

MTR Corporation Limited

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

Baseline Monitoring Report (Part 2)

Certified by: Glenn Frommer

Position: Environmental Team Leader

Date: 08 JAN. 2010

Our ref KMY/AFK/JOC/FY/bl/T264090/22.01/L-0015

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Your ref

MTR Corporation Ltd.,
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8 January 2010
By Post and email

Attn : Dr. Glenn Frommer

Dear Sir

Express Rail Link

Consultancy Agreement No. C806

Independent Environmental Checker (IEC)

Environmental Permit No.: EP-349/2009

Condition 2.42 – Baseline Monitoring Report (Part 2)

Pursuant to the EP Condition 2.42, I hereby verify the Baseline Monitoring Report (Part 2) for Works Area R, S and T.

Yours faithfully,
for MOTT MACDONALD HONG KONG LIMITED



Dr. Anne Kerr
Independent Environmental Checker (IEC)

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EXECUTIVE SUMMARY

The environmental baseline monitoring for the Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link, hereinafter referred to “the XRL” was conducted at 2 noise monitoring locations in the vicinity of Works Area R, S and T (Figure 1). Noise measurements were taken in terms of Leq with L10 and L90 as reference. With reference to the EM&A Manual, there is no dust monitoring location in the vicinity of the said Works Areas, therefore no reporting of baseline air quality is included in this report.

Baseline noise monitoring was conducted between 4/12/2009 and 21/12/2009. No noise monitoring was conducted on 7/12, 8/12, 15/12 (1900-2300 and 2300-0700), 16/12 and 17/12 (0700-1900) due to rainfall. Baseline noise monitoring was conducted during daytime (0700-1900 hours), evening time (1900-2300 hours) and night-time (2300-0700 hours) on all day during the above-mentioned period. In this report, the measured noise levels on weekdays were presented separately from general holidays and Sundays for easy of reference. It was noted from the monitoring results that ambient noise level for daytime at Tower 6, Harbour Green (CN 28), 68 dB(A), is highest between the two monitoring locations. The daytime baseline noise levels at all of the two locations were below the Limit Level for of 75 dB(A) for residential premises.

1. INTRODUCTION

1.1 Background

Further to the Government's decision made in April 2008, MTR Corporation (MTR) commenced to plan and design the Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link (hereinafter referred to "the XRL" or "the Project"), which is a committed cross boundary transport infrastructure project.

The XRL will provide high speed rail services between Hong Kong and Guangzhou, and a connection to the national high-speed passenger rail network serving major mainland cities outside of Guangdong province. The Hong Kong section of the XRL is about 26km from new terminus located in West Kowloon (i.e. West Kowloon Terminus (WKT)) to the boundary at Huang gang. Along the railway corridor, there will be a total of eight ventilation buildings/ emergency access point (EAP), stabling sidings and a maintenance facility at Shek Kong (SSS) and an Emergency Rescue Station (ERS) next to SSS serving the operation of the XRL.

1.2 Purpose of the report

In accordance with the Environmental Monitoring and Audit (EM&A) Manual, environmental baseline monitoring was carried out for noise. This Baseline Monitoring Report (Part 2) contains baseline monitoring findings in the vicinity of Works Area R, S and T(Figure 1). The purpose of this report is to summarize the findings of this baseline monitoring and to establish the compliance levels for the subsequent environmental impact monitoring during construction stage.

2. AIR QUALITY

With reference to Chapter 9 of the EM&A Manual, there is no dust monitoring location in the vicinity of the Works Areas R, S and T, therefore no reporting of baseline air quality is included in this report.

3. AIRBORNE CONSTRUCTION NOISE

3.1 Monitoring Methodology

Consecutive noise measurements were undertaken over a period of at least 14 days to establish the ambient noise levels at representative nearest sensitive receivers. Continuous 5 minute A-weighted noise levels were recorded throughout the daytime, evening and night-time on weekdays (Monday to Saturday) and also on Sundays.

As referred to the Technical Memorandum (TM) issued under the NCO, sound level meters in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. In this baseline monitoring, Rion NL-18 and Rion NL-31 sound level meters, which complies with the above-mentioned specifications, were used.

There should not be any construction activities in the vicinity of the monitoring stations during the baseline monitoring. Any non-project related construction activities in the vicinity of the monitoring stations during the baseline monitoring should be noted and the source and location of such activities should be recorded.

For these two noise monitoring stations, the monitoring stations were positioned at a point 1m from the exterior of the noise sensitive façade. The microphones were positioned to face towards the works area.

3.2 Monitoring Frequency

The baseline monitoring was measured daily for a continuous period of at least 14 consecutive days at a minimum logging interval of 30 minutes for daytime (between 0700 and 1900 hours of normal weekdays) and 15 minutes (as three consecutive Leq, (5 minutes) readings) for evening time (between 1900 and 2300 hours of normal weekdays), general holidays including Sundays (between 0700 and 2300 hours) and night-time (between 2300 and 0700 of all days). The Leq, L10 and L90 were recorded at the specified interval.

3.3 Monitoring location

Baseline noise monitoring was carried out during 4/12/2009 to 21/12/2009 at Noise Sensitive Receivers (NSRs) located in the vicinity of Works Area R, S and T. The locations of the NSR are shown in Figure 2. Monitoring was carried out at the following stations in accordance with the EM&A Manual:

Monitoring Station ID	Noise Monitoring Location	Monitoring period
CN 27	Cheong Yat House, Nam Cheong Estate	4/12/2009-21/12/2009 ¹
CN 28	Tower 6, Harbour Green	4/12/2009-21/12/2009 ¹

¹ No noise monitoring was conducted on 7/12, 8/12, 15/12 (1900-2300 and 2300-0700), 16/12 and 17/12 (0700-1900) due to rainfall.

Table 3.1: Information of Noise Monitoring Stations

3.4 Calibration Requirements

Rion NC 18 and Rion NC 31 sound level meters which complied with the International Electrotechnical Commission Publication 651:1979 (Type 1) and 804:1985 (Type 1), specification as referred to in the Technical Memoranda to the NCO were used for the baseline monitoring. The Rion sound level meters and Rion NC 73 calibrator are verified by the certified laboratory or manufacturer once every year to ensure they perform to the same level of accuracy as stated in the manufacturer's specifications. Calibration certificates of the sound level meters and calibrator are attached in Appendix B.

Immediately prior to and following each noise measurement the accuracy of the sound level meter should be checked using an acoustic calibrator (Rion NC 73) generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the difference between calibration levels obtained before and after the noise measurement is less than 1.0 dB.

3.5 Action and Limit Levels

The Action and Limit Levels defined in the EM&A Manual for airborne construction noise is presented below for reference.

Time Period	Action	Limit
0700-1900 hours on normal weekdays	When one documented complaint is received	75 dB(A) for residential premises
		70 dB(A) for school and 65 dB(A) during examination period

Table 3.2: Action and Limit Levels for Airborne Construction Noise

3.6 Monitoring Results

Baseline noise monitoring was conducted between 4/12/2009 and 21/12/2009 for CN 27 and 28. The weather condition was generally fine with occasional rainfall events during the monitoring period. No façade correction has been made since measurements were taken at building façade at all two monitoring locations. The major noise sources at respective monitoring locations are summarized at the table below:

Monitoring location ID	Monitoring location	Major noise source
CN 27	Cheong Yat House, Nam Cheong Estate	Traffic noise
CN 28	Tower 6, Harbour Green	Traffic Noise

Table 3.3: Major noise source at noise monitoring locations

Baseline noise monitoring results are summarised in Table 3.3 over the monitoring periods. All monitoring data are contained in Appendix A. Graphical presentations of the monitoring results are shown in Appendix A.

Period	Monitoring Station	L_{eq}(30min) - dB(A) (Range)	L₁₀(30min) - dB(A) (Range)	L₉₀(30min) - dB(A) (Range)
0700 – 1900 (Daytime, Normal weekday)	CN 27	67 (65-69)	69 (68-75)	63 (61-65)
	CN 28	68 (66-71)	70 (67-73)	67 (64-69)
Period	Monitoring Station	L_{eq}(5min) - dB(A) (Range)	L₁₀(5min) - dB(A) (Range)	L₉₀(5min) - dB(A) (Range)
0700 – 2300 (General Holiday including Sunday)	CN 27	65 (62-71)	68 (64-73)	62 (58-68)
	CN 28	67 (64-69)	68 (66 -70)	65 (60-67)
1900 – 2300 (Evening, Normal weekday)	CN 27	65 (62-70)	68 (64-75)	61 (58-64)
	CN 28	67 (65-69)	68 (66-70)	65 (63-68)
2300 – 0700 (Night-time, all days)	CN 27	61 (55-71)	64 (57-73)	57 (53-62)
	CN 28	63 (58-68)	65 (58-69)	61 (54-66)

Table 3.4: Baseline noise monitoring results

As revealed from the monitoring results, baseline noise levels for daytime (0700-1900) during normal weekdays at the CN27 and CN28 range from 65-69 dB(A) and 66-71 dB(A) respectively. It was noted from the monitoring results that ambient noise level for daytime at Tower 6, Harbour Green (CN 28), 68 dB(A), is highest between the two monitoring locations. The daytime baseline noise levels at all of the two locations were below the Limit Level for of 75 dB(A) for residential premises.

4. CONCLUSION

4.1 Air

With reference to Chapter 9 of the EM&A Manual, there is no dust monitoring location in the vicinity of the Works Areas R, S and T, therefore no reporting of baseline air quality is included in this report.

4.2 Airborne Construction Noise

Baseline noise monitoring were carried at all two monitoring stations from 4/12/2009 to 21/12/2009. The weather during the baseline monitoring period was generally fine with occasional rainfall events.

As revealed from the monitoring results, baseline noise levels for daytime (0700-1900) during normal weekdays at the CN27 and CN28 range from 65-69 dB(A) and 66-71 dB(A) respectively. It was noted from the monitoring results that ambient noise level for daytime at Tower 6, Harbour Green (CN 28), 68 dB(A), is highest between the two monitoring locations. The daytime baseline noise levels at all of the two locations were below the Limit Level for of 75 dB(A) for residential premises.

Appendix A

Baseline noise monitoring data

Baseline Noise Monitoring Result

Location: CN 27 Cheong Yat House, Nam Cheong Estate

Baseline monitoring period: 4/12/2009-21/12/2009

Parameter: Leq

Time Slot Averaged Baselines

1) Weekdays Daytime Noise Level, dB(A)

Time slot	Leq, 30 min	L10	L90
07:00-07:30	65.7	68.5	62.0
07:30-08:00	66.3	68.9	63.0
08:00-08:30	67.1	69.6	63.9
08:30-09:00	67.3	69.8	63.8
09:00-09:30	67.1	69.6	63.9
09:30-10:00	67.0	69.5	63.7
10:00-10:30	67.0	69.6	63.6
10:30-11:00	66.9	69.5	63.7
11:00-11:30	66.1	68.6	63.0
11:30-12:00	66.3	68.8	62.9
12:00-12:30	66.1	68.7	62.6
12:30-13:00	66.6	69.1	63.0
13:00-13:30	66.6	69.2	63.3
13:30-14:00	66.8	69.4	63.6
14:00-14:30	66.8	69.3	63.5
14:30-15:00	66.7	69.3	63.3
15:00-15:30	67.1	69.6	63.9
15:30-16:00	67.1	69.4	63.6
16:00-16:30	66.4	68.8	63.3
16:30-17:00	67.1	69.5	63.7
17:00-17:30	67.3	69.7	63.8
17:30-18:00	66.6	69.2	63.4
18:00-18:30	66.9	70.0	63.4
18:30-19:00	66.2	68.9	62.6
Average	66.7	69.3	63.4

Noise Control Period Averaged Baselines

2) Weekdays Evening Noise Level, dB(A)

Time Slot	Leq, 5min	L10	L90
19:00-19:15	66.2	68.9	62.9
	66.3	68.8	62.2
	65.7	68.6	62.0
19:15-19:30	65.9	68.8	62.1
	65.7	68.0	62.1
	65.9	68.7	62.2
19:30-19:45	66.2	69.1	62.3
	65.6	68.3	61.9
	66.0	68.8	62.1
19:45-20:00	65.8	68.6	62.2
	65.6	68.6	61.7
	65.1	67.9	61.5
20:00-20:15	65.7	68.5	62.0
	65.9	68.8	62.1
	65.1	68.0	61.2
20:15-20:30	65.5	68.2	61.7
	65.1	67.9	61.5
	65.1	67.8	61.6
20:30-20:45	64.5	67.1	61.4
	65.0	67.9	61.3
	65.0	67.6	61.2
20:45-21:00	65.6	68.3	61.6
	65.5	69.0	61.3
	65.2	68.1	60.7
21:00-21:15	64.6	67.2	61.2
	65.0	67.8	61.1
	64.8	67.7	60.9
21:15-21:30	64.6	67.3	61.1
	64.8	67.5	61.1
	65.1	68.0	61.1
21:30-21:45	64.9	67.9	60.8
	64.6	67.1	60.8

Time Slot	Leq, 5min	L10	L90
	64.5	67.6	60.7
21:45-22:00	64.3	66.9	60.9
	64.5	67.4	60.9
	65.1	68.1	60.9
22:00-22:15	64.6	67.2	60.7
	64.6	67.7	60.8
	64.7	67.6	60.9
22:15-22:30	65.0	67.6	60.9
	64.9	67.9	61.0
	64.4	67.1	60.6
22:30-22:45	63.9	66.7	60.3
	65.0	68.2	60.7
	64.3	67.1	60.7
22:45-23:00	64.4	67.3	60.6
	63.8	66.7	60.1
	64.1	67.2	60.3
Average	65.1	68.0	61.4

3) General Holidays (including Sundays) (0700-2300) Noise Level, dB(A)

Time Slot	Leq, 5min	L10	L90
0700-07:15	64.2	67.7	59.3
	63.8	67.0	59.6
	64.3	67.7	59.6
07:15-07:30	64.3	67.4	60.0
	63.7	66.7	59.4
	64.2	67.6	60.2
07:30-07:45	64.6	67.8	60.2
	63.6	66.6	59.6
	64.4	67.6	60.3
07:45-08:00	64.6	67.8	61.0
	64.6	67.5	60.4
	64.3	66.8	60.1
08:00-08:15	64.5	67.5	60.2
	64.5	67.7	60.2
	64.3	67.3	60.0

Time Slot	Leq, 5min	L10	L90
08:15-08:30	66.3	69.4	61.5
	64.8	68.0	60.2
	64.9	67.7	60.5
08:30-08:45	65.6	68.3	61.4
	65.4	68.4	61.2
	64.7	67.7	60.8
08:45-09:00	65.0	67.8	60.4
	64.5	67.6	60.2
	65.7	68.5	61.2
09:00-09:15	65.0	68.2	60.6
	65.4	68.3	61.6
	65.9	68.7	61.8
09:15-09:30	66.1	68.6	61.8
	67.0	69.2	64.0
	66.7	68.9	63.8
09:30-09:45	65.9	68.6	62.6
	65.6	68.1	61.8
	65.9	68.8	62.0
09:45-10:00	65.7	68.5	62.0
	66.7	69.6	61.9
	64.7	67.0	61.7
10:00-10:15	65.5	68.5	62.0
	66.8	69.1	63.8
	66.6	69.0	63.7
10:15-10:30	65.5	68.4	61.8
	65.1	67.8	61.6
	65.8	68.9	62.1
10:30-10:45	65.2	67.8	62.0
	65.7	68.3	62.3
	68.1	70.4	64.9
10:45-11:00	67.2	69.7	63.0
	66.3	68.9	63.4
	67.9	70.0	65.0
11:00-11:15	67.5	70.3	63.0
	66.3	68.3	63.9
	67.8	70.0	65.0

Time Slot	Leq, 5min	L10	L90
11:15-11:30	67.0	69.2	63.9
	66.8	69.4	63.0
	66.5	69.3	62.6
11:30-11:45	65.2	67.7	62.1
	65.5	68.4	61.4
	65.3	68.0	62.2
11:45-12:00	65.7	68.2	62.6
	64.4	67.0	61.0
	65.7	68.7	61.5
12:00-12:15	65.0	67.8	61.2
	65.3	68.0	61.9
	65.4	67.8	62.3
12:15-12:30	65.9	68.5	61.4
	67.5	70.6	61.6
	64.9	67.9	61.0
12:30-12:45	64.7	67.7	60.9
	65.9	69.5	61.0
	65.3	68.4	61.7
12:45-13:00	65.0	67.5	61.0
	65.8	68.7	61.6
	63.9	66.4	60.9
13:00-13:15	65.5	68.0	62.2
	65.7	68.9	61.9
	65.3	68.2	61.4
13:15-13:30	65.0	67.7	61.8
	65.4	68.0	62.2
	65.3	68.7	61.6
13:30-13:45	65.2	67.5	61.9
	66.7	69.0	63.3
	66.1	68.9	62.6
13:45-14:00	65.4	68.1	61.5
	66.2	68.6	62.8
	65.3	67.8	62.1
14:00-14:15	65.7	67.9	62.4
	66.0	69.1	61.8
	65.4	68.2	62.3

Time Slot	Leq, 5min	L10	L90
14:15-14:30	65.8	68.5	62.2
	67.3	70.6	62.4
	65.2	67.5	62.1
14:30-14:45	65.8	68.0	62.1
	66.9	69.5	63.1
	67.0	69.3	63.7
14:45-15:00	66.0	68.5	62.4
	66.4	68.9	62.9
	66.7	69.6	62.1
15:00-15:15	65.8	68.3	62.2
	66.4	69.5	62.5
	67.0	69.8	62.0
15:15-15:30	68.1	69.9	63.4
	67.4	70.6	62.5
	66.8	69.4	62.6
15:30-15:45	65.9	68.6	61.9
	66.1	69.1	62.0
	66.0	68.3	62.2
15:45-16:00	65.3	68.2	62.0
	65.4	68.3	61.7
	65.7	68.2	62.3
16:00-16:15	66.0	68.3	62.1
	64.9	67.8	61.8
	65.5	68.2	61.9
16:15-16:30	65.2	68.1	61.7
	65.7	68.4	62.0
	65.8	68.8	61.5
16:30-16:45	64.5	67.3	61.4
	65.9	68.8	62.0
	65.4	68.3	61.7
16:45-17:00	65.7	68.7	61.9
	66.3	69.2	62.1
	65.4	68.1	61.8
17:00-17:15	65.0	67.7	61.5
	64.6	67.2	61.5
	66.3	69.1	62.4

Time Slot	Leq, 5min	L10	L90
17:15-17:30	65.5	68.4	61.9
	65.5	68.4	62.2
	65.5	68.2	61.9
17:30-17:45	65.0	67.8	61.7
	65.4	68.1	61.8
	65.8	68.7	61.9
17:45-18:00	64.1	66.5	61.2
	65.6	68.6	62.1
	65.1	68.0	61.4
18:00-18:15	65.4	68.0	62.0
	66.0	68.9	62.3
	64.9	68.3	61.2
18:15-18:30	65.1	67.7	61.9
	64.9	67.6	61.8
	64.8	67.5	61.6
18:30-18:45	64.6	67.4	60.9
	65.6	68.0	61.8
	64.8	67.5	61.4
18:45-19:00	64.2	67.0	61.0
	64.8	67.8	60.9
	64.9	67.9	61.1
19:00-19:15	64.2	66.9	60.9
	64.9	68.2	60.8
	65.4	68.2	61.2
19:15-19:30	65.1	67.8	61.5
	64.8	67.6	61.1
	64.5	68.0	60.4
19:30-19:45	65.1	67.9	61.2
	65.3	68.4	61.8
	64.3	67.4	60.6
19:45-20:00	64.6	67.8	60.6
	64.0	66.8	60.5
	65.2	68.5	61.3
20:00-20:15	64.6	67.2	61.8
	64.6	67.2	61.6
	65.0	67.8	61.4

Time Slot	Leq, 5min	L10	L90
20:15-20:30	66.7	68.6	61.0
	64.9	67.4	60.9
	63.4	65.6	60.7
20:30-20:45	64.7	67.2	61.2
	64.8	67.6	61.0
	64.1	66.9	60.5
20:45-21:00	63.7	66.2	60.3
	64.5	67.4	60.7
	63.6	66.5	60.1
21:00-21:15	64.5	67.5	60.8
	63.8	66.4	60.2
	65.4	68.3	61.5
21:15-21:30	64.3	67.0	60.4
	64.3	67.1	60.4
	63.9	66.5	60.3
21:30-21:45	64.3	67.1	60.3
	64.3	67.0	60.8
	63.7	66.1	60.6
21:45-22:00	64.4	67.4	60.4
	65.0	68.1	60.8
	64.5	67.7	60.0
22:00-22:15	63.8	66.5	60.3
	64.7	67.5	60.6
	64.2	67.4	59.9
22:15-22:30	64.2	67.0	60.4
	64.4	67.5	59.9
	64.1	66.3	60.2
22:30-22:45	63.8	66.7	60.0
	63.4	66.2	59.8
	64.0	67.1	59.6
22:45-23:00	62.7	65.5	59.2
	63.3	66.3	59.3
	62.6	65.7	59.0
Average	65.4	68.2	61.6

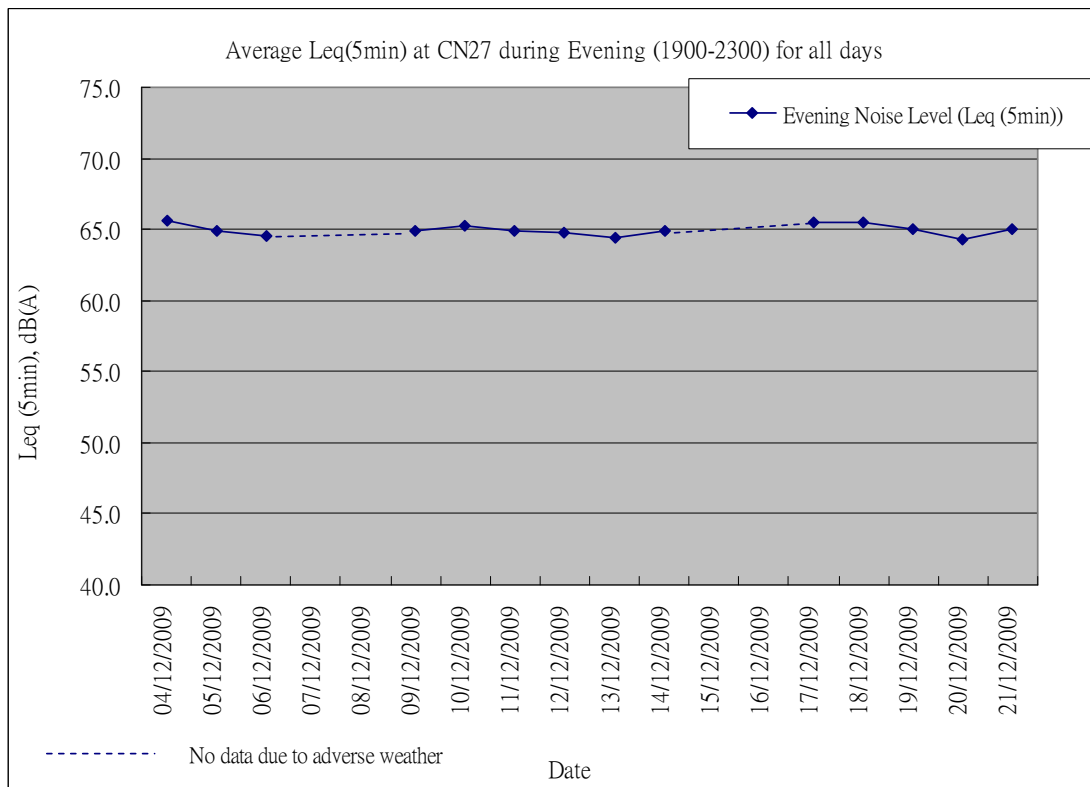
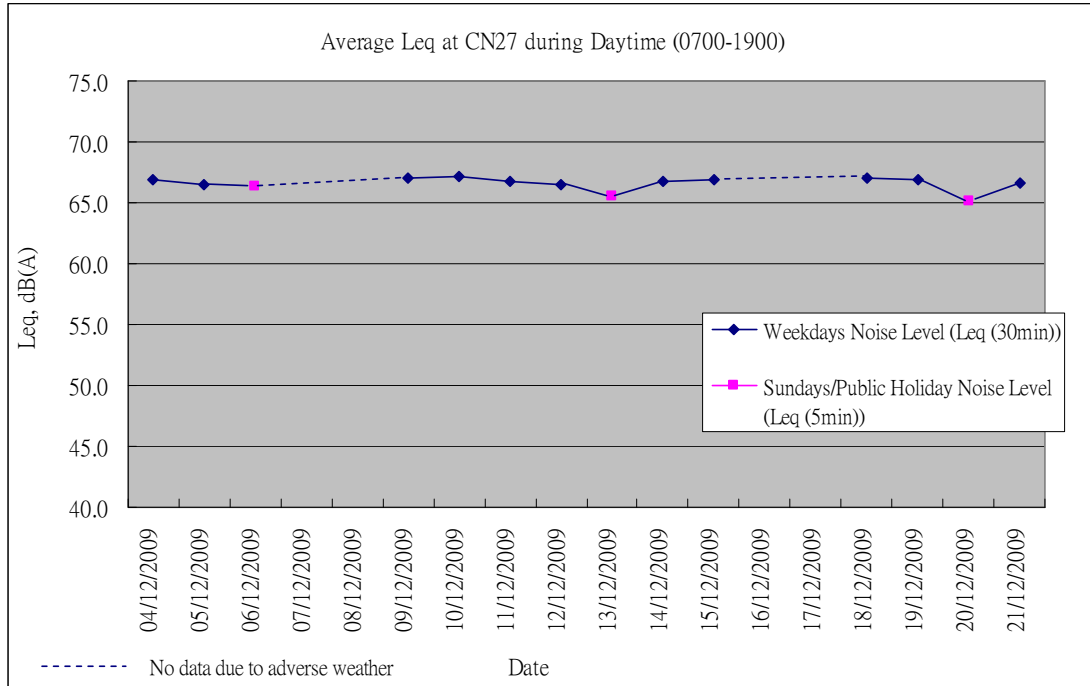
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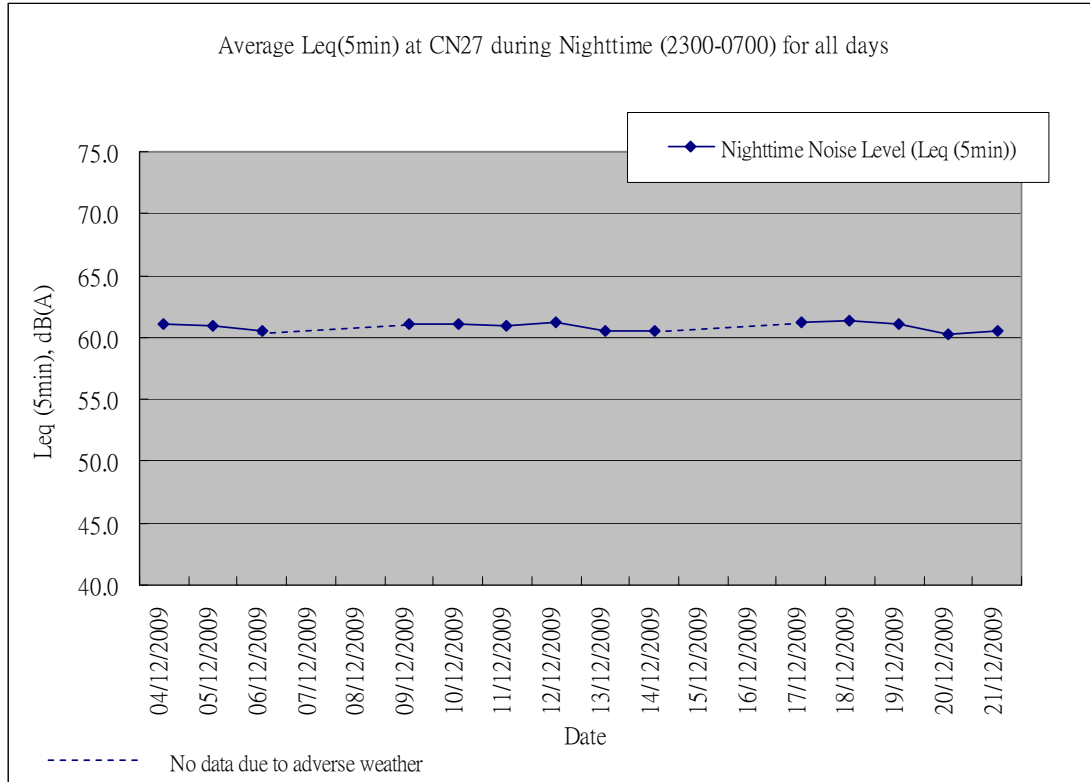
Time Slot	Leq, 5min	L10	L90
23:00-23:15	63.6	66.5	60.1
	63.9	67.0	60.0
	64.3	67.2	60.5
23:15-23:30	64.3	67.5	60.2
	63.2	66.0	59.6
	64.1	67.0	60.2
23:30-23:45	63.9	67.0	59.9
	63.2	66.2	59.3
	63.8	66.7	59.8
23:45-00:00	63.4	66.3	59.4
	63.7	66.9	59.2
	63.1	66.0	59.1
00:00-00:15	63.2	66.2	59.3
	63.2	66.4	59.0
	62.3	65.3	58.6
00:15-00:30	62.3	65.1	58.5
	61.8	64.6	58.0
	61.4	64.0	57.7
00:30-00:45	62.0	65.0	57.8
	60.9	63.3	57.1
	60.5	62.5	57.1
00:45:01:00	59.4	61.3	56.6
	59.6	60.9	56.7
	59.9	61.9	56.6
01:00-01:15	58.7	60.4	56.2
	58.6	60.1	56.2
	59.3	61.2	56.4
01:15-01:30	59.7	61.9	56.3
	58.6	60.2	55.9
	58.4	59.9	56.0
01:30-01:45	59.4	61.6	56.1
	58.7	60.4	55.8
	58.4	60.0	55.7

Time Slot	Leq, 5min	L10	L90
01:45-02:00	58.2	59.9	55.5
	60.8	61.2	55.8
	58.7	60.7	55.8
02:00-02:15	58.2	59.6	55.7
	58.7	60.3	55.8
	58.6	60.4	55.6
02:15-02:30	58.9	60.7	55.8
	57.8	59.4	55.4
	58.0	59.7	55.4
02:30-02:45	59.1	61.5	55.6
	58.1	59.8	55.2
	58.1	59.9	55.3
02:45-03:00	58.8	60.4	55.2
	59.2	59.6	55.1
	58.0	60.2	55.1
03:00-03:15	58.5	60.2	55.5
	59.0	61.3	54.9
	58.1	59.4	54.9
03:15-03:30	57.6	59.2	54.9
	57.1	58.7	54.8
	57.8	59.1	54.6
03:30-03:45	57.6	59.3	54.8
	57.9	60.2	54.6
	57.7	59.9	54.8
03:45-04:00	57.8	59.6	55.0
	57.6	59.3	55.0
	58.8	60.8	55.3
04:00-04:15	58.2	60.1	54.9
	57.2	58.9	54.7
	57.9	59.7	55.0
04:15-04:30	58.0	59.6	55.0
	57.6	59.5	55.0
	58.1	59.9	54.9
04:30-04:45	58.3	60.2	55.3
	57.6	59.7	54.9
	58.6	60.6	55.2

Time Slot	Leq, 5min	L10	L90
04:45-05:00	58.7	60.8	55.4
	58.1	60.1	55.5
	59.1	61.4	55.8
05:00-05:15	58.6	60.8	55.6
	58.4	60.7	55.4
	59.2	61.4	55.8
05:15-05:30	58.9	61.0	55.8
	58.7	61.2	55.7
	59.0	61.0	55.9
05:30-05:45	59.7	62.1	56.3
	59.6	62.1	56.5
	60.6	63.6	56.5
05:45-06:00	61.5	64.7	57.0
	60.9	63.7	56.8
	62.0	65.2	57.7
06:00-06:15	62.7	65.6	58.7
	61.9	64.8	58.0
	62.5	65.5	58.6
06:15-06:30	62.8	65.9	58.7
	63.1	66.1	59.0
	63.6	66.6	59.6
06:30-06:45	64.9	67.5	59.4
	64.0	66.8	60.3
	64.1	67.2	60.1
06:45-07:00	64.8	68.0	60.4
	63.9	66.7	60.4
	64.1	67.1	60.0
Average	60.9	63.5	57.3

Log average was used





Baseline Noise Monitoring Result

Location: CN 28 Tower 6, Harbour Green
Baseline monitoring period: 4/12/2009-21/12/2009

Parameter: Leq

Time Slot Averaged Baselines

1) Weekdays Daytime Noise Level, dB(A)

Time slot	Leq, 30 min	L10	L90
07:00-07:30	66.8	68.2	65.0
07:30-08:00	68.1	69.3	66.4
08:00-08:30	69.0	70.4	67.3
08:30-09:00	69.0	70.4	67.5
09:00-09:30	68.8	69.9	67.3
09:30-10:00	68.7	69.9	67.2
10:00-10:30	68.6	69.7	67.0
10:30-11:00	68.4	69.7	66.9
11:00-11:30	68.3	69.6	66.8
11:30-12:00	68.1	69.3	66.5
12:00-12:30	68.0	69.3	66.4
12:30-13:00	68.2	69.5	66.5
13:00-13:30	68.1	69.4	66.4
13:30-14:00	68.3	69.6	66.7
14:00-14:30	68.3	69.5	66.7
14:30-15:00	68.3	69.6	66.8
15:00-15:30	68.2	69.4	66.6
15:30-16:00	68.4	69.7	66.6
16:00-16:30	68.3	69.6	66.7
16:30-17:00	68.4	69.6	66.6
17:00-17:30	68.5	69.8	66.9
17:30-18:00	68.4	69.6	66.9
18:00-18:30	68.3	69.5	66.7
18:30-19:00	67.8	69.1	66.2
Average	68.3	69.6	66.7

Noise Control Period Averaged Baselines

2) Weekdays Evening Noise Level, dB(A)

Time Slot	Leq, 5min	L10	L90
19:00-19:15	67.6	68.9	66.0
	67.4	68.7	65.7
	67.4	68.7	65.6
19:15-19:30	67.3	68.6	65.3
	67.0	68.4	65.3
	67.2	68.6	65.4
19:30-19:45	67.1	68.5	65.4
	67.3	68.7	65.5
	67.4	68.8	65.5
19:45-20:00	67.3	68.6	65.4
	67.5	69.0	65.5
	67.4	68.8	65.5
20:00-20:15	67.2	68.6	65.4
	67.2	68.5	65.4
	67.2	68.5	65.3
20:15-20:30	67.0	68.3	65.0
	67.0	68.4	65.3
	66.9	68.4	65.1
20:30-20:45	66.8	68.2	64.9
	66.8	68.2	64.9
	66.9	68.3	65.2
20:45-21:00	66.8	68.2	64.9
	66.9	68.5	64.8
	66.7	68.1	64.8
21:00-21:15	66.9	68.4	65.0
	66.7	68.1	64.8
	66.8	68.3	64.7
21:15-21:30	66.6	68.0	64.6
	66.5	68.0	64.5
	66.6	68.0	64.8

Time Slot	Leq, 5min	L10	L90
21:30-21:45	66.7	68.1	64.8
	66.6	68.1	64.7
	66.7	68.1	64.6
21:45-22:00	66.7	68.2	64.8
	66.9	68.4	64.9
	66.8	68.2	64.9
22:00-22:15	67.0	68.4	65.1
	66.8	68.2	65.0
	67.0	68.4	65.2
22:15-22:30	66.8	68.1	65.0
	66.7	68.0	64.9
	66.5	68.0	64.6
22:30-22:45	66.7	68.0	64.9
	66.4	67.9	64.6
	66.6	68.1	64.7
22:45-23:00	66.5	68.1	64.4
	66.7	68.1	64.8
	66.4	67.9	64.4
Average	66.9	68.3	65.0

3) General Holidays (including Sundays) (0700-2300) Noise Level, dB(A)

Time Slot	Leq, 5min	L10	L90
0700-07:15	64.4	66.3	61.9
	64.3	66.2	62.0
	64.7	66.8	61.9
07:15-07:30	64.4	66.4	61.9
	64.9	66.8	62.5
	64.9	66.5	61.9
07:30-07:45	65.2	67.1	62.6
	65.3	67.3	62.7
	65.7	67.5	63.5
07:45-08:00	65.4	67.1	63.3
	65.6	67.4	63.4
	65.4	67.1	63.0

Time Slot	Leq, 5min	L10	L90
08:00-08:15	65.4	67.4	62.8
	65.8	67.4	63.9
	66.1	68.0	64.1
08:15-08:30	65.7	67.1	64.0
	66.2	68.0	64.1
	65.9	67.3	63.9
08:30-08:45	66.1	67.8	63.9
	66.0	67.7	63.9
	66.0	67.6	64.2
08:45-09:00	66.3	68.3	63.9
	66.3	68.0	64.3
	66.4	68.0	64.4
09:00-09:15	66.6	68.2	64.4
	66.6	68.0	64.3
	66.6	68.4	64.6
09:15-09:30	66.5	68.1	64.5
	66.5	68.2	64.8
	66.6	68.1	64.6
09:30-09:45	66.6	68.1	64.8
	66.7	68.0	65.0
	66.8	68.4	64.8
09:45-10:00	66.9	68.5	65.0
	66.9	68.4	65.1
	66.8	68.3	64.9
10:00-10:15	66.6	68.2	64.8
	66.8	68.4	64.9
	66.9	68.6	65.2
10:15-10:30	66.9	68.4	65.1
	66.9	68.4	65.2
	67.0	68.3	65.3
10:30-10:45	66.9	68.6	65.0
	66.9	68.4	65.0
	66.9	68.5	64.9
10:45-11:00	67.5	68.8	65.4
	67.1	68.6	65.3
	66.7	68.2	64.8

Time Slot	Leq, 5min	L10	L90
11:00-11:15	67.4	69.0	65.2
	67.1	68.6	65.4
	66.9	68.3	65.1
11:15-11:30	66.9	68.6	64.9
	67.3	68.8	65.4
	67.2	68.8	65.4
11:30-11:45	67.2	68.7	65.2
	67.2	68.7	65.3
	66.9	68.4	64.9
11:45-12:00	66.9	68.3	65.3
	67.3	68.9	65.1
	66.6	67.9	64.7
12:00-12:15	67.0	68.0	65.2
	67.3	68.2	65.5
	67.4	68.2	65.5
12:15-12:30	67.3	68.4	65.6
	67.3	68.5	65.3
	66.7	67.7	65.0
12:30-12:45	67.4	68.2	65.5
	67.0	68.0	65.6
	67.4	68.2	65.2
12:45-13:00	67.0	68.0	65.4
	67.3	68.4	65.7
	67.1	68.2	65.0
13:00-13:15	67.0	68.0	65.3
	67.2	68.1	65.2
	67.2	68.2	65.5
13:15-13:30	67.2	68.2	65.3
	67.4	68.8	65.5
	67.1	68.0	65.5
13:30-13:45	67.2	68.0	65.4
	67.6	68.6	65.6
	67.1	68.3	65.3
13:45-14:00	67.3	68.4	65.6
	67.3	68.3	65.5
	67.4	68.3	65.8

Time Slot	Leq, 5min	L10	L90
14:00-14:15	67.2	68.4	65.2
	67.3	68.0	65.5
	67.1	68.0	65.3
14:15-14:30	67.1	67.8	65.3
	67.3	68.2	65.6
	67.5	68.5	65.9
14:30-14:45	67.4	68.5	65.5
	67.5	68.4	65.6
	67.4	68.5	65.7
14:45-15:00	67.5	68.4	65.5
	67.3	68.2	65.6
	67.4	68.4	65.4
15:00-15:15	67.0	68.2	65.3
	67.8	68.6	65.7
	67.6	68.7	65.9
15:15-15:30	67.6	68.4	65.7
	67.3	68.1	65.6
	67.3	68.1	65.5
15:30-15:45	67.3	68.3	65.5
	67.3	68.2	65.8
	67.5	68.6	65.7
15:45-16:00	67.3	68.2	65.4
	67.2	68.1	65.4
	67.8	68.3	65.7
16:00-16:15	67.2	68.2	65.2
	67.6	68.5	65.5
	67.2	68.2	65.1
16:15-16:30	66.9	67.7	65.2
	67.4	68.6	65.6
	67.2	68.1	65.4
16:30-16:45	67.5	68.4	65.5
	67.2	68.2	65.4
	67.3	68.1	65.7
16:45-17:00	67.1	67.9	65.5
	67.3	68.3	65.7
	67.3	68.0	65.6

Time Slot	Leq, 5min	L10	L90
17:00-17:15	67.0	67.8	65.3
	66.8	67.8	64.9
	67.2	68.2	65.5
17:15-17:30	67.4	68.2	65.5
	67.2	68.2	65.4
	67.2	68.1	65.5
17:30-17:45	67.3	68.3	65.8
	67.2	68.1	65.4
	67.4	68.3	65.6
17:45-18:00	67.5	68.4	65.9
	67.2	68.2	65.2
	67.4	68.1	65.8
18:00-18:15	67.4	68.3	65.7
	67.4	68.3	65.5
	67.3	68.3	65.6
18:15-18:30	67.5	68.4	65.6
	67.0	68.0	65.4
	67.5	67.9	65.6
18:30-18:45	66.8	68.0	65.0
	66.7	67.7	64.9
	66.9	67.9	65.3
18:45-19:00	66.7	67.5	65.0
	66.9	67.9	65.0
	66.6	67.5	65.0
19:00-19:15	67.2	68.2	65.3
	66.8	67.8	64.8
	66.8	68.1	64.9
19:15-19:30	66.8	67.7	64.9
	66.9	67.9	65.3
	66.4	67.4	64.5
19:30-19:45	67.0	68.0	65.2
	66.7	67.6	64.8
	66.6	67.7	64.4
19:45-20:00	66.2	67.0	64.6
	66.5	67.5	64.7
	66.1	66.9	64.3

Time Slot	Leq, 5min	L10	L90
20:00-20:15	66.3	67.6	64.1
	66.2	67.1	64.1
	66.0	67.2	63.9
20:15-20:30	66.3	67.4	64.3
	66.1	67.1	64.0
	66.2	67.1	64.5
20:30-20:45	66.2	67.3	64.1
	66.1	67.1	64.3
	66.5	67.7	64.6
20:45-21:00	66.3	67.4	64.4
	66.7	67.7	64.6
	66.4	67.2	64.3
21:00-21:15	66.4	67.5	64.5
	66.9	67.4	64.5
	66.3	67.4	64.4
21:15-21:30	66.5	67.1	64.9
	66.7	67.9	64.7
	66.2	67.0	64.5
21:30-21:45	66.4	67.3	64.4
	66.5	67.4	64.3
	66.4	67.4	64.3
21:45-22:00	66.6	67.2	64.9
	66.8	67.9	65.1
	66.4	67.2	64.5
22:00-22:15	67.0	67.7	65.0
	66.4	67.3	64.4
	66.4	67.4	64.4
22:15-22:30	66.3	67.3	64.2
	66.8	67.7	64.6
	65.9	66.8	64.2
22:30-22:45	66.3	67.5	64.1
	66.3	67.1	64.5
	66.3	67.5	64.1
22:45-23:00	66.1	67.1	64.1
	66.0	66.9	64.2
	65.8	66.8	63.8

Time Slot	Leq, 5min	L10	L90
Average	66.8	68.0	64.9

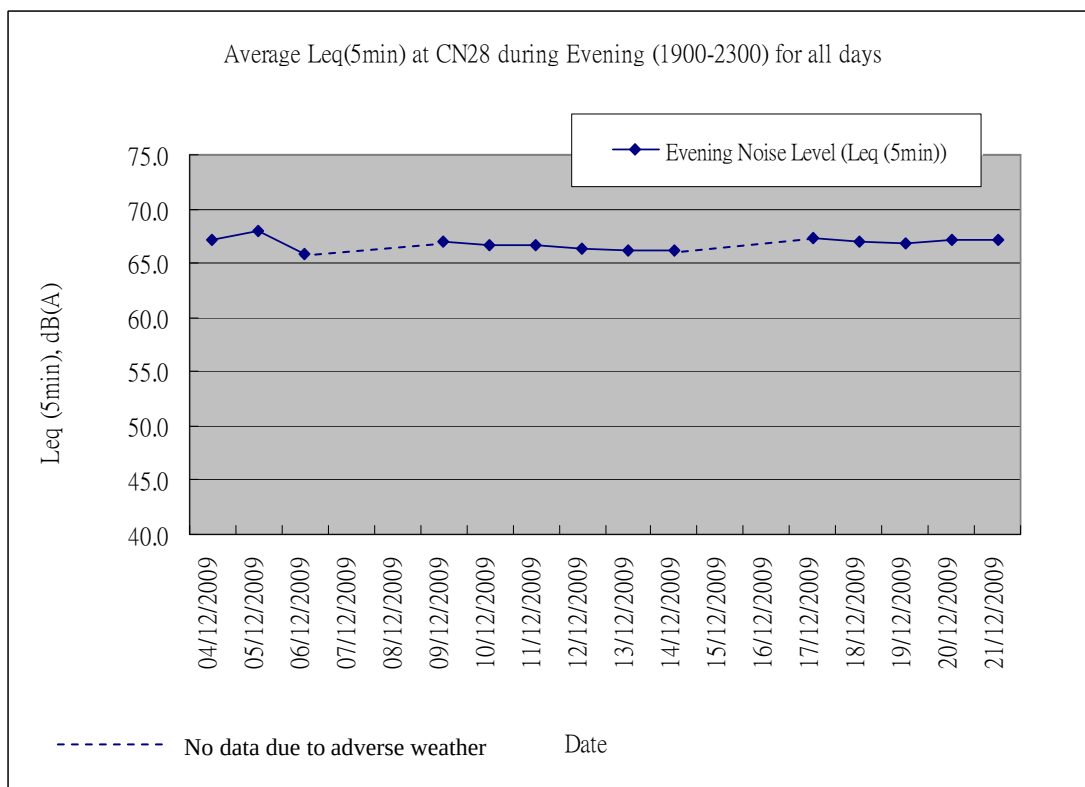
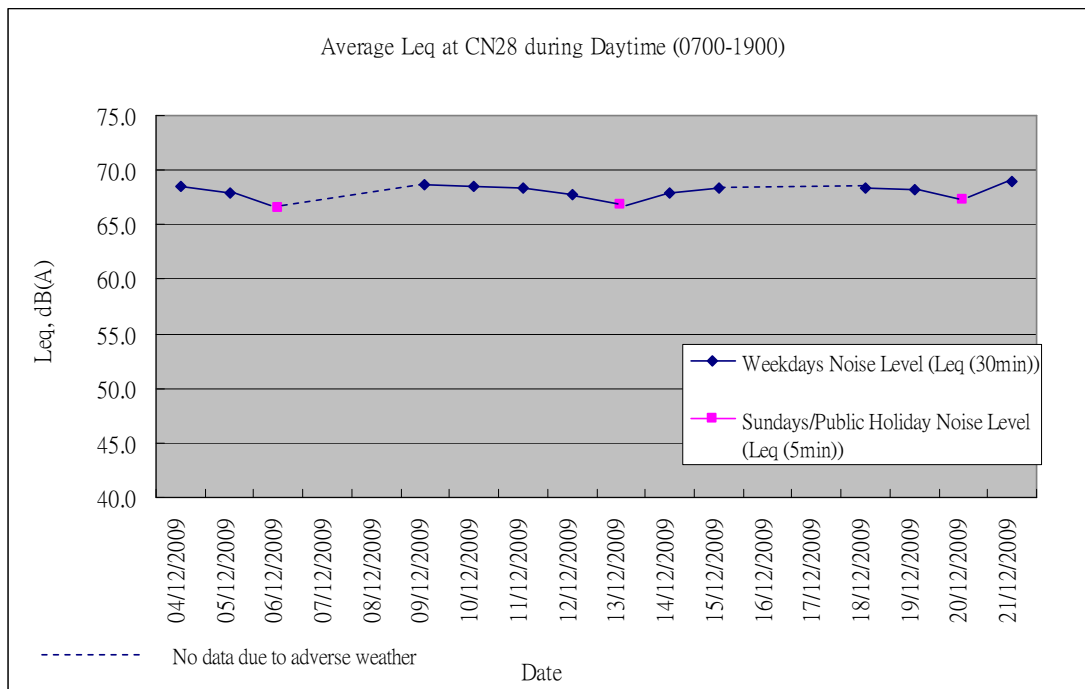
4) Night-time (for all days) Noise Level, dB(A)

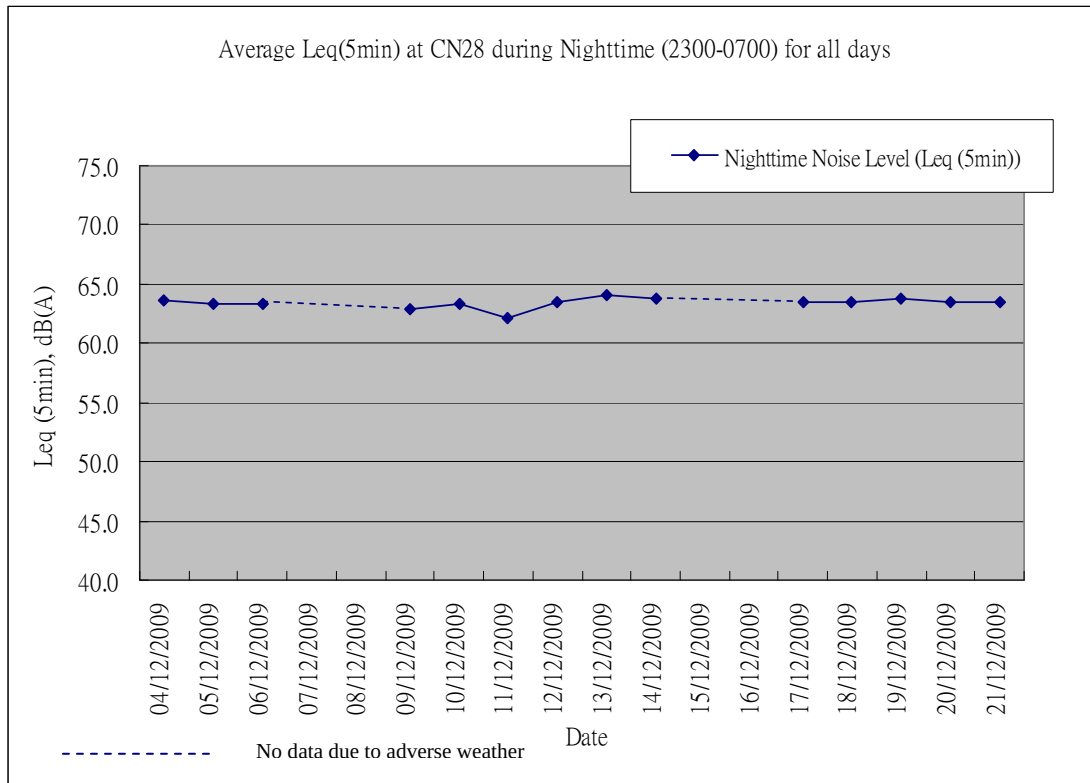
Time Slot	Leq, 5min	L10	L90
23:00-23:15	66.3	67.7	64.2
	66.3	67.6	64.1
	66.1	67.3	64.2
23:15-23:30	66.1	67.5	63.9
	66.1	67.5	63.9
	66.1	67.4	63.9
23:30-23:45	65.9	67.2	63.9
	65.7	67.1	63.6
	65.9	67.3	63.8
23:45-00:00	65.9	67.3	63.7
	65.6	67.0	63.4
	65.5	67.0	63.2
00:00-00:15	65.4	67.0	63.2
	65.3	66.9	62.9
	65.1	66.7	62.7
00:15-00:30	65.2	66.6	62.7
	64.7	66.1	62.3
	64.5	66.3	61.9
00:30-00:45	64.7	66.2	61.9
	63.9	65.5	61.1
	63.9	65.6	61.2
00:45:01:00	63.7	65.4	61.1
	63.4	65.1	60.6
	63.3	65.1	60.4
01:00-01:15	63.4	65.3	60.3
	63.2	65.0	60.2
	63.1	64.8	60.3
01:15-01:30	62.8	64.6	60.0
	62.8	64.6	59.4
	62.5	64.2	59.3

Time Slot	Leq, 5min	L10	L90
01:30-01:45	62.8	64.4	59.5
	62.4	64.3	59.0
	62.5	64.3	59.1
01:45-02:00	62.2	64.0	59.0
	61.8	63.7	58.6
	61.9	63.8	58.8
02:00-02:15	61.9	63.6	58.9
	61.7	63.6	58.5
	61.8	63.5	59.0
02:15-02:30	61.5	63.3	58.5
	61.6	63.6	58.3
	61.7	63.5	58.6
02:30-02:45	61.8	63.7	58.4
	61.4	63.5	57.9
	61.2	63.3	57.8
02:45-03:00	61.5	63.3	58.2
	61.1	63.0	57.8
	61.1	63.0	58.0
03:00-03:15	61.1	63.2	57.7
	61.0	62.8	58.0
	60.7	62.6	57.5
03:15-03:30	60.7	62.7	57.5
	60.4	62.4	57.2
	60.6	62.7	57.2
03:30-03:45	60.7	62.6	57.7
	60.6	62.5	57.4
	60.7	62.7	57.6
03:45-04:00	60.9	62.9	57.5
	60.8	62.7	57.7
	60.6	62.5	57.4
04:00-04:15	60.6	62.6	57.5
	60.7	62.6	57.7
	60.7	62.5	57.4
04:15-04:30	60.5	62.4	57.5
	60.8	62.7	57.5
	60.8	62.6	57.5

Time Slot	Leq, 5min	L10	L90
04:30-04:45	61.1	62.9	58.1
	61.0	62.9	57.7
	60.8	62.6	57.5
04:45-05:00	61.1	63.1	58.0
	61.3	63.2	58.3
	61.4	63.3	58.2
05:00-05:15	61.2	63.0	58.4
	61.5	63.3	58.5
	62.0	63.9	58.8
05:15-05:30	61.8	63.7	58.5
	62.0	63.7	59.2
	62.2	64.0	59.1
05:30-05:45	62.2	64.0	59.5
	62.1	64.0	59.0
	62.2	63.9	59.1
05:45-06:00	62.7	64.6	59.7
	62.8	64.6	59.9
	63.0	64.8	60.1
06:00-06:15	63.0	64.7	59.9
	63.3	65.2	60.3
	63.3	65.2	60.5
06:15-06:30	63.5	65.1	60.7
	63.9	65.7	61.1
	64.2	65.9	61.6
06:30-06:45	64.4	66.1	61.6
	64.6	66.1	62.2
	64.7	66.3	62.4
06:45-07:00	65.3	66.7	63.0
	65.2	66.7	63.0
	65.5	67.0	63.3
Average	63.2	64.9	60.5

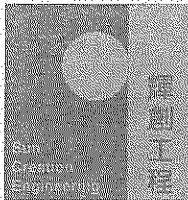
Log average was used





Appendix B

Calibration Certificates for Monitoring Equipments



輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C093598

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Calibrator

Manufacturer : Rion

Model No. : NC-73

Serial No. : 10786708

*has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C093598.*

The equipment is supplied by

Co. Name : Envirotech Services Co.

*Address : Shop 6, G/F., Casio Mansion, 209 Shaaukeiwan Road,
Hong Kong*

Send to: Winnie RO		Ref:
Received by:	Date:	
Action taken:		
By:	Date:	Action:

Date Received by ERM
IC-370
Login Ref

Date of Issue : 10 July 2009

Certified by : H C Chan

The test equipment used for calibration are traceable to the National Standards as specified in this report.
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Calibration and Testing Laboratory of Sun Creation Engineering Limited

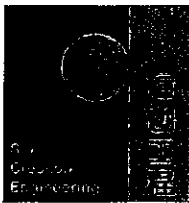
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

Tel: 2927 2606

Fax: 2744 8986

E-mail: callab@suncreation.com

Website: www.suncreation.com



輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C093598

Calibration Report

ITEM TESTED

DESCRIPTION : Sound Level Calibrator
MANUFACTURER : Rion
MODEL NO. : NC-73
SERIAL NO. : 10786708

TEST CONDITIONS

AMBIENT TEMPERATURE : $(23 \pm 2)^{\circ}\text{C}$
LINE VOLTAGE : ---

RELATIVE HUMIDITY : $(55 \pm 20)\%$

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 9 July 2009

JOB NO. : IC09-1664

TEST RESULTS

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

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

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

Tested by :

K/C Lee

Date : 10 July 2009

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

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

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Page 1 of 2



Calibration Report

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours before the commencement of the test.
2. The results presented are the mean of 3 measurements at each calibration point.
3. Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
TST150A	Measuring Amplifier	C080751
CL129	Universal Counter	C093121
CL281	Multifunction Acoustic Calibrator	DC090052

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	93.9	± 0.5	± 0.2

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (Hz)	Mfr's Spec. (Hz)	Uncertainty of Measured Value (Hz)
1	0.991 6	1 kHz $\pm 2\%$	± 0.1

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

Note :

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



輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C093473

Certificate of Calibration

This is to certify that the equipment

Description : Precision Integrating Sound Level Meter

Manufacturer : Rion

Model No. : NL-18

Serial No. : 00360030

*has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C093473.*

The equipment is supplied by

Co. Name : Envirotech Services Co.

*Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road,
Hong Kong*

Date of Issue : 6 July 2009

*Certified by : Chan H C
H C Chan*

The test equipment used for calibration are traceable to the National Standards as specified in this report.
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Calibration and Testing Laboratory of Sun Creation Engineering Limited

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輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C093473

Calibration Report

ITEM TESTED

DESCRIPTION : Precision Integrating Sound Level Meter
MANUFACTURER : Rion
MODEL NO. : NL-18
SERIAL NO. : 00360030

TEST CONDITIONS

AMBIENT TEMPERATURE : $(23 \pm 2)^{\circ}\text{C}$
LINE VOLTAGE : ---

RELATIVE HUMIDITY : $(55 \pm 20)\%$

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 3 July 2009

JOB NO. : IC09-1664

TEST RESULTS

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

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

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

Tested by :

K/C Lee

Date : 6 July 2009

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

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Website: www.suncreation.com

Page 1 of 4



Calibration Report

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
2. Self-calibration using the internal standard (After Adjustment) was performed before the test 6.1.2 - 6.4.
3. The results presented are the mean of 3 measurements at each calibration point.
4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C090024
CL281	Multifunction Acoustic Calibrator	DC090052

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)		IEC 651 Type 1 Spec. (dB)
Range (dB)	Mode	Weight	Response	Level (dB)	Freq. (kHz)	Before Adjustment	After Adjustment	
50 - 110	LA	A	Fast	94.00	1	93.3	94.1	± 0.7

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Weight	Response	Level (dB)	Freq. (kHz)	
60 - 120	LA	A	Fast	94.00	1	94.2 (Ref.)
				104.00		104.2
				114.00		114.2

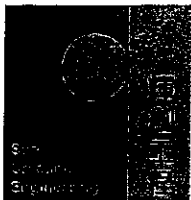
IEC 651 Type 1 Spec. : ± 0.4 dB per 10 dB step and ± 0.7 dB for overall different.

6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 651 Type 1 Spec. (dB)
Range (dB)	Mode	Weight	Response	Level (dB)	Freq. (kHz)		
50 - 110	LA	A	Fast	94.00	1	94.1	Ref.
			Slow			94.0	± 0.1

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.



Calibration Report

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT	IEC 651 Type 1
Range (dB)	Mode	Weight	Response	Level (dB)	Burst Duration	Reading (dB)	Spec. (dB)
50 -110	LA	A	Fast	106.00	Continuous	106.0	Ref.
	LAmx				200 ms	105.0	-1.0 ± 1.0
	LA	Slow			Continuous	106.0	Ref.
	LAmx				500 ms	102.4	-4.1 ± 1.0

6.3 Frequency Weighting

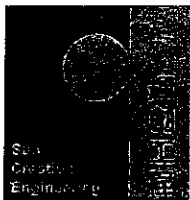
6.3.1 A-Weighting

UUT Setting				Applied Value		UUT	IEC 651 Type 1
Range (dB)	Mode	Weight	Response	Level (dB)	Freq.	Reading (dB)	Spec. (dB)
40 - 100	LA	A	Fast	94.00	31.5 Hz	54.7	-39.4 ± 1.5
					63 Hz	68.0	-26.2 ± 1.5
					125 Hz	78.0	-16.1 ± 1.0
					250 Hz	85.4	-8.6 ± 1.0
					500 Hz	90.8	-3.2 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	95.3	+1.2 ± 1.0
					4 kHz	94.9	+1.0 ± 1.0
					8 kHz	91.7	-1.1 (+1.5 ; -3.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT	IEC 651 Type 1
Range (dB)	Mode	Weight	Response	Level (dB)	Freq.	Reading (dB)	Spec. (dB)
40 - 100	LC	C	Fast	94.00	31.5 Hz	91.4	-3.0 ± 1.5
					63 Hz	93.6	-0.8 ± 1.5
					125 Hz	94.1	-0.2 ± 1.0
					250 Hz	94.2	0.0 ± 1.0
					500 Hz	94.2	0.0 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	93.9	-0.2 ± 1.0
					4 kHz	93.1	-0.8 ± 1.0
					8 kHz	89.8	-3.0 (+1.5 ; -3.0)

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.



Calibration Report

6.4 Time Averaging

UUT Setting				Applied Value					UUT	IEC 60804
Range (dB)	Mode	Freq. Weight	Integrating Time	Freq. (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)	Reading (dB)	Type 1 Spec. (dB)
50 - 110	LAeq	A	10 sec.	4	1	1/10	110.0	100	100.2	± 0.5
			1/10 ²			90		90.2	± 0.5	
			60 sec.			1/10 ³		80	79.8	± 1.0
			5 min.			1/10 ⁴		70	70.2	± 1.0

Remarks : - Mfr's Spec. : IEC 651 Type 1 & IEC 60804 Type 1

- Uncertainties of Applied Value : 94 dB : 31.5Hz - 125 Hz : ± 0.35 dB
250 Hz - 500 Hz : ± 0.30 dB
1 kHz : ± 0.20 dB
2 kHz - 4 kHz : ± 0.35 dB
8 kHz : ± 0.45 dB
104 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)
114 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)
Burst equivalent level : ± 0.2 dB (Ref. 110 dB continuous sound level)

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

Note :

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

**輝創工程有限公司****Sun Creation Engineering Limited Calibration and Testing Laboratory**

Certificate No. : C095683

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Meter

Manufacturer : Rion

Model No. : NL-31

Serial No. : 00983400

*has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C095683.*

The equipment is supplied by

Co. Name : Envirotech Services Co.

*Address : Shop 6, G/F., Casio Mansion, 209 Shauketwan Road,
Hong Kong*

Date of Issue : 23 October 2009

Certified by :

K C Lee

The test equipment used for calibration are traceable to the National Standards as specified in this report.
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Calibration and Testing Laboratory of Sun Creation Engineering Limited

Unit 47, Tai Yee Chai Wai Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2964 8986 E-mail: calandtest@suncreation.com website: www.suncreation.com

Send to:	Ref:
Received by:	Date:
Action taken:	
Copy to:	Date:
Action req:	

**輝創工程有限公司****Sun Creation Engineering Limited Calibration and Testing Laboratory**

Report No. : C095683

Calibration Report

ITEM TESTED

DESCRIPTION : Sound Level Meter
MANUFACTURER : Rion
MODEL NO. : NL-31
SERIAL NO. : 00983400

TEST CONDITIONS

AMBIENT TEMPERATURE : $(23 \pm 2)^{\circ}\text{C}$
LINE VOLTAGE : ---

RELATIVE HUMIDITY : $(55 \pm 20)\%$ **TEST SPECIFICATIONS**

Calibration check

DATE OF TEST : 22 October 2009**JOB NO.** : IC09-2709**TEST RESULTS**

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

Tested by :


L L Cheung

Date : 23 October 2009

The test equipment used for calibration are traceable to the National Standards as specified in this report.
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Calibration and Testing Laboratory of Sun Creation Engineering Limited

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Page 1 of 4



輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C095683

Calibration Report

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
2. Self-calibration was performed before the test.
3. The results presented are the mean of 3 measurements at each calibration point.
4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C090024
CL281	Multifunction Acoustic Calibrator	DC090052

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT	IEC 61672
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Class 1 Spec. (dB)
30 - 120	L _A	A	Fast	94.00	1	94.2	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
30 - 120	L _A	A	Fast	94.00	1	94.2 (Ref.)
				104.00		104.2
				114.00		114.2

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

6.2 Time Weighting

UUT Setting				Applied Value		UUT	IEC 61672
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Class 1 Spec. (dB)
30 - 120	L _A	A	Fast	94.00	1	94.2	Ref.
			Slow			94.2	± 0.3

The test equipment used for calibration are traceable to the National Standards as specified in this report.
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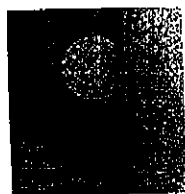
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輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C095683

Calibration Report

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L _A	A	Fast	94.00	31.5 Hz	54.3	-39.4 ± 2.0
					63 Hz	67.7	-26.2 ± 1.5
					125 Hz	77.9	-16.1 ± 1.5
					250 Hz	85.4	-8.6 ± 1.4
					500 Hz	90.9	-3.2 ± 1.4
					1 kHz	94.2	Ref.
					2 kHz	93.5	+1.2 ± 1.6
					4 kHz	93.3	+1.0 ± 1.6
					8 kHz	93.2	-1.1 (+2.1; -3.1)
					12.5 kHz	90.3	-4.3 (+3.0; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L _C	C	Fast	94.00	31.5 Hz	90.9	-3.0 ± 2.0
					63 Hz	93.3	-0.8 ± 1.5
					125 Hz	94.0	-0.2 ± 1.5
					250 Hz	94.2	0.0 ± 1.4
					500 Hz	94.2	0.0 ± 1.4
					1 kHz	94.2	Ref.
					2 kHz	94.1	-0.2 ± 1.6
					4 kHz	93.5	-0.8 ± 1.6
					8 kHz	91.3	-3.0 (+2.1; -3.1)
					12.5 kHz	88.4	-6.2 (+3.0; -6.0)

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

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輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C095683

Calibration Report

Remarks : - Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value : 94 dB	31.5 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
104 dB	1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	1 kHz	: ± 0.10 dB (Ref. 94 dB)

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

Note :

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

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

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E-mail: cal@suncreation.com

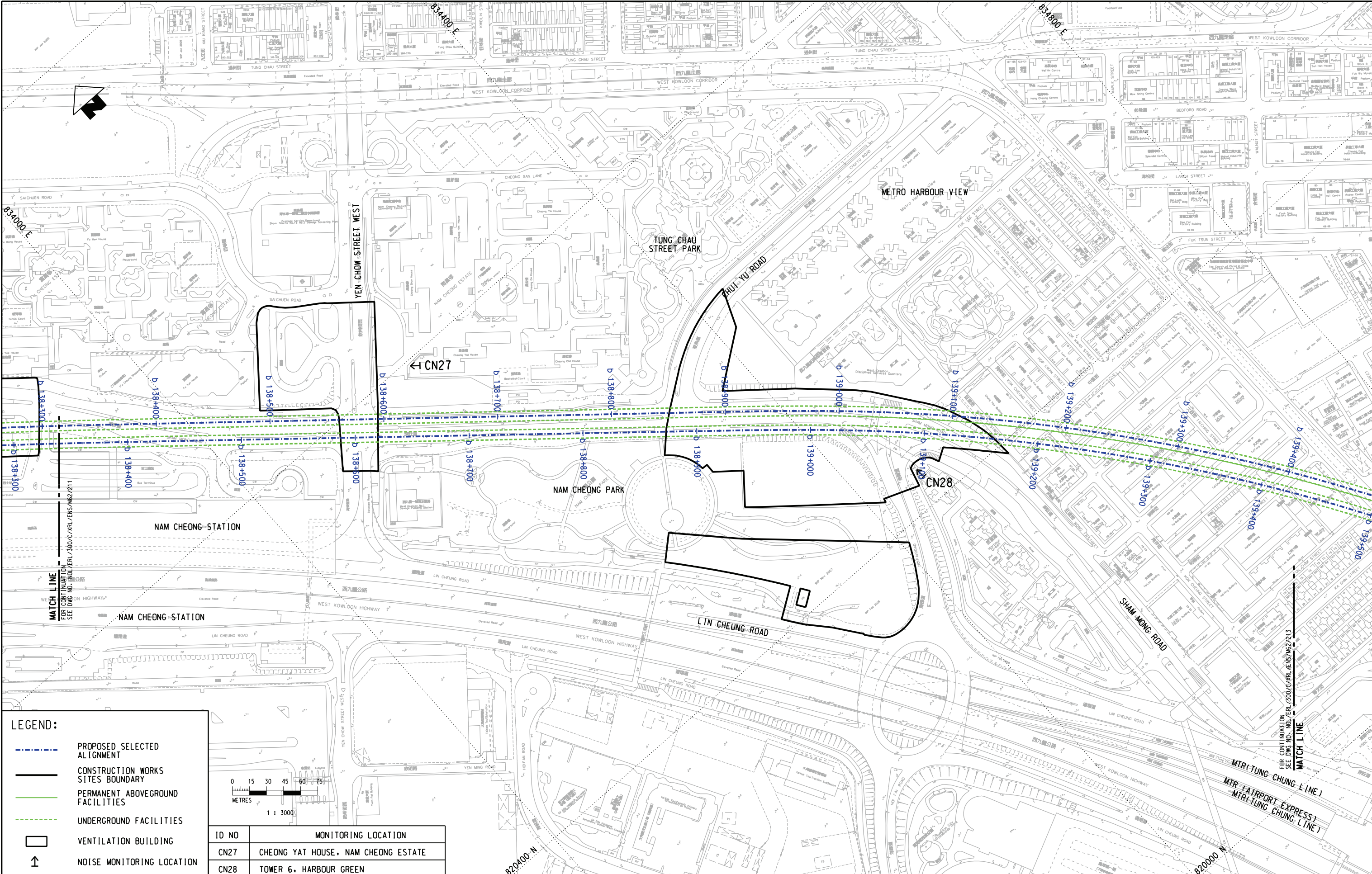
Website: www.suncreation.com

Page 4 of 4

Appendix C

Figures

Re:ustinet\mtr\p1\otriver\windows\3\ colour\p1 93723
Default 2009-5-9 93723
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p1\otriver\3\colour\p1\otriver\windows\3\ colour\p1 93723



LEGEND:

- PROPOSED SELECTED ALIGNMENT
- CONSTRUCTION WORKS SITES BOUNDARY
- PERMANENT ABOVEGROUND FACILITIES
- UNDERGROUND FACILITIES
- VENTILATION BUILDING
- NOISE MONITORING LOCATION

0 15 30 45 60 75
METRES
1 : 3000

ID NO	MONITORING LOCATION
CN27	CHEONG YAT HOUSE, NAM CHEONG ESTATE
CN28	TOWER 6, HARBOUR GREEN

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