HHS-68-1	East	188	72	-10	-53	3	12		
		HHS-68-2	East	188	71	-10	-53	3	11		
		HHS-68-3	East	188	70	-10	-53	3	10		
		HHS-70-3	East	182	59	-10	-53	3	negligible*		
		HHS-71-1	East	181	54	-10	-53	3	negligible*		
		HHS-71-2	East	181	56	-10	-53	3	negligible*		
		HHS-71-3	East	181	67	-10	-53	3	7		
		HHS-73	East	205	53	0	-54	3	2		
		HHS-77-1	East	211	54	0	-54	3	3		
		HHS-77-2	East	211	55	0	-54	3	4		
		HHS-77-3	East	211	55	0	-54	3	4		
		HHS-78	North	247	79	0	-56	3	26		
		HUH-80-1	Top	584	113	-10	-63	3	N/A		
		HUH-80-2	Top	580	113	-10	-63	3	N/A		
		HUH-80-3	Top	576	113	-10	-63	3	N/A		
		HUH-81	Top	558	93	-10	-63	3	N/A		
		HUH-82-1	South	383	88	-10	-60	3	N/A		
		HUH-82-2	South	383	88	-10	-60	3	N/A		
		HUH-82-3	South	383	88	-10	-60	3	N/A		
		HUH-82-4	South	383	88	-10	-60	3	N/A		
		HUH-82-5	South	383	88	-10	-60	3	N/A		
		HUH-82-6	South	383	88	-10	-60	3	N/A		
		HUH-82-7	South	383	88	-10	-60	3	N/A		
		HUH-82-8	South	383	88	-10	-60	3	N/A		
		HUH-82-9	South	383	88	-10	-60	3	N/A		
		HUH-82-10	South	383	88	-10	-60	3	N/A		
		HUH-82-11	South	383	88	-10	-60	3	N/A		
		HUH-82-12	South	383	88	-10	-60	3	N/A		
		HHS-84	East	260	72	-10	-56	3	9		
		HUH-85b	North	337	91	0	-59	3	N/A		
		HUH-86-4	North	345	89	-10	-59	3	N/A		
		HUH-86-13	North	345	89	-10	-59	3	N/A		
		HHS-87-2	East	333	75	-10	-58	3	N/A		
		HHS-88-2	East	422	58	-10	-61	3	N/A		
		HUH-95b	South	479	91	-10	-62	3	N/A		
		HHS-100-2	South	428	62	-10	-61	3	N/A		
		HHS-101-1	South	422	76	-10	-60	3	N/A		
		HHS-102-1	East	350	69	-10	-59	3	N/A		
		HHS-102-2	East	350	71	-10	-59	3	N/A		
		HHS-102-3	East	350	75	-10	-59	3	N/A		
		HHS-102-6	East	350	71	-10	-59	3	N/A		
		HHS-102-7	East	350	73	-10	-59	3	N/A		
		HHS-102-9	East	350	71	-10	-59	3	N/A		
		HHS-102-11	East	350	72	-10	-59	3	N/A		
		HUH-103-1	Top	391	91	-10	-60	3	N/A		
		HUH-103-2	Top	391	91	-10	-60	3	N/A		
		HUH-103-3	Top	391	91	-10	-60	3	N/A		
		HUH-103-4	Top	391	91	-10	-60	3	N/A		
		HUH-103-5	Top	391	91	-10	-60	3	N/A		
		HUH-103-6	Top	391	91	-10	-60	3	N/A		
		HUH-103-7	Top	391	91	-10	-60	3	N/A		
		HUH-103-8	Top	391	91	-10	-60	3	N/A		
		HUH-103-9	Top	391	91	-10	-60	3	N/A		
		HUH-103-10	Top	391	91	-10	-60	3	N/A		
		HUH-103-11	Top	391	91	-10	-60	3	N/A		
		HUH-103-12	Top	391	91	-10	-60	3	N/A		
		HUH-103-13	Top	391	91	-10	-60	3	N/A		
		HUH-103-14	Top	391	91	-10	-60	3	N/A		
		HUH-104-1	Top	341	88	0	-59	3	N/A		
		HUH-104-2	Top	341	88	0	-59	3	N/A		
		HUH-104-3	Top	341	88	0	-59	3	N/A		
		HUH-104-4	Top	341	88	0	-59	3	N/A		
		HUH-104-5	Top	341	88	0	-59	3	N/A		
		HUH-104-6	Top	341	88	0	-59	3	N/A		
HUH-104-7	Top	341	88	0	-59	3	N/A				
HUH-107b	South	487	88	-10	-62	3	N/A				
HUH-108	South	454	88	-10	-61	3	N/A				
HUH-109	Top	379	88	0	-60	3	N/A				
HUH-110	Top	381	88	0	-60	3	N/A				
HUH-111	Top	382	88	0	-60	3	N/A				
HUH-112	Top	383	88	0	-60	3	N/A				
HUH-113	Top	384	88	0	-60	3	N/A				
HUH-115	North	404	88	0	-60	3	N/A				
HUH-116	North	400	88	0	-60	3	N/A				
HUH-117	North	395	88	0	-60	3	N/A				
HUH-118	North	391	88	0	-60	3	N/A				
HUH-119	Top	583	90	-10	-63	3	N/A				
HUH-120	Top	580	90	-10	-63	3	N/A				
HHS-121	East	208	60	0	-54	3	9				
NOV-VS1	Top	542	87	-10	-63	3	N/A				
NOV-VS2	Top	535	87	-10	-63	3	N/A				
NOV-LV-03	East	525	85								

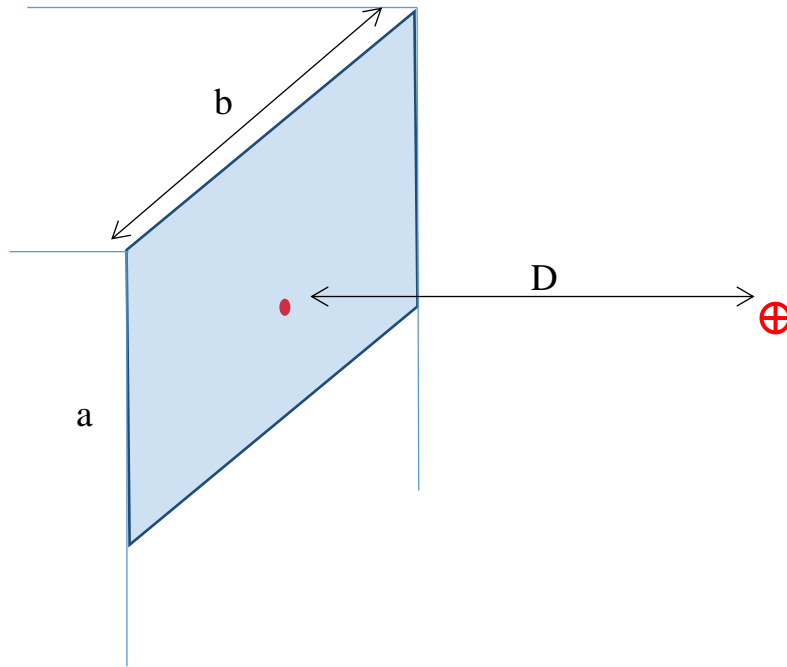
Appendix B

Noise Measurement to obtain the SWLs of Fixed Plant Noise Sources

Appendix B1

Measurement Methodology

Method 1: Far-Field Testing Method for Louver



a: Short side of the louver

b: Long side of the louver

D: Measurement distance (separation between louver and microphone), where D must be greater than (2b) and rounded up to integer.

 Louver opening

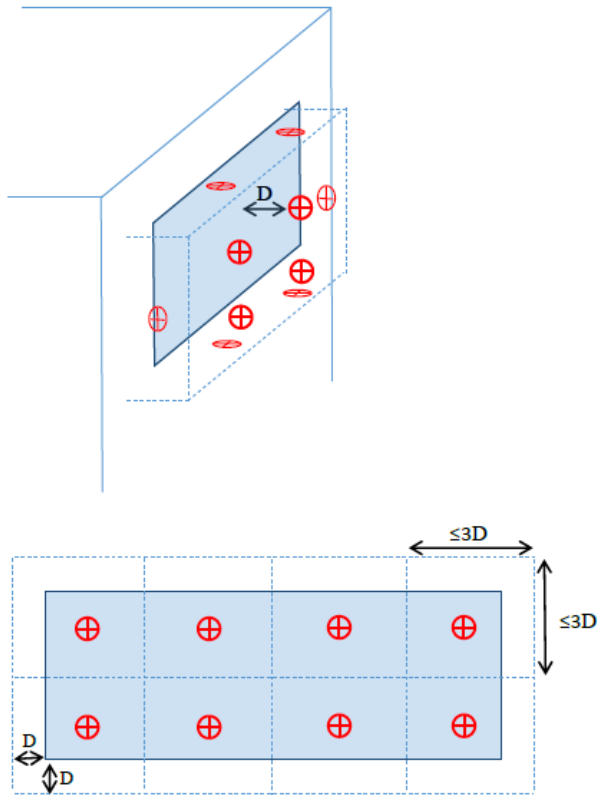
 Proposed measurement point (microphone pointing perpendicular to the center of the louver)

For method 1,

- “D” must be greater than 2b and round up to integer.
- The microphone must point to the center of the louver.
- At least 3 sets of $L_{Aeq, 1 \text{ min}}$ should be obtained.
- Background noise measurement should be obtained for determination of background correction factor.
- Any reason causing this method cannot be performed, noise measurement should then be conducted at near field in accordance with Method 2.
- If results of measurement reveal that difference in noise levels measured at far field with and without operation of fixed plant item is less than 3.0dB(A), noise measurement should then be conducted at near field in accordance with Method 2.
- Noise measurement to confirm any tonal, impulsive and intermittent characteristics at representative NSRs.

$$SWL = \text{Mean measured } L_{Aeq, 1 \text{ min}} + 20\log(D) + 8 + \text{background noise correction factor}$$

Method 2: Near-Field Testing Method for Louver



D: Measurement distance

- Louver opening
- Measurement box
- ⊕ Proposed measurement point (microphone pointing perpendicular to the louver)

For method 2 (developed based on the principle of ISO3746:2010),

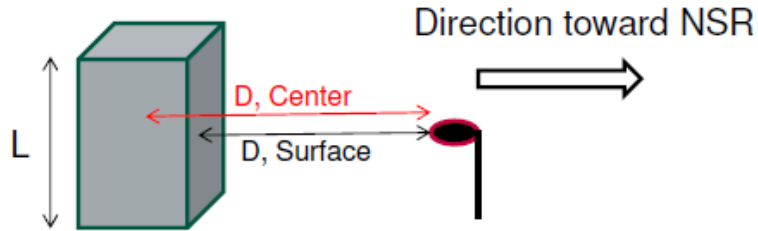
- First step is to determine a hypothetical measurement surfaces with at least 1m separation (D, measured from the centre of the louver or its nearest edges as appropriate) from the louver.
- For louver with largest dimension $\leq 3D$, at least one measurement at the centre of the measurement surface parallel to the louver should be conducted.
- Minimum 10 seconds of measurement interval should be obtained at each measurement point.
- Extra localized microphone positions on the measurement surfaces in the region of high radiation should be considered. In this case follow the procedures of ISO3744.
- For louver with largest dimension $> 3D$, measurement surface and measurement position should follow ISO3746.
- Background noise level should be taken at each measurement point for determining the background correction (K1A).
- If the difference between the background noise and the measured noise level is less than 3.0dB, K1A should be capped to 3.0dB.
- If necessary to obtain less conservative results, D should be reduced according to ISO3746 to obtain higher measured noise levels.
- Noise measurement to confirm any tonal, impulsive and intermittent characteristics at representative NSRs.

SWL = Mean LAeq over all measurement points + 10 log (total surface area over the measurement box) + K1A + K2A

K1A refers to background noise correction factor

K2A refers to environmental correction for sound absorption and reflection

Method 3 – Far Field Testing Method for Plant Item



“L” is the longest side of the plant item

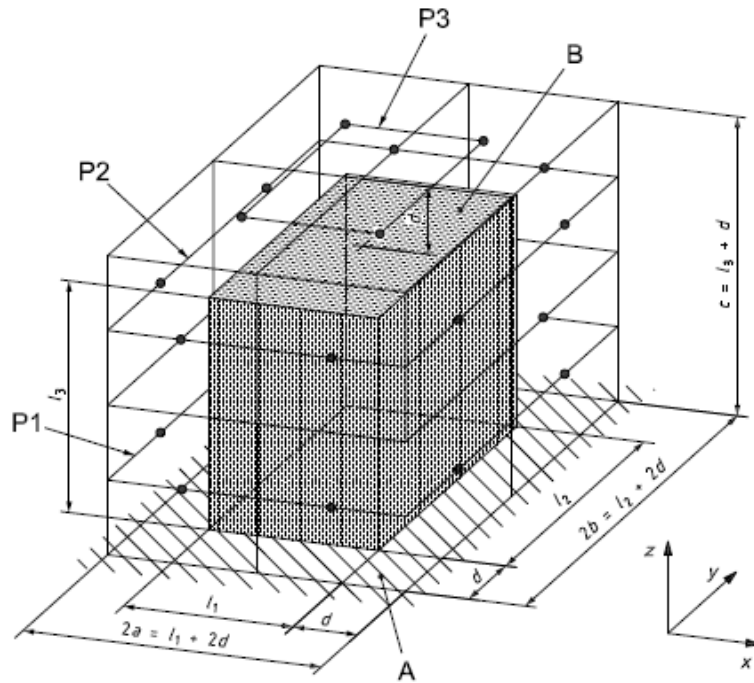
“D, Center” is the separation between center of the plant item and microphone

“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 (e.g 6m ,7m, 8m...).
- The microphone must be pointing to the center of the plant.
- Measurement should be carried out at the direction toward all NSRs.
- At least 3 sets of $L_{Aeq, 1 \text{ min}}$ should be obtained at each the measurement point.
- Background noise measurement should be obtained for determination of background correction factor.
- Any reason causing this method cannot be performed, noise measurement should then be conducted at near field in accordance with latest edition of ISO3746 (Method 4).
- If results of measurement reveal that difference in noise levels measured at far field with and without operation of fixed plant item is less than 3.0 dB(A), noise measurement should then be conducted at near field in accordance with latest edition of ISO3746 (Method 4).
- Noise measurement to confirm any tonal, impulsive and intermittent characteristics at representative NSRs.

$$SWL = \text{Mean measured } L_{Aeq, 1 \text{ min}} + 20 \log (D, \text{Center}) + 8 + \text{background noise correction factor}$$

Method 4 – Near Field Testing Method for Plant Item



For Method 4 (based on ISO3746:2010),

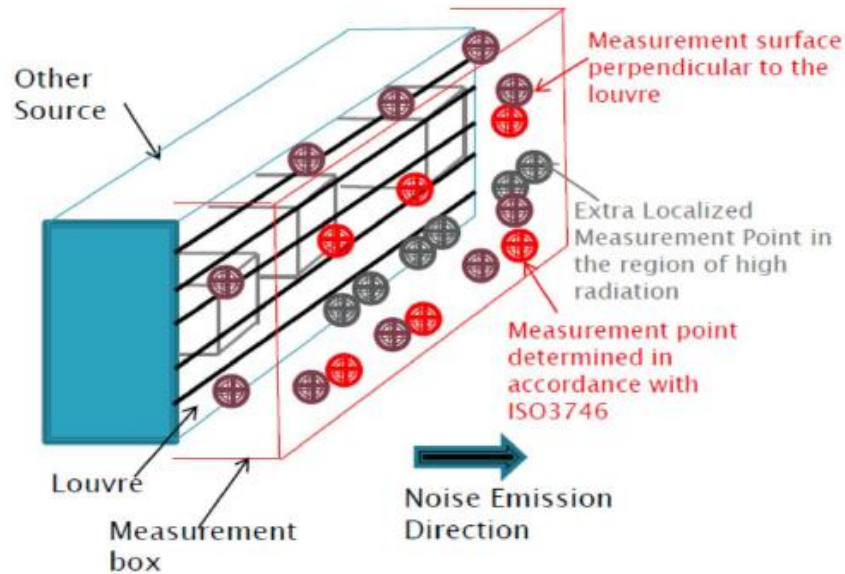
- Please refer to latest edition of ISO3746 for measurement requirement.
- The locations of measurement points are depended on the size of the plant, which cannot be easily generalized (see figure for example)
- Background noise measurement should be obtained for determination of background correction factor (K1A). According to ISO3746, if the source under test radiates noise predominantly in one direction or if the noise from a large source is emitted only from a small portion of the source, the usage of extra localized microphone positions on the measurement surface in the region of high radiation should be considered. In this case, follow the procedures specified in ISO3744.
- Minimum 10 seconds of measurement interval should be obtained at each measurement point.
- Detail calculation of the SWL should refer to the latest edition of ISO3746.
- Noise measurement to confirm any tonal, impulsive and intermittent characteristics at representative NSRs.

$SWL = \text{Mean } L_{Aeq} \text{ over all measurement points} + 10 \log (\text{total surface area over the measurement box}) + K1A + K2A$

K1A refers to background noise correction factor

K2A refers to environmental correction for sound absorption and reflection

Method 5 – Near Field Testing Method for Plant Room or other source



For Method 5 (developed based on the principle of ISO3746 -2010),

- First step is to determine a measurement box with at least 1m separation (measured from the centre of the louvre or its nearest edges as appropriate) from the louvre.
- Secondly, is to determine the location of measurement points on the measurement surface of the hypothetical box.
- Extra localized microphone positions on the measurement surface in the region of high radiation should be considered. In this case follow the procedures of ISO 3744.
- Background noise level should be taken for determination of background correction (K1A).
- Minimum 10 seconds of measurement interval should be obtained at each measurement point.
- If the difference between the BGL and the measured noise level (MNL) is less than 3.0dB, K1A should be capped to 3.0dB.
- If necessary to obtain less conservative results. D should be reduced according to ISO3746 to obtain higher MNLs.
- Noise measurement to confirm any tonal, impulsive and intermittent characteristics at representative NSRs.

$SWL = \text{Mean } L_{Aeq} \text{ over all measurement points} + 10 \log (\text{total surface area over the measurement box}) + K1A + K2A$

K1A refers to background noise correction factor


K2A refers to environmental correction for sound absorption and reflection

Appendix B2

Calibration Certificates – Noise Measurement for Fixed Plant Noise

Appendix B2 Calibration Certificates – Noise Measurement for Fixed Plant Noise

Cert B1: Calibration Certificate of Sound Level Meter SVANTEK 955 (SN: 15234)


MAXLAB


CALIBRATION CERTIFICATE

Certificate Information	
Date of Issue	6-Feb-2018
Certificate Number	MLCN180200S

Customer Information	
Company Name	Wilson Acoustics Limited
Address	Unit 601, Block A, Shatin Industrial Centre, Yuen Shun Circuit, Shatin, N. T.

Equipment-under-Test (EUT)	
Description	Sound Level Meter
Manufacturer	SvanteK
Model Number	SVAN 955
Serial Number	15234
Equipment Number	--

Calibration Particular																
Date of Calibration	6-Feb-2018															
Calibration Equipment	4231(MLTE008) / PA160059 / 20-May-2018															
Calibration Procedure	MLCG00, MLCG15															
Calibration Conditions	<table border="1"><tbody><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></tbody></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.															

Approved By & Date	
	K.O. Lo
	6-Feb-2018

Statements	
<ul style="list-style-type: none">• 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.	

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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



Certificate No. MLCN180200S

Calibration Data							
Parameter	Frequency Weighting	Range (dB)	Time Weighting	EUT Reading	Standard Reading	EUT Error	Calibration Uncertainty
SPL	A (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 (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 (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 (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 (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 (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 : K.O. Lo
Date : 6-Feb-2018

Page 2 of 2

Cert B2: Calibration Certificate of Sound Level Meter SVANTEK 958 (SN: 20890)



CALIBRATION CERTIFICATE

Certificate Information	
Date of Issue	23-Jun-2017
Certificate Number	MLCN171137S
Customer Information	
Company Name	Wilson Acoustics 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	
<ul style="list-style-type: none">* 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.	

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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 (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 (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 (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 (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 (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 (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 (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 (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 (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 : Patrick
Date : 23-Jun-2017

Checked By : K.O. Lo
Date : 23-Jun-2017
Page 2 of 2

Cert B3: Calibration Certificate of Sound Level Meter SVANTEK 958 (SN: 28422)


MAXLAB

CALIBRATION CERTIFICATE

Certificate Information				
Date of Issue		7-May-2018	Certificate Number	
			MLCN180788S	
Customer Information				
Company Name		Wilson Acoustics 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		28422		
Equipment Number		--		
Calibration Particular				
Date of Calibration		7-May-2018		
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	
			7-May-2018	
Statements				
<ul style="list-style-type: none">* 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.				

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Certificate No. MLCN180788S

Calibration Data						
Channel / Mode	Filter / Detector	Range	EUT Reading	Standard Reading	EUT Error	Calibration Uncertainty
CH4 / Sound	A / FAST (1 kHz Input)	105 dB	93.9 dB	94.0 dB	-0.1 dB	0.2 dB
		130 dB	94.0 dB	94.0 dB	0.0 dB	0.2 dB
			114.0 dB	114.0 dB	0.0 dB	0.2 dB
	C / FAST (1 kHz Input)	105 dB	93.9 dB	94.0 dB	-0.1 dB	0.2 dB
		130 dB	94.0 dB	94.0 dB	0.0 dB	0.2 dB
			114.0 dB	114.0 dB	0.0 dB	0.2 dB
	LIN / FAST (1 kHz Input)	105 dB	93.9 dB	94.0 dB	-0.1 dB	0.2 dB
		130 dB	94.0 dB	94.0 dB	0.0 dB	0.2 dB
			114.0 dB	114.0 dB	0.0 dB	0.2 dB
	A / SLOW (1 kHz Input)	105 dB	93.9 dB	94.0 dB	-0.1 dB	0.2 dB
		130 dB	114.0 dB	114.0 dB	0.0 dB	0.2 dB
	C / SLOW (1 kHz Input)	105 dB	93.9 dB	94.0 dB	-0.1 dB	0.2 dB
		130 dB	114.0 dB	114.0 dB	0.0 dB	0.2 dB
	LIN / SLOW (1 kHz Input)	105 dB	93.9 dB	94.0 dB	-0.1 dB	0.2 dB
		130 dB	114.0 dB	114.0 dB	0.0 dB	0.2 dB
	A / IMPULSE (1 kHz Input)	105 dB	93.9 dB	94.0 dB	-0.1 dB	0.2 dB
		130 dB	114.0 dB	114.0 dB	0.0 dB	0.2 dB
	C / IMPULSE (1 kHz Input)	105 dB	93.9 dB	94.0 dB	-0.1 dB	0.2 dB
		130 dB	114.0 dB	114.0 dB	0.0 dB	0.2 dB
	LIN / IMPULSE (1 kHz Input)	105 dB	93.9 dB	94.0 dB	-0.1 dB	0.2 dB
		130 dB	114.0 dB	114.0 dB	0.0 dB	0.2 dB

- END -

Calibrated By :
Date :

Dan
7-May-2018

Checked By :
Date :

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

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ISO9001 certified

FACTORY CALIBRATION DATA OF THE SVAN 958 No. 59120

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	113.99	-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; $f_{in}=1000\text{ Hz}$

	Input [dB]	24.0	30.0	40.0	60.0	80.0	100.0	114.0
Channel 1	Error [dB]	0.24	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; $f_{in}=1000\text{ Hz}$

	Input [dB]	45.0	50.0	60.0	80.0	100.0	120.0	135.0
Channel 1	Error [dB]	0.09	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; $f_{in}=1000\text{ Hz}$

	Input [dB]	35.0	40.0	60.0	80.0	100.0	120.0	135.0
Channel 1	Error [dB]	0.39	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

*** SVAN958 No. 59120 page 1 ***

4. TONEBURST RESPONSE* (electrical)

LEVEL METER, Characteristic: A; $f_{\text{an}} = 4000 \text{ Hz}$; 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

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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

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

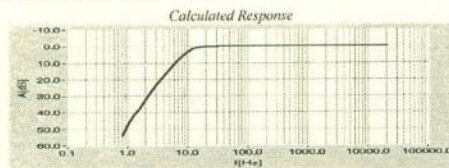
Result	Detector	Ch.	Duration [ms]	1000	500	200	100	50	20	10	5
MAX	Fast	1	Indication [dB]	74.0	73.9	73.0	71.4	69.2	65.7	62.8	59.9
			Error [dB]	0.0	0.0	0.0	-0.0	-0.0	-0.0	-0.1	-0.0
		2	Indication [dB]	74.0	73.9	73.0	71.4	69.2	65.7	62.8	59.9
			Error [dB]	0.0	0.0	73.0	0.0	-0.0	-0.0	-0.0	0.0
		3	Indication [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, A_n-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	12.6
Channel 2 Level [dB]	17.4	13.0	12.3
Channel 3 Level [dB]	17.8	11.7	11.1
Channel 4 Level [dB]	14.9	11.8	12.4

* 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/s²), f_m=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,

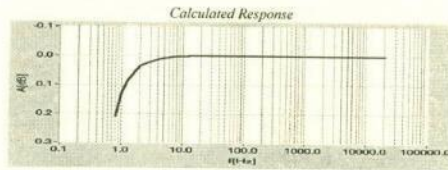
Filter	HP1		HP10		Wd		Wm		Wh	
	Indication [dB]	Error [dB]	Indication [dB]	Error [dB]	Indication [dB]	Error [dB]	Indication [dB]	Error [dB]	Indication [dB]	Error [dB]
Channel 1	119.8	-0.2	119.8	-0.2	105.9	-0.2	102.2	0.1	110.7	0.1
Channel 2	119.8	-0.2	119.8	-0.2	105.9	-0.2	102.2	0.1	110.7	0.1
Channel 3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

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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

P. Bednarczyk

Test date: 2016-09-20

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Cert B5: Calibration Certificate of Sound Level Meter SVANTEK 958A (SN: 59121)



ISO9001 certified

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} =1kHz

	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 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 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 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

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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]	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

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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

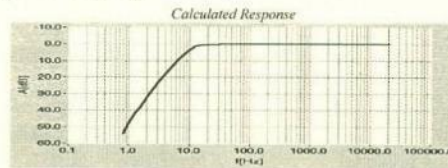
Result	Detector	Ch.	Duration [ms]	1000	500	200	100	50	20	10	5
MAX	Fast	1	Indication [dB]	73.9	73.8	72.9	71.3	69.1	65.6	62.8	59.8
			Error [dB]	-0.0	0.0	0.0	0.0	-0.0	-0.0	-0.1	0.0
		2	Indication [dB]	73.9	73.8	72.9	71.3	69.1	65.6	62.8	59.8
			Error [dB]	-0.0	0.0	72.9	0.0	-0.0	-0.0	-0.0	0.0
		3	Indication [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
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	11.8
Channel 2	Level [dB]	13.2	10.7	10.8
Channel 3	Level [dB]	13.9	11.2	11.8
Channel 4	Level [dB]	14.0	11.4	11.3

* 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/s²), f₀=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;

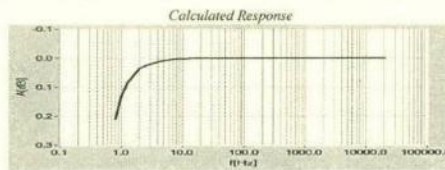
Filter	HP1		HP10		Wd		Wm		Wh	
	Indication [dB]	Error [dB]	Indication [dB]	Error [dB]	Indication [dB]	Error [dB]	Indication [dB]	Error [dB]	Indication [dB]	Error [dB]
Channel 1	119.8	-0.2	119.8	-0.2	106.0	-0.2	102.2	0.1	110.7	0.1
Channel 2	119.8	-0.2	119.8	-0.2	105.9	-0.2	102.1	0.1	110.7	0.1
Channel 3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

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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

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

Pm

Test date: 2016-09-20

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ISO9001 certified

FACTORY CALIBRATION DATA OF THE SVAN 958 No. 69082

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	114.03	0.03
Channel 2	113.98	-0.02	114.02	0.02
Channel 3	113.98	-0.02	114.02	0.02
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	113.8	-0.2	113.8	-0.2	113.8	-0.2
Channel 2	113.8	-0.2	113.8	-0.2	113.8	-0.2
Channel 3	113.8	-0.2	113.8	-0.2	113.8	-0.2
Channel 4	113.8	-0.2	113.8	-0.2	113.8	-0.2

Calibration measured with the microphone SVANTEK type SV 22 No. 4010479 Calibration factor: 0.6dB

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]	0.19	0.10	0.05	0.00	0.00	0.00	0.00
Channel 2	Error [dB]	0.21	0.11	0.04	-0.01	0.00	0.00	0.00
Channel 3	Error [dB]	0.14	0.08	0.03	0.00	0.00	0.01	0.01
Channel 4	Error [dB]	0.11	0.07	0.03	0.00	0.00	0.00	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]	0.11	0.15	0.06	0.00	0.00	0.00	0.01
Channel 2	Error [dB]	0.13	0.14	0.05	0.00	0.00	-0.01	0.01
Channel 3	Error [dB]	0.07	0.07	0.04	-0.00	0.01	-0.00	0.02
Channel 4	Error [dB]	0.08	0.07	0.03	-0.00	-0.00	-0.01	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]	0.44	0.11	0.07	0.00	0.00	-0.01	0.01
Channel 2	Error [dB]	0.42	0.12	0.07	-0.00	-0.00	-0.00	0.01
Channel 3	Error [dB]	0.34	0.11	0.04	-0.00	-0.00	-0.01	0.01
Channel 4	Error [dB]	0.35	0.12	0.04	0.00	0.01	0.00	0.01

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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	100.8	97.9	94.0	91.0	87.9	84.9
			Error [dB]	-0.0	0.0	0.0	0.0	-0.0	-0.0	-0.1	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	91.0	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	107.2	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
		4	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	-0.0	0.0	-0.0	-0.0	-0.1	-0.1
	Slow	1	Indication [dB]	109.9	107.9	104.6	101.8	98.9	95.0	92.0	89.0	85.0	-	-	-
			Error [dB]	-0.1	0.0	-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	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-	-	-
		3	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	-	-	-
		4	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	-	-	-
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	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
		3	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
		4	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

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	40.9	37.9
			Error [dB]	0.0	0.0	0.0	-0.0	-0.0	-0.0	-0.0	0.0
		2	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	-0.0	0.0
		3	Indication [dB]	52.0	51.9	51.0	49.4	47.2	43.7	40.9	38.0
			Error [dB]	0.0	0.0	0.0	-0.0	-0.0	0.0	-0.0	0.0
		4	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	-0.0	0.0
	Slow	1	Indication [dB]	49.8	47.9	44.6	41.8	38.9	35.0	32.0	29.0
			Error [dB]	-0.2	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	0.0
		2	Indication [dB]	49.8	47.9	44.6	41.8	38.9	35.0	32.0	29.0
			Error [dB]	-0.2	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	0.0
		3	Indication [dB]	49.9	48.0	44.6	41.8	38.9	35.0	32.0	29.0
			Error [dB]	-0.1	0.1	-0.0	-0.0	-0.0	-0.0	0.0	0.0
		4	Indication [dB]	49.8	47.9	44.6	41.8	38.9	34.9	32.0	29.0
			Error [dB]	-0.2	0.1	-0.0	-0.0	-0.0	-0.0	0.0	0.0
SEL	-	1	Indication [dB]	51.7	49.0	45.0	42.0	39.0	35.0	32.1	29.1
			Error [dB]	-0.3	-0.0	0.0	0.0	0.0	0.0	0.1	0.1
		2	Indication [dB]	51.7	49.0	45.0	42.0	39.0	35.0	32.0	29.1
			Error [dB]	-0.3	-0.0	0.0	-0.0	0.0	0.0	0.1	0.1
		3	Indication [dB]	51.7	49.0	45.0	42.0	39.0	35.1	32.1	29.1
			Error [dB]	-0.3	0.0	0.0	0.0	0.0	0.1	0.1	0.1
		4	Indication [dB]	51.7	49.0	45.0	42.0	39.0	35.0	32.0	29.1
			Error [dB]	-0.3	-0.0	0.0	0.0	0.0	0.0	0.1	0.1

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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	0.1
		2	Indication [dB]	34.0	34.0
			Error [dB]	0.0	0.0
		3	Indication [dB]	34.0	34.0
			Error [dB]	-0.0	0.0
		4	Indication [dB]	34.0	33.9
			Error [dB]	0.0	0.1
	Slow	1	Indication [dB]	31.9	30.1
			Error [dB]	-0.1	0.1
		2	Indication [dB]	31.9	30.0
			Error [dB]	-0.1	0.1
		3	Indication [dB]	31.9	30.1
			Error [dB]	-0.1	0.1
		4	Indication [dB]	31.8	30.0
			Error [dB]	-0.1	0.1
SEL		1	Indication [dB]	33.8	31.1
			Error [dB]	-0.2	0.1
		2	Indication [dB]	33.8	31.1
			Error [dB]	-0.2	0.1
		3	Indication [dB]	33.8	31.1
			Error [dB]	-0.2	0.0
		4	Indication [dB]	33.8	31.1
			Error [dB]	-0.2	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]	134.0	133.9	133.0	131.4	129.2	125.7	122.8	119.9	116.0	113.0	109.9	106.9
			Error [dB]	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.1	0.0	-0.0	-0.0	-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	133.1	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	-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	122.8	119.9	116.0	112.9	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]	131.8	129.9	126.6	123.8	120.9	117.0	114.0	111.0	107.0	-	-	-
			Error [dB]	-0.2	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-	-	-
		2	Indication [dB]	131.8	129.9	126.6	123.8	120.9	117.0	114.0	111.0	107.0	-	-	-
			Error [dB]	-0.2	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-	-	-
		3	Indication [dB]	131.9	130.0	126.6	123.8	120.9	117.0	114.0	111.0	107.0	-	-	-
			Error [dB]	-0.2	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-	-	-
		4	Indication [dB]	131.8	129.9	126.6	123.8	120.9	117.0	114.0	111.0	107.0	-	-	-
			Error [dB]	-0.2	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-	-	-
SEL		1	Indication [dB]	133.7	131.0	127.0	124.0	121.0	117.0	114.0	111.0	107.0	104.0	100.9	97.9
			Error [dB]	-0.3	-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]	133.7	131.0	127.0	124.0	121.0	117.0	114.0	111.0	107.0	103.9	100.9	97.9
			Error [dB]	-0.3	-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	131.0	127.0	124.0	121.0	117.0	114.0	111.0	107.0	104.0	100.9	97.9
			Error [dB]	-0.3	-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]	133.7	131.0	127.0	124.0	121.0	117.0	114.0	111.0	107.0	103.9	100.9	97.9
			Error [dB]	-0.3	-0.0	0.0	-0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.1	-0.1	-0.1

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

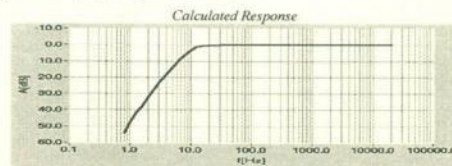
Result	Detector	Ch.	Duration [ms]	1000	500	200	100	50	20	10	5
MAX	Fast	1	Indication [dB]	74.0	73.9	73.0	71.4	69.2	65.7	62.9	59.9
			Error [dB]	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0	0.0
		2	Indication [dB]	74.0	73.9	73.0	71.4	69.2	65.7	62.9	59.9
			Error [dB]	0.0	0.0	73.0	0.0	-0.0	-0.0	-0.0	-0.0
		3	Indication [dB]	74.0	73.9	73.0	71.4	69.2	65.7	62.9	60.0
			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	70.0	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]	71.8	69.9	66.6	63.8	60.9	57.0	54.0	51.0
			Error [dB]	-0.2	0.0	-0.0	-0.0	-0.0	-0.0	0.0	-0.0
		3	Indication [dB]	71.9	70.0	66.6	63.8	60.9	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]	71.8	69.9	66.6	63.8	60.9	56.9	54.0	51.0
			Error [dB]	-0.1	0.0	-0.0	-0.0	-0.0	-0.0	0.0	0.0
SEL		1	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
		2	Indication [dB]	73.7	71.0	67.0	64.0	61.0	57.0	54.1	51.0
			Error [dB]	-0.3	-0.0	0.0	0.0	-0.0	0.0	0.1	0.0
		3	Indication [dB]	73.8	71.0	67.0	64.0	61.0	57.0	54.1	51.1
			Error [dB]	-0.3	-0.0	0.0	0.0	-0.0	0.0	0.0	0.1
		4	Indication [dB]	73.7	71.0	67.0	64.0	61.0	57.0	54.0	51.1
			Error [dB]	-0.3	-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	54.0
			Error [dB]	0.0	0.0
		2	Indication [dB]	54.1	54.0
			Error [dB]	0.0	0.0
		3	Indication [dB]	54.1	54.0
			Error [dB]	0.0	0.1
		4	Indication [dB]	54.0	53.9
			Error [dB]	0.0	0.0
	Slow	1	Indication [dB]	52.0	50.1
			Error [dB]	-0.1	0.1
		2	Indication [dB]	51.9	50.0
			Error [dB]	-0.1	0.1
		3	Indication [dB]	51.9	50.0
			Error [dB]	-0.1	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]	-0.2	0.1
		2	Indication [dB]	53.8	51.1
			Error [dB]	-0.2	0.1
		3	Indication [dB]	53.8	51.1
			Error [dB]	-0.2	0.1
		4	Indication [dB]	53.8	51.0
			Error [dB]	-0.2	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	0.0	-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]	14.4	11.2	12.0
Channel 2	Level [dB]	15.0	10.9	11.1
Channel 3	Level [dB]	13.9	10.6	11.2
Channel 4	Level [dB]	13.3	10.2	11.3

* measured with preamplifier SVANTEK type SV 12L No. 17701.

VIBRATION LEVEL METER

1. CALIBRATION (electrical)

LEVEL METER; Filter: HP10; Input signal =140.0dB (10.0 m/s²), f₀=79.6Hz

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

2. CALIBRATION (vibrational)

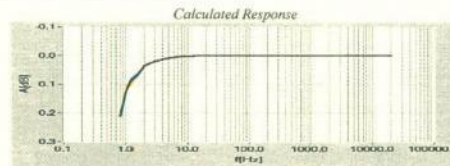
LEVEL METER; Range: 145dB; Input signal: 120dB;

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	120.0	0.0	120.0	0.0	106.1	0.0	102.0	-0.0	110.5	-0.0
Channel 2	120.0	0.0	120.0	0.0	106.1	0.0	102.0	-0.0	110.5	-0.0
Channel 3	120.0	0.0	120.0	0.0	106.1	0.0	102.0	-0.0	110.5	-0.0
Channel 4	120.0	0.0	120.0	0.0	106.2	0.0	102.0	-0.0	110.5	-0.0

Calibration measured with the accelerometer SVANTEK type SV80 No. H0413. Calibration factor: -0.56dB

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	0.19	0.19	0.19	0.19	5	0.02	0.01	0.01	0.01	500	-0.01	-0.01	-0.01	-0.01
1	0.10	0.10	0.10	0.10	6.3	0.00	-0.00	-0.00	-0.00	1000	0.00	-0.00	-0.00	-0.01
1.25	0.08	0.08	0.08	0.08	8	-0.01	-0.01	-0.01	-0.01	2000	0.00	-0.00	-0.00	-0.00
1.6	0.06	0.06	0.06	0.06	16	-0.02	-0.02	-0.02	-0.02	4000	0.01	0.01	-0.00	-0.00
2	0.02	0.02	0.02	0.02	31.5	0.00	-0.00	-0.00	-0.00	8000	0.03	0.04	0.02	0.02
2.5	0.01	0.01	0.01	0.01	63	-0.01	-0.01	-0.01	-0.01	16000	0.02	0.02	-0.01	-0.02
3.15	-0.01	-0.01	-0.01	-0.01	125	-0.01	-0.01	-0.01	-0.01	20000	0.02	0.01	0.01	-0.01
4	0.02	0.02	0.02	0.02	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]	54.8	52.0	42.6	38.8	36.2
Channel 2	Indication [dB]	55.0	52.4	42.6	39.0	36.8
Channel 3	Indication [dB]	55.5	53.3	42.8	39.1	36.1
Channel 4	Indication [dB]	54.8	52.4	42.4	39.0	36.2

ENVIRONMENTAL CONDITIONS

Temperature	Relative humidity	Ambient pressure
26 °C	47 %	1000 hPa

TEST EQUIPMENT

Item	Manufacturer	Model	Serial no.	Description
1.	SVANTEK	SVAN 401	127	Signal generator
2.	SVANTEK	SVAN 912A	4369	Sound & Vibration Analyser
3.	KEITHLEY	2000	0910165	Digital multimeter
4.	SVANTEK	SV33	48878	Acoustic calibrator
5.	SVANTEK	ST02	-	Microphone equivalent electrical impedance (18pF)
6.	DYTRAN	3233A	1376	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: Krzysztof Kubel

Kubel

Test date: 2018-08-13

*** 81/AN958 No. 69082 page 6 ***

Cert B7: Calibration Certificate of Sound Level Meter SVANTEK 959 (SN: 11228)



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, Yuen Shun Circuit, Shatin, N. T., 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. All calibration results were within EUT specification.																
Approved By & Date																		
		K.O. Lo 7-May-2018																
Statements																		
<ul style="list-style-type: none">* 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.																		

Page 1 of 2



Certificate No. MLCN180789S

Calibration Data						
Weighting / Time	Range	EUT Reading	Standard Reading	EUT Error	Calibration Uncertainty	EUT Specification
A / FAST (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 (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 (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 (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 (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 (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 (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 (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 (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

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., Baldwin 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

Cert B8: Calibration Certificate of Acoustic Calibrator SV30A (SN: 10814)



CALIBRATION CERTIFICATE

Certificate Information	
Date of Issue	15-Jun-2017
Certificate Number	MLCN171088S
Customer Information	
Company Name	Wilson Acoustics 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	10814
Equipment Number	--
Calibration Particular	
Date of Calibration	15-Jun-2017
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 Relative Humidity 55% ± 25% EUT Stabilizing Time Over 3 hours Warm-up Time Not applicable 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 15-Jun-2017	
Statements	
<ul style="list-style-type: none">* 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.	

Page 1 of 2



Certificate No. MLCN171088S

Calibration Data					
EUT Setting		Standard Reading	EUT Error	Calibration Uncertainty	EUT Specification
94	dB	94.0 dB	0.0 dB	0.15 dB	± 0.3 dB
114	dB	113.9 dB	0.1 dB	0.15 dB	± 0.3 dB

- END -

Calibrated By : Patrick
Date : 15-Jun-17

Checked By : K.O. Lo
Date : 15-Jun-17
Page 2 of 2



CALIBRATION CERTIFICATE

Certificate Information																		
Date of Issue	21-Jul-2018	Certificate Number	MLCN181526S															
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	10814																	
Equipment Number	--																	
Calibration Particular																		
Date of Calibration	21-Jul-2018																	
Calibration Equipment	4231(MLTE008) / AV180068 / 13-May-20 1351(MLTE049) / MLEC18/06/02 / 6-Jun-19																	
Calibration Procedure	MLCG00, MLCG15																	
Calibration Conditions	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Laboratory</td> <td style="width: 30%;">Temperature</td> <td style="width: 40%;">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>Not applicable</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	Not applicable		Power Supply	Internal battery
Laboratory	Temperature	23 °C ± 5 °C																
	Relative Humidity	55% ± 25%																
EUT	Stabilizing Time	Over 3 hours																
	Warm-up Time	Not applicable																
	Power Supply	Internal battery																
Calibration Results	<p>Calibration data were detailed in the continuation pages.</p> <p>All calibration results were within EUT specification.</p>																	
Approved By & Date																		
		K.O. Lo	21-Jul-2018															
Statements																		
<ul style="list-style-type: none"> * 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. 																		

Page 1 of 2



Certificate No. MLCN181526S

Calibration Data					
EUT Setting		Standard Reading	EUT Error	Calibration Uncertainty	EUT Specification
94	dB	94.0 dB	0.0 dB	0.15 dB	± 0.3 dB
114	dB	114.0 dB	0.0 dB	0.15 dB	± 0.3 dB

- END -

Calibrated By : Dan
Date : 21-Jul-18


Checked By : K.O. Lo
Date : 21-Jul-18
Page 2 of 2

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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

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Cert B9: Calibration Certificate of Acoustic Calibrator SV30A (SN: 29088)


MAXLAB

CALIBRATION CERTIFICATE

Certificate Information																
Date of Issue	5-Mar-2018															
Certificate Number	MLCN180297S															
Customer Information																
Company Name	Wilson Acoustics 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	<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>Not applicable</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	Not applicable		Power Supply	Internal battery
Laboratory	Temperature	23 °C ± 5 °C														
	Relative Humidity	55% ± 25%														
EUT	Stabilizing Time	Over 3 hours														
	Warm-up Time	Not applicable														
	Power Supply	Internal battery														
Calibration Results	Calibration data were detailed in the continuation pages. All calibration results were within EUT specification.															
Approved By & Date																
<div style="text-align: right;"> K.O. Lo 5-Mar-2018</div>																
Statements																
<ul style="list-style-type: none">* 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.																

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MaxLab Calibration Centre Limited
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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	± 0.3 dB
114 dB	113.7 dB	0.3 dB	0.15 dB	± 0.3 dB

- END -

Calibrated By :
Date :

Patrick
5-Mar-18

Checked By :
Date :

K.O. Lo
5-Mar-18

Page 2 of 2

萬備校正中心有限公司
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., Baldwin 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



CALIBRATION CERTIFICATE

Certificate Information			
Date of Issue	18-Mar-2019	Certificate Number	MLCN190639S
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	18-Mar-2019		
Calibration Equipment	4231(MLTE008) / AV180068 / 13-May-20 1351(MLTE049) / MLEC18/06/02 / 6-Jun-19		
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	Not applicable
		Power Supply	Internal battery
Calibration Results	Calibration data were detailed in the continuation pages. All calibration results exceeded the EUT error limit.		
Approved By & Date			
		K.O. Lo	18-Mar-2019
Statements			
<ul style="list-style-type: none"> * 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. 			

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Certificate No. MLCN190639S

Calibration Data				
EUT Setting	Standard Reading	EUT Error	Calibration Uncertainty	EUT Specification
94 dB	93.5 dB	0.5 dB *	0.15 dB	± 0.3 dB
114 dB	113.6 dB	0.4 dB *	0.15 dB	± 0.3 dB

- END -

Calibrated By :
Date :

Dan
18-Mar-19

Checked By :
Date :

K.O. Lo
18-Mar-19

Page 2 of 2

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

香港新界葵涌葵星街16-18號保盈工業大廈9樓B2室

Unit B2, 9/F., Baldwin Industrial Bldg., 16-18 Wai Sing Street, Kwai Chung, N.T., Hong Kong Tel: (852) 2116 1380 Fax: (852) 2264 6480 Email: info@maxlab.com.hk

Appendix B3

**Photographs showing the Examples of Noise Measurement
for Fixed Plant Noise**

Appendix B3 Photographs showing the Examples of Noise Measurement for Fixed Plant Noise

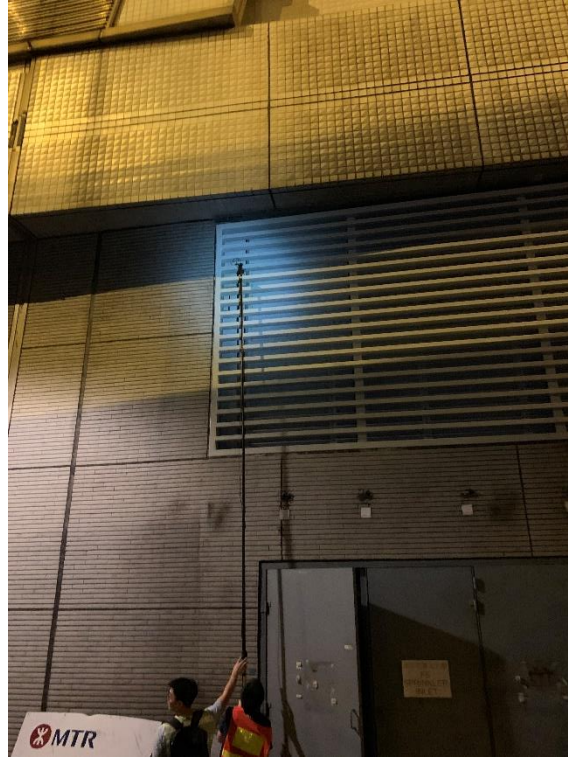
SWL Measurement Location for HHS-62-2



SWL Measurement Location for HHS-67-1



SWL Measurement Location for HHS-71-1



SWL Measurement Location for HHS-84



Appendix B4

Noise Measurement Results

Appendix B4 Noise Measurement Results

Fixed Plant Source ID	Plant Type	Method	Size of Louvre (mm)			Measurement Distance (m) D ^(a) & (e)	Averaged Measured L _{Aeq} , dB(A) ^(b)	Background L _{Aeq} , dB(A)	Difference L _{Aeq} , dB(A)	Background Corrected L _{Aeq} , dB(A) ^(c)	Calculated SWL, dB(A)
			Length	Width	Height						
HHS-38	Louvre	2	800	800	N/A	1.00	54.6	53.8	0.8	51.6	64
HHS-40	Louvre	2	1500	8800	N/A	1.00	71.7	56.0	15.7	71.7	88
HHS-41-1	Louvre	2	500	500	N/A	0.25	54.1	51.4	2.7	51.1	54
HHS-41-2	Louvre	2	1000	2950	N/A	0.50	57.6	55.7	1.9	54.6	66
HHS-42-1	Louvre	2	1350	900	N/A	0.50	59.1	55.6	3.5	56.6	66
HHS-42-2	Louvre	2	400	400	N/A	0.25	62.7	57.5	5.2	61.2	64
HHS-42-3	Louvre	2	1200	900	N/A	0.50	57.2	54.7	2.5	54.2	63
HHS-45-1	Louvre	2	850	900	N/A	1.00	71.7	56.6	15.1	71.7	85
HHS-45-2	Louvre	2	350	350	N/A	0.25	60.5	58.4	2.1	57.5	60
HHS-49-2	Louvre	2	800	800	N/A	1.00	66.7	61.4	5.3	65.2	78
HHS-49-3	Louvre	2	800	800	N/A	0.50	64.2	57.8	6.4	63.0	71
HHS-49-6	Louvre	2	600	1100	N/A	0.50	62.0	55.9	6.1	60.8	67
HHS-49-8	Louvre	2	800	800	N/A	0.50	63.7	59.9	3.8	61.3	70
HHS-50-1	Louvre	2	1600	500	N/A	0.25	69.4	56.4	13.0	69.4	75
HHS-50-2	Louvre	2	600	1800	N/A	1.00	58.7	57.3	1.4	55.7	69
HHS-51	Louvre	2	2450	12450	N/A	0.50	67.3	55.8	11.5	67.3	85
HHS-51 ^(d)	Louvre	2	2450	12450	N/A	0.50	68.0	53.8	14.2	68.0	86
HHS-52-1	Louvre	2	800	850	N/A	1.00	53.2	50.8	2.4	50.2	63
HHS-53-1	Louvre	2	800	500	N/A	1.00	58.4	55.5	2.9	55.4	68
HHS-53-2	Louvre	2	2450	800	N/A	1.00	62.0	57.0	5.0	60.3	75
HHS-53-3	Louvre	2	250	250	N/A	0.25	60.8	57.3	3.5	58.2	59
HHS-53-4	Louvre	2	800	600	N/A	1.00	57.5	56.7	0.8	54.5	67
HHS-53-5	Louvre	2	800	650	N/A	1.00	59.1	56.6	2.5	56.1	69
HHS-53-6	Louvre	2	800	400	N/A	1.00	57.0	55.7	1.3	54.0	66
HHS-56	Louvre	2	650	650	N/A	0.50	68.4	67.0	1.4	65.4	73
HHS-57-2	Louvre	2	200	200	N/A	0.25	63.5	62.1	1.4	60.5	61
HHS-58-1	Louvre	2	1200	1350	N/A	0.50	60.9	58.3	2.6	57.9	68
HHS-58-2	Louvre	2	2500	1100	N/A	0.50	60.6	59.3	1.3	57.6	69
HHS-62-2	Louvre	2	1000	1100	N/A	0.25	66.4	65.4	1.0	63.4	69
HHS-67-1	Louvre	2	600	3900	N/A	0.50	61.4	57.4	4.0	59.2	71
HHS-67-3	Louvre	2	570	1770	N/A	1.00	61.3	57.5	3.8	59.0	73
HHS-68-1	Louvre	2	1200	650	N/A	1.00	61.0	56.8	4.2	59.0	72
HHS-68-2	Louvre	2	900	1800	N/A	0.50	64.0	61.0	3.0	61.1	71
HHS-68-3	Louvre	2	1450	1800	N/A	0.50	61.8	60.5	1.3	58.8	70
HHS-70-3	Louvre	2	500	300	N/A	0.25	59.6	57.8	1.8	56.6	59
HHS-71-1	Louvre	2	200	300	N/A	0.25	55.8	55.2	0.6	52.8	54
HHS-71-2	Louvre	2	250	200	N/A	0.25	58.3	56.7	1.6	55.3	56
HHS-71-3	Louvre	2	1200	7000	N/A	0.50	55.2	54.6	0.6	52.2	67
HHS-73	Louvre	2	500	850	N/A	0.25	52.4	51.8	0.6	49.4	53
HHS-77-1	Louvre	2	250	250	N/A	0.25	56.1	54.4	1.7	53.1	54
HHS-77-2	Louvre	2	250	250	N/A	0.25	56.7	55.5	1.2	53.7	55
HHS-77-3	Louvre	2	250	250	N/A	0.25	56.5	55.1	1.4	53.5	55
HHS-78	Louvre	2	3200	9500	N/A	1.00	62.1	60.6	1.5	59.1	79
HHS-78 ^(d)	Louvre	2	3200	9500	N/A	1.00	67.8	59.3	8.5	67.1	87
HHS-84	Louvre	2	1750	1100	N/A	1.00	61.4	59.3	2.1	58.4	72
HHS-87-2	Louvre	2	1200	1000	N/A	0.50	68.4	67.9	0.5	65.4	75
HHS-88-2	Louvre	2	300	300	N/A	0.25	59.1	56.9	2.2	56.1	58
HHS-100-2	Louvre	2	1730	1000	N/A	1.00	51.2	48.8	2.4	48.2	62
HHS-101-1	Louvre	2	1730	2470	N/A	0.50	64.7	54.8	9.9	64.2	76
HHS-102-1	Louvre	2	1300	1050	N/A	0.50	62.7	61.3	1.4	59.7	69
HHS-102-2	Louvre	2	1300	1500	N/A	0.50	63.9	63.5	0.4	60.9	71
HHS-102-3	Louvre	2	1300	5300	N/A	0.50	64.1	60.2	3.9	61.8	75
HHS-102-6	Louvre	2	1300	1050	N/A	0.50	64.7	64.4	0.3	61.7	71
HHS-102-7	Louvre	2	1300	1500	N/A	0.50	65.8	64.4	1.4	62.8	73
HHS-102-9	Louvre	2	1300	1050	N/A	0.50	64.7	61.8	2.9	61.7	71
HHS-102-11	Louvre	2	1300	1050	N/A	0.50	65.1	63.8	1.3	62.1	72
HHS-121	Louvre	2	150	300	N/A	0.25	62.0	59.1	2.9	59.0	60

Remarks:

- Measurement Distance between louvre and microphone.
- Results are averaged from number of points in accordance with ISO3746.
- If the difference between the background and the measured noise level is less than 3.0 dB, background noise correction factor should be capped to 3.0dB.
- Operation scenario during daytime/evening period only and the measured SWL will be checked against the respective noise criterion.
- Measurement distance of 1 m was generally adopted. However, the impact noise at 1m from some louvers was not noticeably higher than the background noise. In accordance with Section 7.2.1 of ISO3746-2010, for a noise source located in a space having unfavourable acoustical conditions (e.g. being subject to high levels of background noise), the selection of a small measurement distance is appropriate. Therefore shorter measurement distance of at least 0.15m was adopted in accordance with Section 7.2.4 of ISO3746-2010 to determine the parallelepiped measurement surface to increase the measurement accuracy.

Appendix C

**Noise Measurement to Confirm any Tonal, Impulsive and
Intermittent Characteristics from the Fixed Plant Noise
Sources at Representative NSRs**

Appendix C1
Calibration Certificates –
Noise Measurement at Representative NSRs

Appendix C1 Calibration Certificates – Noise Measurement at Representative NSRs

Cert C1: Calibration Certificate of Sound Level Meter SVANTEK 958 (SN: 20890)



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	
<ul style="list-style-type: none">* 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.	

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Certificate No MLCN171137S

Calibration Data							
Channel / Mode	Filter / Detector	Range	EUT Reading	Standard Reading	EUT Error	Calibration Uncertainty	
CH4 / Sound	A / FAST (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 (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 (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 (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 (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 (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 (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 (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 (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
Page 2 of 2

Cert C2: Calibration Certificate of Sound Level Meter SVANTEK 958A (SN: 69082)



ISO9001 certified

FACTORY CALIBRATION DATA OF THE SVAN 958 No. 69082

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	114.03	0.03
Channel 2	113.98	-0.02	114.02	0.02
Channel 3	113.98	-0.02	114.02	0.02
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	113.8	-0.2	113.8	-0.2	113.8	-0.2
Channel 2	113.8	-0.2	113.8	-0.2	113.8	-0.2
Channel 3	113.8	-0.2	113.8	-0.2	113.8	-0.2
Channel 4	113.8	-0.2	113.8	-0.2	113.8	-0.2

Calibration measured with the microphone SVANTEK type SV 22 No. 4010479. Calibration factor: 0.6dB

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]	0.19	0.10	0.05	0.00	0.00	0.00	0.00
Channel 2	Error [dB]	0.21	0.11	0.04	-0.01	0.00	0.00	0.00
Channel 3	Error [dB]	0.14	0.08	0.03	0.00	0.00	0.01	0.01
Channel 4	Error [dB]	0.11	0.07	0.03	0.00	0.00	0.00	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]	0.11	0.15	0.06	0.00	0.00	0.00	0.01
Channel 2	Error [dB]	0.13	0.14	0.05	0.00	0.00	-0.01	0.01
Channel 3	Error [dB]	0.07	0.07	0.04	-0.00	0.01	-0.00	0.02
Channel 4	Error [dB]	0.08	0.07	0.03	-0.00	-0.00	-0.01	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]	0.44	0.11	0.07	0.00	0.00	-0.01	0.01
Channel 2	Error [dB]	0.42	0.12	0.07	-0.00	-0.00	-0.00	0.01
Channel 3	Error [dB]	0.34	0.11	0.04	-0.00	-0.00	-0.01	0.01
Channel 4	Error [dB]	0.35	0.12	0.04	0.00	0.01	0.00	0.01

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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]	112.0	111.9	111.0	109.4	107.2	103.7	100.8	97.9	94.0	91.0	87.9	84.9
			Error [dB]	-0.0	0.0	0.0	0.0	-0.0	-0.0	-0.1	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	91.0	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	107.2	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
		4	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	-0.0	0.0	-0.0	-0.0	-0.1	-0.1
	Slow	1	Indication [dB]	109.9	107.9	104.6	101.8	98.9	95.0	92.0	89.0	85.0	-	-	-
			Error [dB]	-0.1	0.0	-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	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-	-	-
		3	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	-	-	-
		4	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	-	-	-
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	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
		3	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
		4	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

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	40.9	37.9
			Error [dB]	0.0	0.0	0.0	-0.0	-0.0	-0.0	-0.0	0.0
		2	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	-0.0	0.0
		3	Indication [dB]	52.0	51.9	51.0	49.4	47.2	43.7	40.9	38.0
			Error [dB]	0.0	0.0	0.0	-0.0	-0.0	0.0	-0.0	0.0
		4	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	-0.0	0.0
	Slow	1	Indication [dB]	49.8	47.9	44.6	41.8	38.9	35.0	32.0	29.0
			Error [dB]	-0.2	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	0.0
		2	Indication [dB]	49.8	47.9	44.6	41.8	38.9	35.0	32.0	29.0
			Error [dB]	-0.2	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	0.0
SEL		1	Indication [dB]	51.7	49.0	45.0	42.0	39.0	35.0	32.1	29.1
			Error [dB]	-0.3	-0.0	0.0	0.0	0.0	0.0	0.1	0.1
		2	Indication [dB]	51.7	49.0	45.0	42.0	39.0	35.0	32.0	29.1
			Error [dB]	-0.3	-0.0	0.0	-0.0	0.0	0.0	0.1	0.1
		3	Indication [dB]	51.7	49.0	45.0	42.0	39.0	35.1	32.1	29.1
			Error [dB]	-0.3	0.0	0.0	0.0	0.0	0.1	0.1	0.1
		4	Indication [dB]	51.7	49.0	45.0	42.0	39.0	35.0	32.0	29.1
			Error [dB]	-0.3	-0.0	0.0	0.0	0.0	0.0	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	0.1
		2	Indication [dB]	34.0	34.0
			Error [dB]	0.0	0.0
		3	Indication [dB]	34.0	34.0
			Error [dB]	-0.0	0.0
		4	Indication [dB]	34.0	33.9
			Error [dB]	0.0	0.1
	Slow	1	Indication [dB]	31.9	30.1
			Error [dB]	-0.1	0.1
		2	Indication [dB]	31.9	30.0
			Error [dB]	-0.1	0.1
		3	Indication [dB]	31.9	30.1
			Error [dB]	-0.1	0.1
		4	Indication [dB]	31.8	30.0
			Error [dB]	-0.1	0.1
SEL		1	Indication [dB]	33.8	31.1
			Error [dB]	-0.2	0.1
		2	Indication [dB]	33.8	31.1
			Error [dB]	-0.2	0.1
		3	Indication [dB]	33.8	31.1
			Error [dB]	-0.2	0.0
		4	Indication [dB]	33.8	31.1
			Error [dB]	-0.2	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]	134.0	133.9	133.0	131.4	129.2	125.7	122.8	119.9	116.0	113.0	109.9	106.9
			Error [dB]	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.1	0.0	-0.0	-0.0	-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	133.1	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	-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	122.8	119.9	116.0	112.9	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]	131.8	129.9	126.6	123.8	120.9	117.0	114.0	111.0	107.0	-	-	-
			Error [dB]	-0.2	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-	-	-
		2	Indication [dB]	131.8	129.9	126.6	123.8	120.9	117.0	114.0	111.0	107.0	-	-	-
			Error [dB]	-0.2	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-	-	-
		3	Indication [dB]	131.9	130.0	126.6	123.8	120.9	117.0	114.0	111.0	107.0	-	-	-
			Error [dB]	-0.2	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-	-	-
		4	Indication [dB]	131.8	129.9	126.6	123.8	120.9	117.0	114.0	111.0	107.0	-	-	-
			Error [dB]	-0.2	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-	-	-
SEL		1	Indication [dB]	133.7	131.0	127.0	124.0	121.0	117.0	114.0	111.0	107.0	104.0	100.9	97.9
			Error [dB]	-0.3	-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]	133.7	131.0	127.0	124.0	121.0	117.0	114.0	111.0	107.0	103.9	100.9	97.9
			Error [dB]	-0.3	-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	131.0	127.0	124.0	121.0	117.0	114.0	111.0	107.0	104.0	100.9	97.9
			Error [dB]	-0.3	-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]	133.7	131.0	127.0	124.0	121.0	117.0	114.0	111.0	107.0	103.9	100.9	97.9
			Error [dB]	-0.3	-0.0	0.0	-0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.1	-0.1	-0.1

*** S14N958 No. 69082 page 3 ***

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

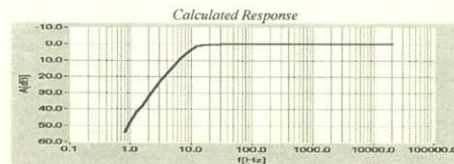
Result	Detector	Ch.	Duration [ms]	1000	500	200	100	50	20	10	5
MAX	Fast	1	Indication [dB]	74.0	73.9	73.0	71.4	69.2	65.7	62.9	59.9
			Error [dB]	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0	0.0
		2	Indication [dB]	74.0	73.9	73.0	71.4	69.2	65.7	62.9	59.9
			Error [dB]	0.0	0.0	73.0	0.0	-0.0	-0.0	-0.0	-0.0
		3	Indication [dB]	74.0	73.9	73.0	71.4	69.2	65.7	62.9	60.0
			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	70.0	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]	71.8	69.9	66.6	63.8	60.9	57.0	54.0	51.0
			Error [dB]	-0.2	0.0	-0.0	-0.0	-0.0	-0.0	0.0	-0.0
		3	Indication [dB]	71.9	70.0	66.6	63.8	60.9	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]	71.8	69.9	66.6	63.8	60.9	56.9	54.0	51.0
			Error [dB]	-0.1	0.0	-0.0	-0.0	-0.0	-0.0	0.0	0.0
SEL	-	1	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
		2	Indication [dB]	73.7	71.0	67.0	64.0	61.0	57.0	54.1	51.0
			Error [dB]	-0.3	-0.0	0.0	0.0	-0.0	0.0	0.1	0.0
		3	Indication [dB]	73.8	71.0	67.0	64.0	61.0	57.0	54.1	51.1
			Error [dB]	-0.3	-0.0	0.0	0.0	-0.0	0.0	0.0	0.1
		4	Indication [dB]	73.7	71.0	67.0	64.0	61.0	57.0	54.0	51.1
			Error [dB]	-0.3	-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	54.0
			Error [dB]	0.0	0.0
		2	Indication [dB]	54.1	54.0
			Error [dB]	0.0	0.0
		3	Indication [dB]	54.1	54.0
			Error [dB]	0.0	0.1
		4	Indication [dB]	54.0	53.9
			Error [dB]	0.0	0.0
	Slow	1	Indication [dB]	52.0	50.1
			Error [dB]	-0.1	0.1
		2	Indication [dB]	51.9	50.0
			Error [dB]	-0.1	0.1
		3	Indication [dB]	51.9	50.0
			Error [dB]	-0.1	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]	-0.2	0.1
		2	Indication [dB]	53.8	51.1
			Error [dB]	-0.2	0.1
		3	Indication [dB]	53.8	51.1
			Error [dB]	-0.2	0.1
		4	Indication [dB]	53.8	51.0
			Error [dB]	-0.2	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	0.0	-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]	14.4	11.2
Channel 2	Level [dB]	15.0	10.9
Channel 3	Level [dB]	13.9	11.2
Channel 4	Level [dB]	13.3	10.2

* measured with preamplifier SVANTEK type SV 12L No. 17701.

VIBRATION LEVEL METER

1. CALIBRATION (electrical)

LEVEL METER; Filter: HP10; Input signal =140.0dB (10.0 m/s²), f₀=79.6Hz

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

2. CALIBRATION (vibrational)

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

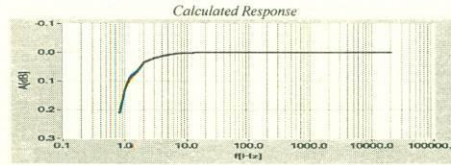
Filter	HP1		HP10		Wd		Wm		Wh	
	Indication [dB]	Error [dB]	Indication [dB]	Error [dB]	Indication [dB]	Error [dB]	Indication [dB]	Error [dB]	Indication [dB]	Error [dB]
Channel 1	120.0	0.0	120.0	0.0	106.1	0.0	102.0	-0.0	110.5	-0.0
Channel 2	120.0	0.0	120.0	0.0	106.1	0.0	102.0	-0.0	110.5	-0.0
Channel 3	120.0	0.0	120.0	0.0	106.1	0.0	102.0	-0.0	110.5	-0.0
Channel 4	120.0	0.0	120.0	0.0	106.2	0.0	102.0	-0.0	110.5	-0.0

Calibration measured with the accelerometer SVANTEK type SV80 No. H0413. Calibration factor: -0.56dB

*** SVAN958 No. 69082 page 5 ***

3. FREQUENCY RESPONSE (electrical)

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



Measured Response (f: frequency; A_n: 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	0.19	0.19	0.19	0.19	5	0.02	0.01	0.01	0.01	500	-0.01	-0.01	-0.01	-0.01
1	0.10	0.10	0.10	0.10	6.3	0.00	-0.00	-0.00	-0.00	1000	0.00	-0.00	-0.00	-0.01
1.25	0.08	0.08	0.08	0.08	8	-0.01	-0.01	-0.01	-0.01	2000	0.00	-0.00	-0.00	-0.00
1.6	0.06	0.06	0.06	0.06	16	-0.02	-0.02	-0.02	-0.02	4000	0.01	0.01	-0.00	-0.00
2	0.02	0.02	0.02	0.02	31.5	0.00	-0.00	-0.00	-0.00	8000	0.03	0.04	0.02	0.02
2.5	0.01	0.01	0.01	0.01	63	-0.01	-0.01	-0.01	-0.01	16000	0.02	0.02	-0.01	-0.02
3.15	-0.01	-0.01	-0.01	-0.01	125	-0.01	-0.01	-0.01	-0.01	20000	0.02	0.01	0.01	-0.01
4	0.02	0.02	0.02	0.02	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]	54.8	52.0	42.6	38.8	36.2
Channel 2	Indication [dB]	55.0	52.4	42.6	39.0	36.8
Channel 3	Indication [dB]	55.5	53.3	42.8	39.1	36.1
Channel 4	Indication [dB]	54.8	52.4	42.4	39.0	36.2

ENVIRONMENTAL CONDITIONS

Temperature	Relative humidity	Ambient pressure
26 °C	47 %	1000 hPa

TEST EQUIPMENT

Item	Manufacturer	Model	Serial no.	Description
1.	SVANTEK	SVAN 401	127	Signal generator
2.	SVANTEK	SVAN 912A	4369	Sound & Vibration Analyser
3.	KEITHLEY	2000	0910165	Digital multimeter
4.	SVANTEK	SV33	48878	Acoustic calibrator
5.	SVANTEK	ST02	-	Microphone equivalent electrical impedance (18pF)
6.	DYTRAN	3233A	1376	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 guaranteed 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: Krzysztof Kubel

Kubel

Test date: 2018-08-13

***SVAN958 No. 69082 page 6 ***

Cert C3: Calibration Certificate of Sound Level Meter SVANTEK 958A (SN: 59120)



CALIBRATION CERTIFICATE

Certificate Information			
Date of Issue		7-Nov-2018	
Certificate Number		MLCN182746S	
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 958A	
Serial Number		59120	
Equipment Number		--	
Calibration Particular			
Date of Calibration		7-Nov-2018	
Calibration Equipment		4231(MLTE008) / AV180068 / 13-May-2020	
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 7-Nov-2018	
Statements			
<ul style="list-style-type: none">* 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.			

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Certificate No. MLCN182746S

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

- END -

Calibrated By :
Date :

Dan
7-Nov-2018

Checked By :
Date :

K.O. Lo
7-Nov-2018

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., Baldwin 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

Cert C4: Calibration Certificate of Sound Level Meter SVANTEK 958A (SN: 59121)



CALIBRATION CERTIFICATE

Certificate Information			
Date of Issue		Certificate Number	
4-Oct-2018		MLCN182370S	
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 958A	
Serial Number		59121	
Equipment Number		--	
Calibration Particular			
Date of Calibration		4-Oct-2018	
Calibration Equipment		4231(MLTE008) / AV180068 / 13-May-2020	
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 4-Oct-2018	
Statements			
<ul style="list-style-type: none">* 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.			

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Certificate No. MLCN182370S

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

- END -

Calibrated By :
Date :

Dan
4-Oct-2018

Checked By :
Date :

K.O. Lo
4-Oct-2018

Page 2 of 2

Cert C5: Calibration Certificate of Sound Level Meter SVANTEK 959 (SN: 11228)



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, Yuen Shun Circuit, Shatin, N. T., 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	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. All calibration results were within EUT specification.		
Approved By & Date			
		K.O. Lo	7-May-2018
Statements			
<ul style="list-style-type: none"> * 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. 			

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Certificate No. MLCN180789S

Calibration Data						
Weighting / Time	Range	EUT Reading	Standard Reading	EUT Error	Calibration Uncertainty	EUT Specification
A / FAST (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 (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 (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 (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 (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 (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 (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 (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 (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 C6: Calibration Certificate of Acoustic Calibrator SV30A (SN: 29088)



CALIBRATION CERTIFICATE

Certificate Information																	
Date of Issue	18-Mar-2019	Certificate Number															
MLCN190639S																	
Customer Information																	
Company Name	Wilson Acoustics 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	18-Mar-2019																
Calibration Equipment	4231(MLTE008) / AV180068 / 13-May-20 1351(MLTE049) / MLEC18/06/02 / 6-Jun-19																
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>Not applicable</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	Not applicable		Power Supply	Internal battery
Laboratory	Temperature	23 °C ± 5 °C															
	Relative Humidity	55% ± 25%															
EUT	Stabilizing Time	Over 3 hours															
	Warm-up Time	Not applicable															
	Power Supply	Internal battery															
Calibration Results	Calibration data were detailed in the continuation pages. All calibration results exceeded the EUT error limit.																
Approved By & Date																	
K.O. Lo		18-Mar-2019															
Statements																	
<ul style="list-style-type: none">* 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. MLCN190639S

Calibration Data					
EUT Setting		Standard Reading	EUT Error	Calibration Uncertainty	EUT Specification
94	dB	93.5 dB	0.5 dB *	0.15 dB	\pm 0.3 dB
114	dB	113.6 dB	0.4 dB *	0.15 dB	\pm 0.3 dB

- END -

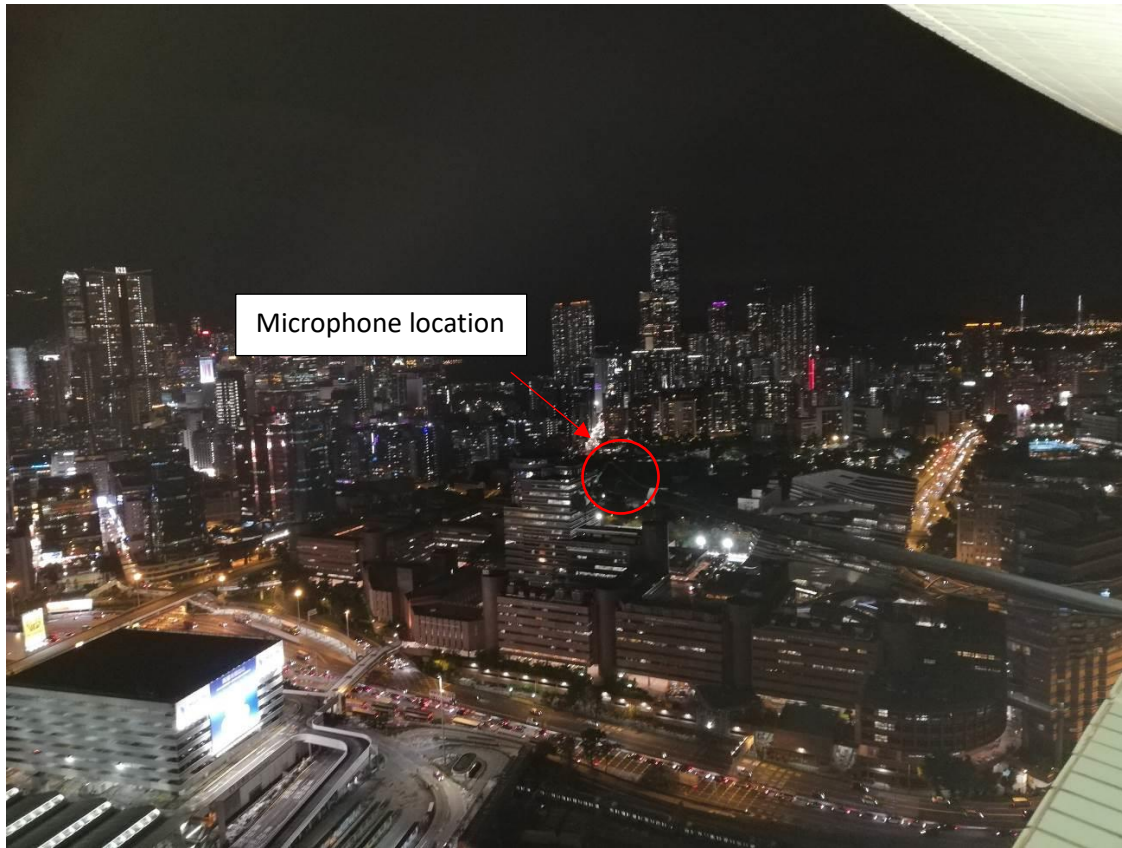
Calibrated By : Dan
Date : 18-Mar-19

Checked By : K.O. Lo
Date : 18-Mar-19
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Appendix C2

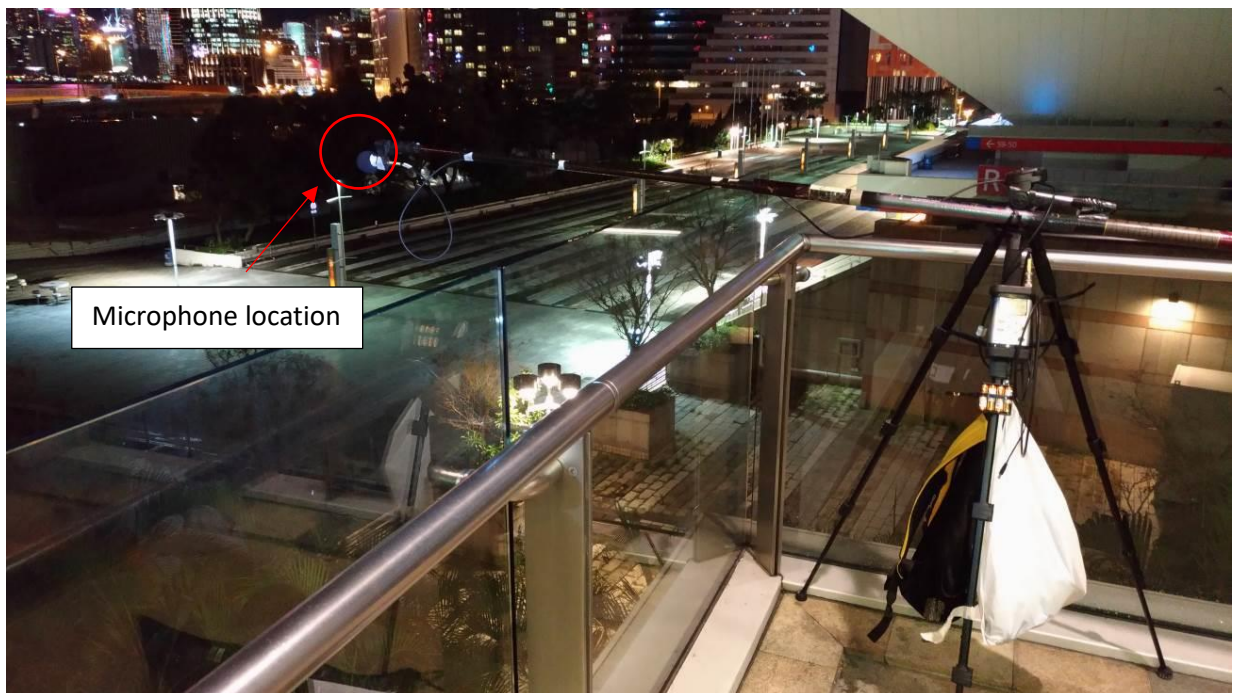
Photographs – Noise Measurement at Representative NSRs

Appendix C2 Photographs – Noise Measurement at Representative NSRs



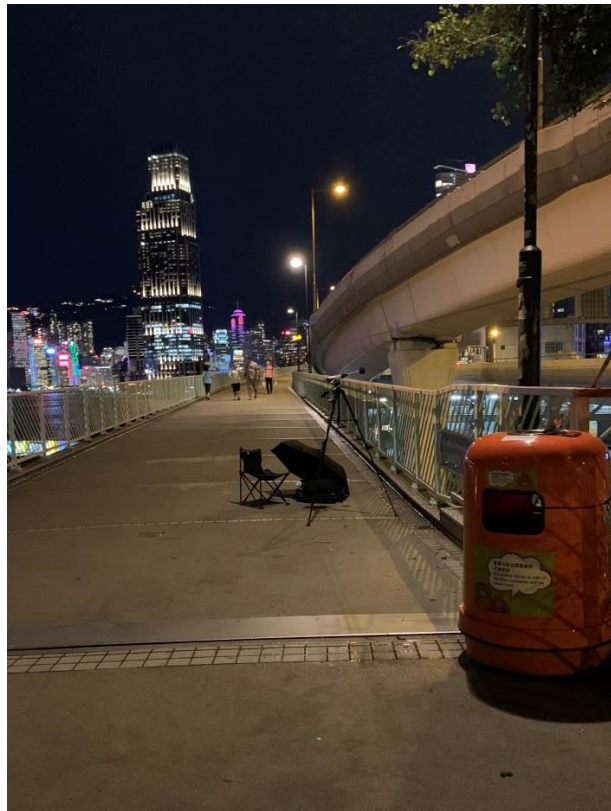
Microphone location

NSR Measurement Location at HUH-FN1

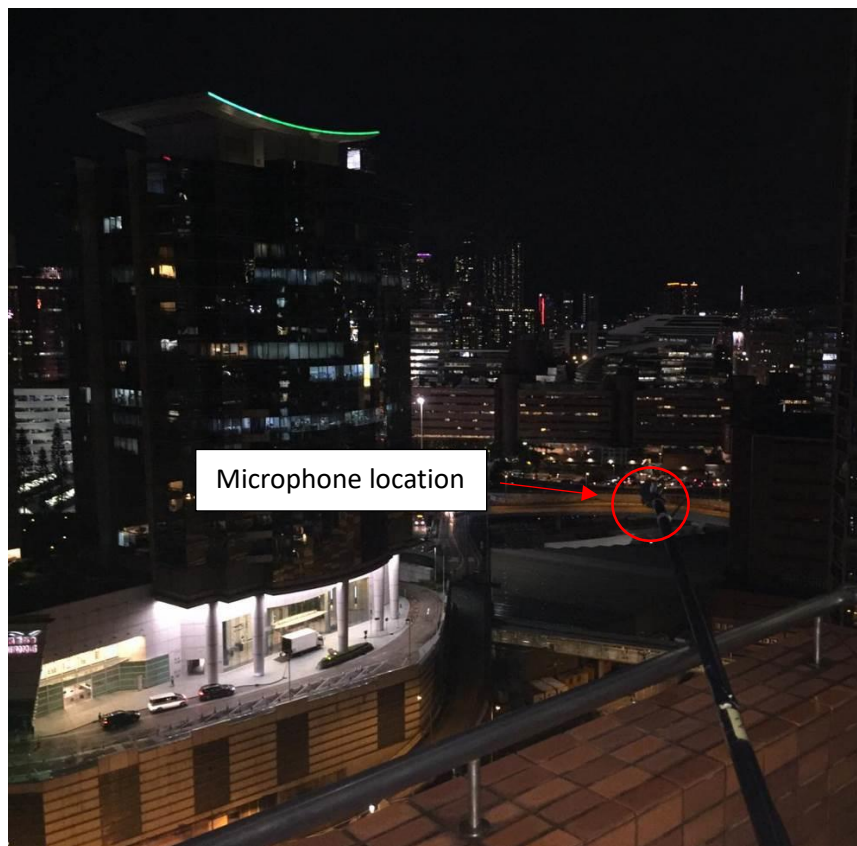


Microphone location

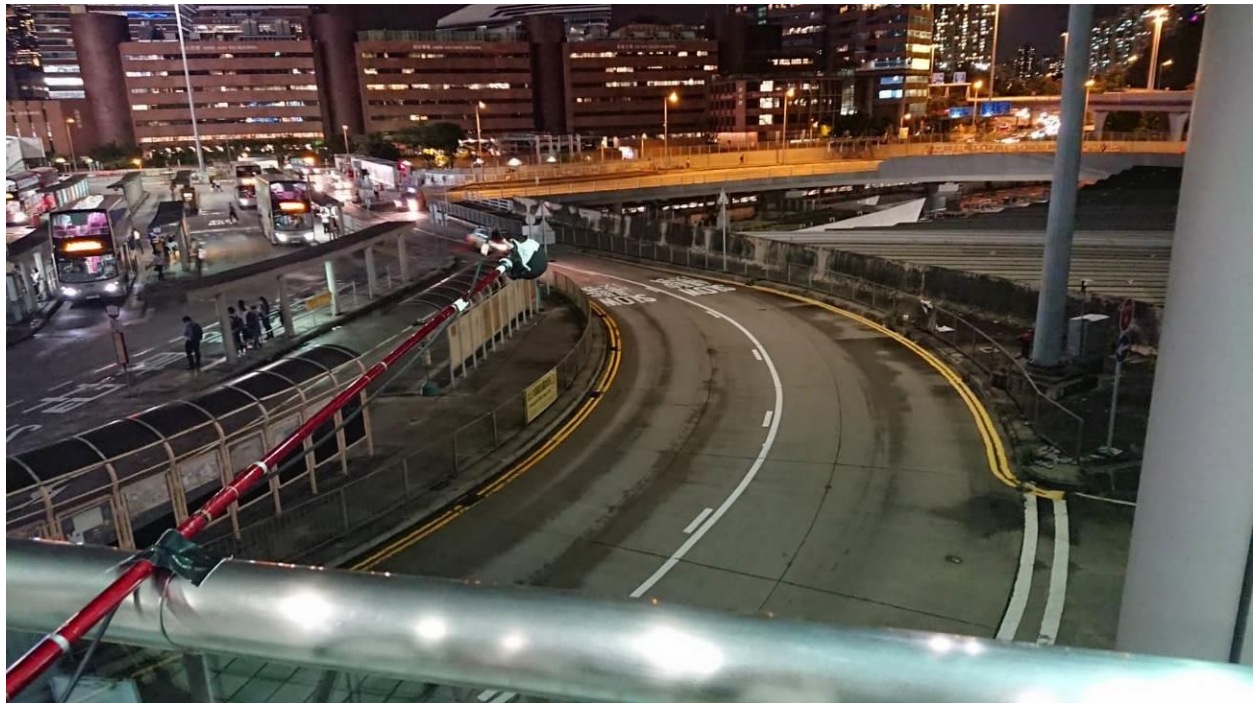
NSR Measurement Location at HUH-FN2



NSR Measurement Location at HUH-FN3



NSR Measurement Location at HUH-FN4



NSR Measurement Location at HUH-FN5

Appendix C3

Measurement Results at Representative NSRs

Appendix C3 Noise Measurement Results at Measurement Locations

Measurement Location ID	Measurement Date	Operation Scenario ⁽¹⁾⁽²⁾	Fixed Plant Noise		Background Noise		Difference between Measured Noise Level and Background Level, dB(A) ⁽³⁾
			Measurement Time	Measured Noise Level, $L_{Aeq\ 30mins}$, dB(A)	Measurement Time	Background Noise Level, $L_{Aeq\ 5mins}$, dB(A)	
HUH-FN1	10/6/2019 - 11/6/2019	Daytime and Evening	2100-2130 hours	67.7	2025-2030 hours	68.0	-0.3
		Night-time	2300-2330 hours	66.8	0000-0005 hours	65.6	1.2
HUH-FN2	10/6/2019 - 11/6/2019	Daytime and Evening	2100-2130 hours	61.5	2025-2030 hours	60.5	1.0
		Night-time	2300-2330 hours	60.3	0000-0005 hours	58.2	2.1
HUH-FN3	10/6/2019 - 11/6/2019	Daytime and Evening	2100-2130 hours	64.3	2025-2030 hours	63.0	1.3
		Night-time	2300-2330 hours	62.3	0000-0005 hours	60.7	1.6
HUH-FN4	10/6/2019 - 11/6/2019	Daytime and Evening	2100-2130 hours	65.8	2025-2030 hours	65.7	0.1
		Night-time	2300-2330 hours	64.4	0000-0005 hours	62.4	2.0
HUH-FN5	10/6/2019 - 11/6/2019	Daytime and Evening	2100-2130 hours	69.5	2025-2030 hours	69.9	-0.4
		Night-time	2300-2330 hours	68.2	0000-0005 hours	68.0	0.2

Notes:

(1) Daytime and evening period (i.e 0700 to 2300 hours) and night-time period (i.e. Night: 2300 to 0700 hours).

(2) Fixed plant noise operation during daytime/evening and night-time periods have been included according to corresponding fixed plant noise measurement.

(3) The measured noise levels were dominated by background noise (i.e. road traffic noise from major roads nearby). Since traffic noise fluctuated during the daytime & evening measurement periods, leading to higher background noise levels than the measured noise levels of the fixed sources at few measurement locations.