



## REPORT 160095R1

Revision 0

# Patrick Port Botany Terminal Biannual Environmental Noise Compliance Monitoring May 2018

PREPARED FOR:
Patrick Port Botany Terminal
PO Box 197
Botany NSW 1455

29 May 2018



# Patrick Port Botany Terminal Biannual Environmental Noise Compliance Monitoring May 2018

### PREPARED BY:

Rodney Stevens Acoustics Pty Ltd

Telephone: 61 2 9943 5057 Facsimile 61 2 9475 1019 Email: info@rodneystevensacoustics.com.au Web: www.rodneystevensacoustics.com.au

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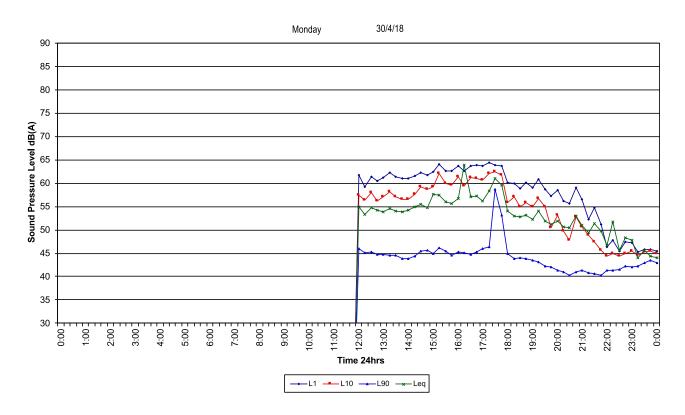
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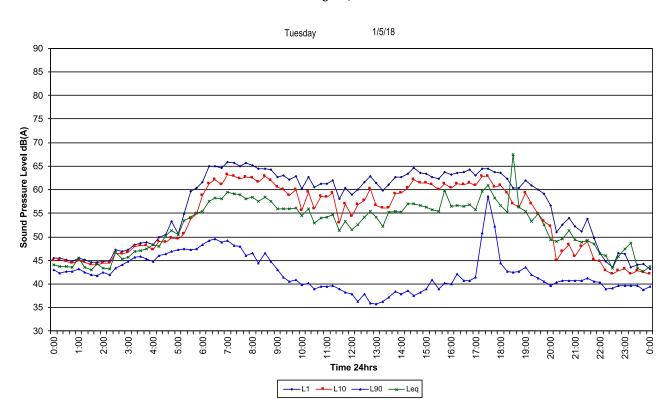
Reference	Status	Date	Prepared	Checked	Authorised
160095R1	Revision 0	29 May 2018	Thomas Carney	Desmond Raymond	Rodney Stevens



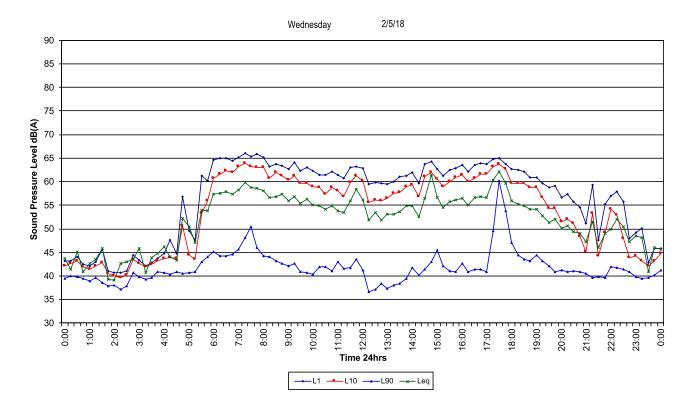
# Appendix F – Unattended Logger Results – Jennings Street

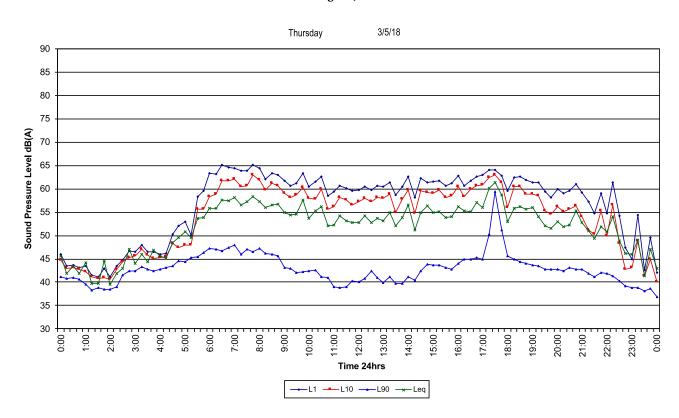
### 46 Jennings St, Matraville



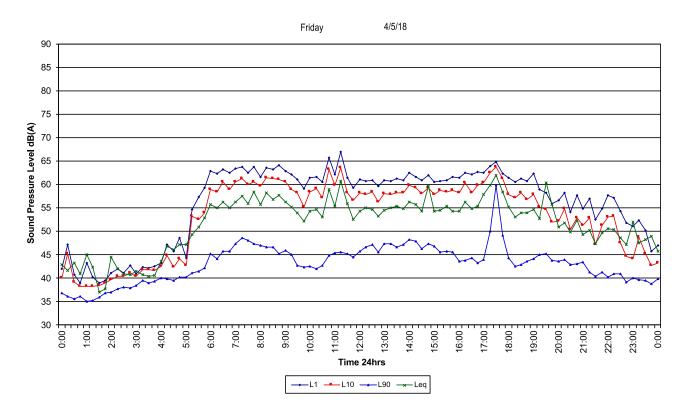


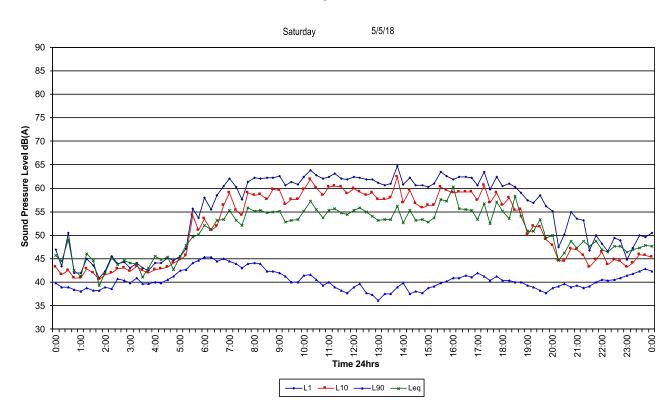




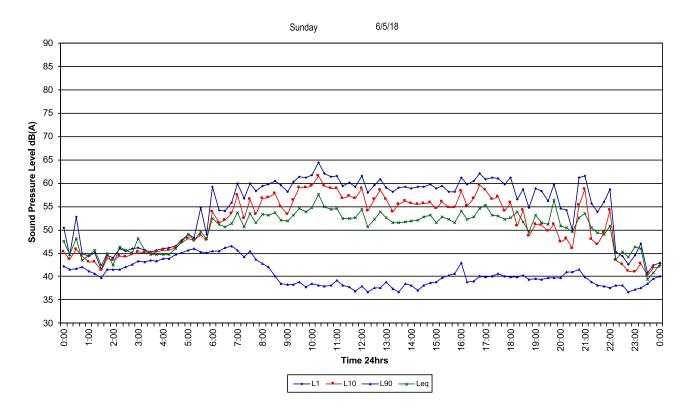


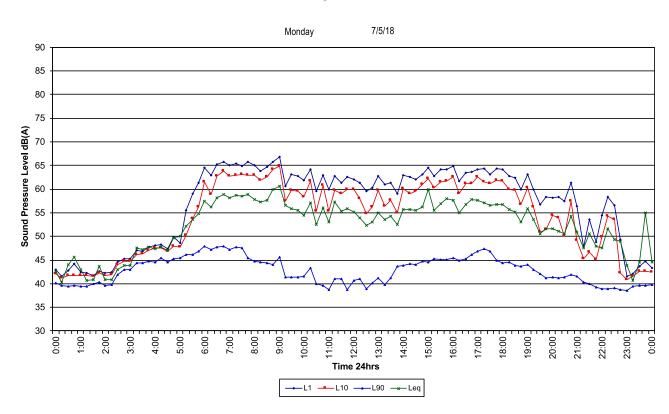




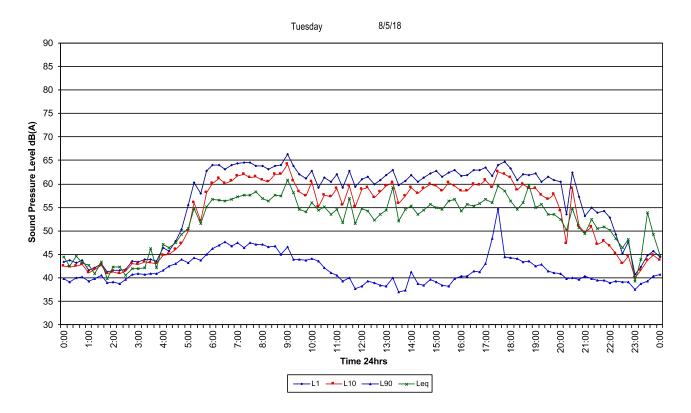


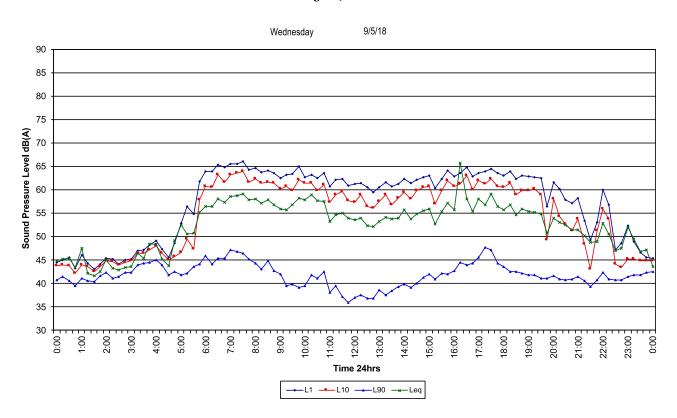




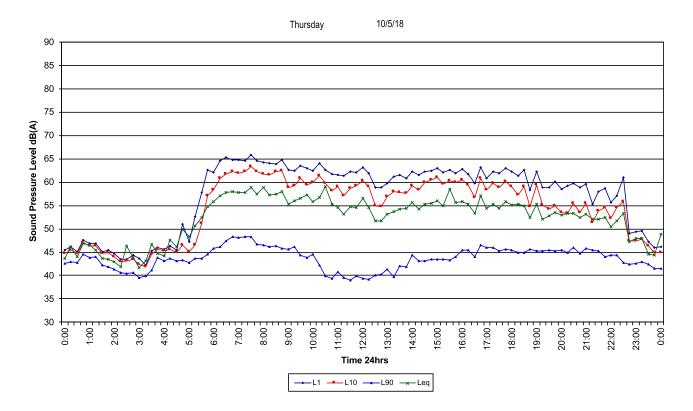


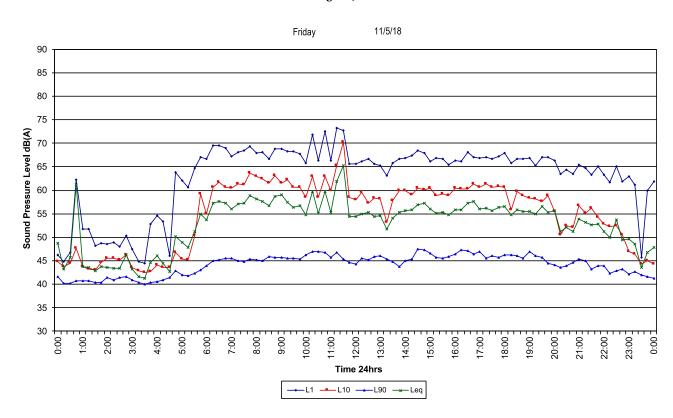




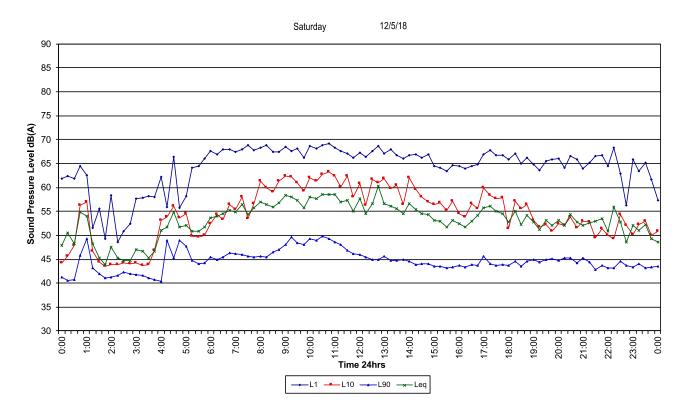


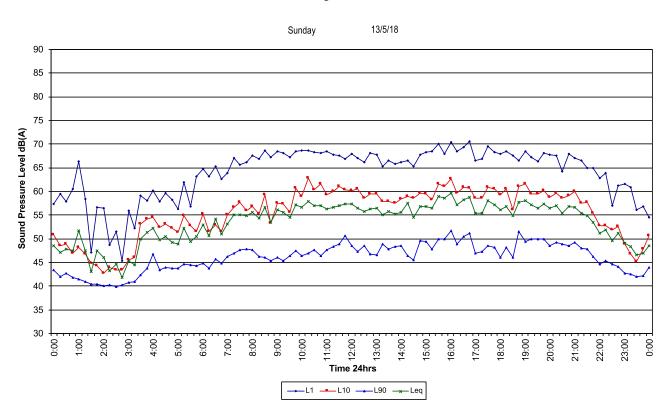




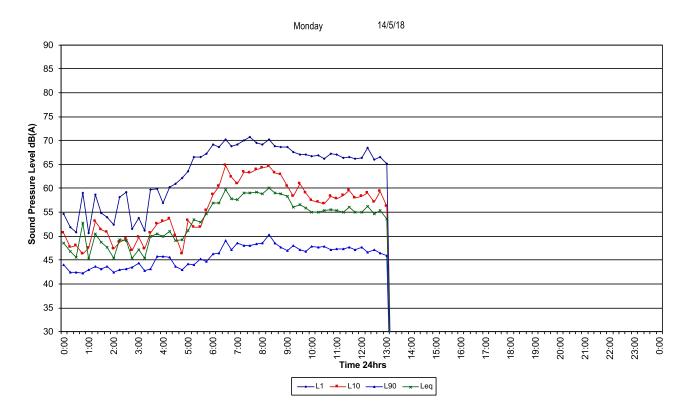








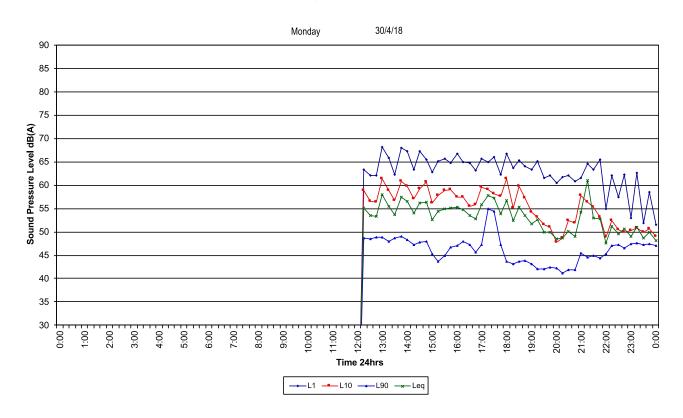


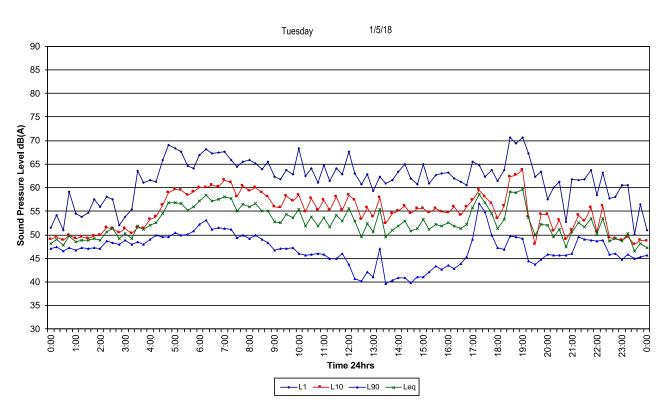




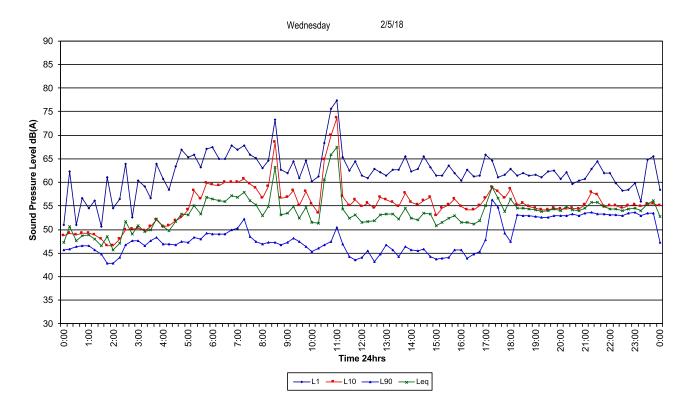
# Appendix G - Unattended Logger Results - Military Road

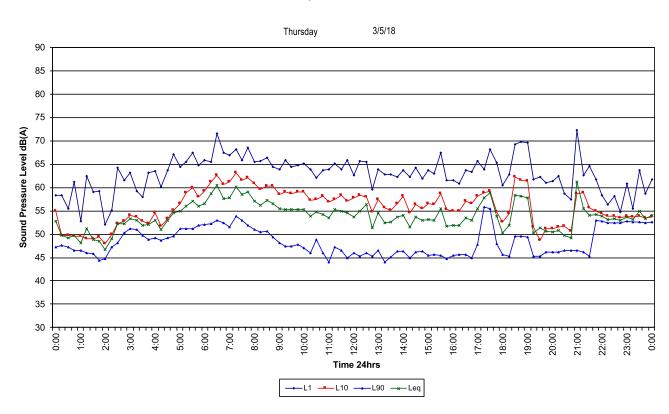
### Military Road, Matraville



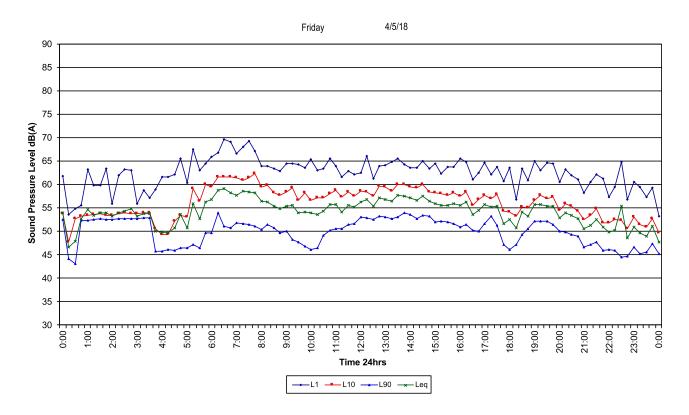


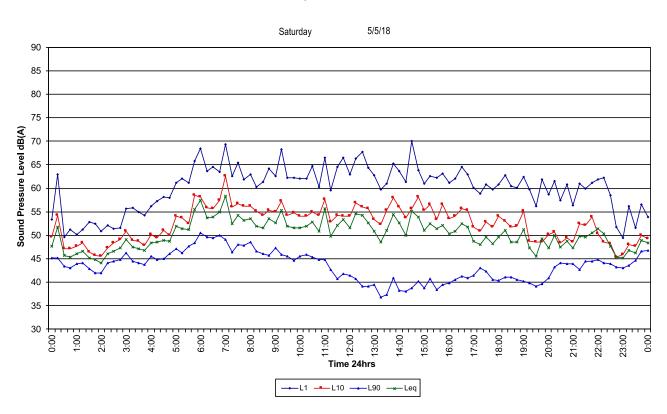




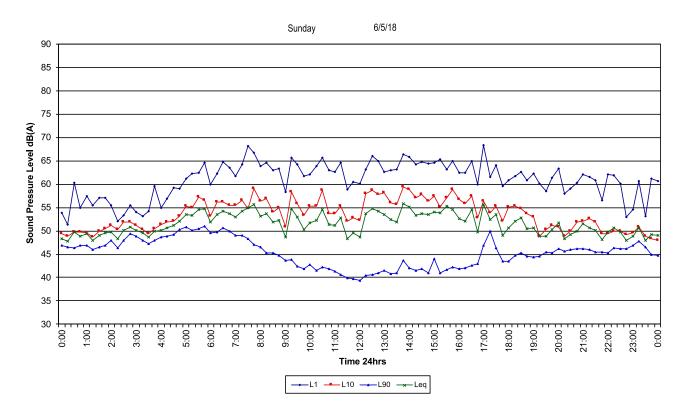


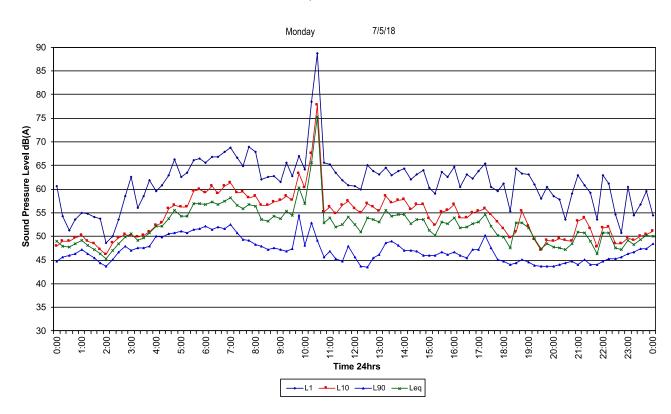




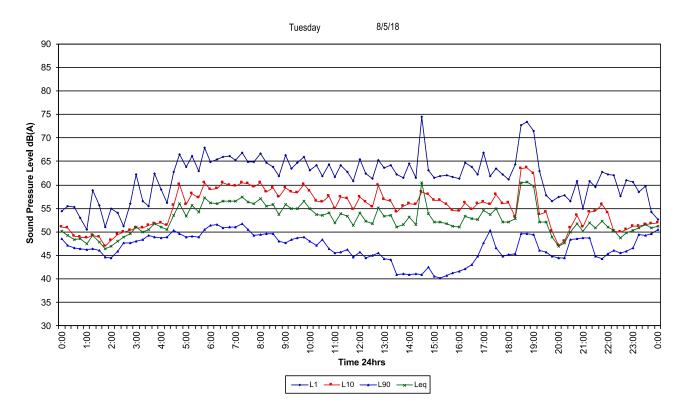


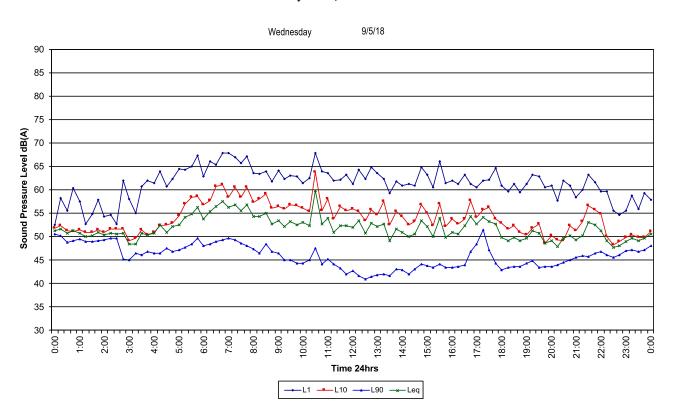




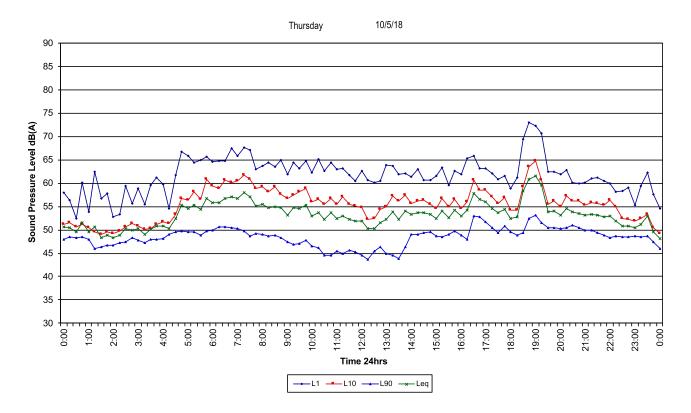


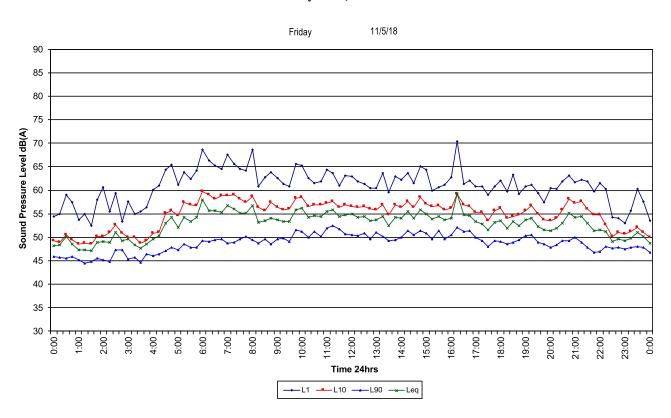




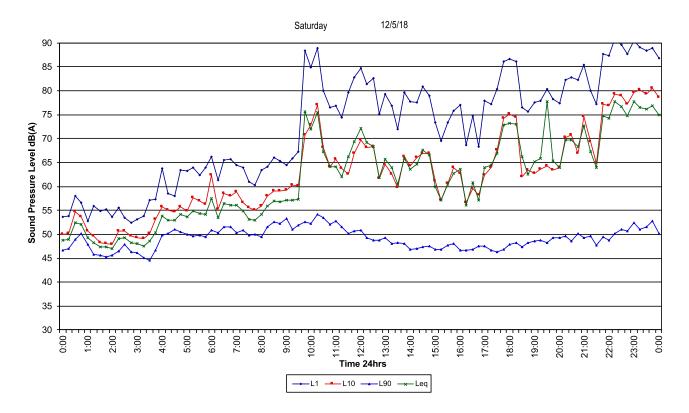


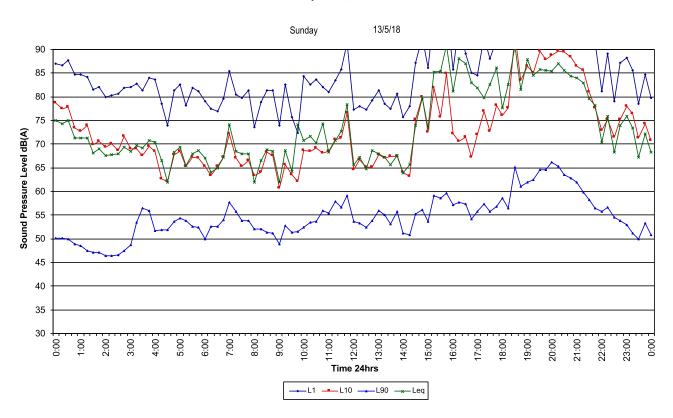




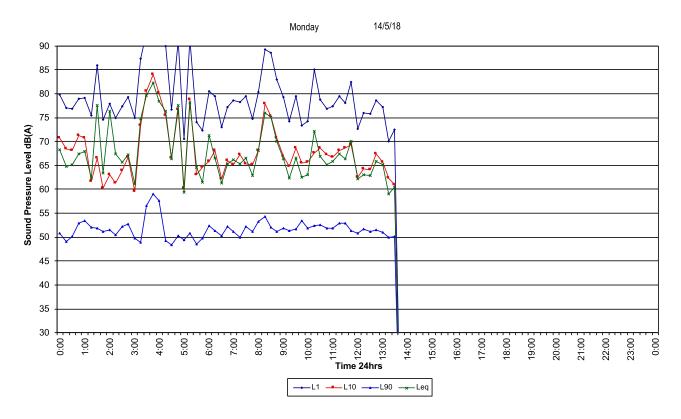














# Appendix H – Calibration Certificates



Acoustic Research Level 7 Building 2 423 Pennant Hills Rd Pennant Hills NSW AUSTRALIA 2120 Ph: +61294840800 A.B.N. 65160399119 Labs Pty Ltd | www.acousticresearch.com.au

### **Sound Level Meter** IEC 61672-3.2013

### Calibration Certificate

Calibration Number C17536

Client Details Rodney Stevens Acoustics Pty Ltd

1 Majura Close

St Ives Chase NSW 2075

Equipment Tested/ Model Number: Rion NL-42EX Instrument Serial Number: 00710677 Microphone Serial Number: 147121 Pre-amplifier Serial Number: 33998

**Pre-Test Atmospheric Conditions** Ambient Temperature: 22.9°C Relative Humidity: 47.7% Barometric Pressure: 99.47kPa Post-Test Atmospheric Conditions Ambient Temperature: 22.2°C Relative Humidity: 45.9% Barometric Pressure: 99.42kPa

±0.05°C

±0.017kPa

Calibration Technician: Jason Gomes Calibration Date: 13/10/2017

Secondary Check: Riley Cooper Report Issue Date: 17/10/2017

### Approved Signatory:

Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 2 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full requirements of IEC 61672-1-2002 because evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1.2002 and because the periodic tests of IEC 61672-3:2006 cover only a limited subset of the specifications in IEC 61672-1:2002

Least Uncertainties of Measurement

Acoustic Tests
31.5 Hz to 8kHz **Environmental Conditions** ±0.16dB Temperature Relative Humidity 12.5kHz 16kHz ±0.29dB Barometric Pressure

Electrical Tests
31.5 Hz to 20 kHz +0.12dB

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report. Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172 Accredited for compliance with ISO/IEC 17025.

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.





> Sound Level Meter IEC 61672-3.2013

# **Calibration Certificate**

Calibration Number C17322

Rodney Stevens Acoustics Pty Ltd **Client Details** 

1 Majura Close

St Ives Chase NSW 2075

Rion NL-42EX Equipment Tested/ Model Number:

00572558 Instrument Serial Number: Microphone Serial Number: 170393 Pre-amplifier Serial Number: 72896

Approved Signatory:

**Pre-Test Atmospheric Conditions** 

Ambient Temperature: 22.2°C Relative Humidity: 36.6%

Barometric Pressure: 99.76kPa

**Post-Test Atmospheric Conditions** 

Ambient Temperature: 22.8°C 35.9% Relative Humidity: 99.65kPa **Barometric Pressure:** 

Calibration Technician: Lucky Jaiswal Calibration Date: 03/07/2017

Secondary Check: Riley Cooper Report Issue Date: 04/07/2017

Juan Aguero

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 2 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full requirements of IEC 61672-1:2002 because evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002 and because the periodic tests of IEC 61672-3:2006 cover only a limited subset of the specifications in IEC 61672-1:2002.

### Least Uncertainties of Measurement -

Acoustic Tests 31.5 Hz to 8kHz ±0.16dB 12.5kHz  $\pm 0.2dB$ ±0.29dB 16kH= Electrical Tests

±0.12dB

**Environmental Conditions** Temperature Relative Humidity Barometric Pressure

±0.05°C ±0.46% ±0.017kPa

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

This calibration certificate is to be read in conjunction with the calibration test report.



31.5 Hz to 20 kHz

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# **Sound Level Meter** IEC 61672-3.2006

# **Calibration Certificate**

Calibration Number C16716

Rodney Stevens Acoustics Pty Ltd Client Details

1 Majura Close

St Ives Chase NSW 2075

Equipment Tested/ Model Number: Rion NL-42EX 00546393 Instrument Serial Number: Microphone Serial Number: 152907

Pre-amplifier Serial Number: 46605

**Pre-Test Atmospheric Conditions** Ambient Temperature: 23.5°C Relative Humidity: 51.6% Barometric Pressure: 98.97kPa **Post-Test Atmospheric Conditions** Ambient Temperature: 23.6°C Relative Humidity: 50.8% 98.87kPa **Barometric Pressure:** 

Vicky Jaiswal Calibration Technician: Calibration Date: 09/01/2017

Secondary Check: Riley Cooper Report Issue Date: 10/01/2017

Approved Signatory:

Juan Aguero

	,		
Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
10: Self-generated noise	Pass	14: Level linearity on the reference level range	Pass
11: Acoustical tests of a frequency weighting	Pass	15: Level linearity incl. the level range control	Pass
12: Electrical tests of frequency weightings	Pass	16: Toneburst response	Pass
13: Frequency and time weightings at 1 kHz	Pass	17: Peak C sound level	Pass
		18: Overload Indication	Pass

The sound level meter submitted for testing has successfully completed the class 2 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full requirements of IEC 61672-1:2002 because evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002 and because the periodic tests of IEC 61672-3:2006 cover only a limited subset of the specifications in IEC 61672-1:2002.

Least Uncertainties of Measurement

Acoustic Tests
31.5 Hz to 8kHz
12.5kHz ±0.12dB 16kHz Electrical Tests 31.5 Hz to 20 kHz ±0.31dB ±0.12dB

**Environmental Conditions** ±0.05°C Temperature Relative Humidity +0 46%  $\pm 0.017kPa$ Barometric Pressure

This calibration certificate is to be read in conjunction with the calibration test report.



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> Sound Level Meter IEC 61672-3.2013

# Calibration Certificate

46604

Calibration Number C17335

Client Details Rodney Stevens Acoustics Pty Ltd

1 Majura Close STIVES NSW 2075

Rion NL-42EX Equipment Tested/ Model Number: Instrument Serial Number: 00133013 162572 Microphone Serial Number:

Pre-amplifier Serial Number:

**Pre-Test Atmospheric Conditions** Ambient Temperature: 23°C Relative Humidity: 38.8% Barometric Pressure: 98.93kPa Post-Test Atmospheric Conditions Ambient Temperature: 23°C Relative Humidity: 37.7% Barometric Pressure: 98.94kPa

Calibration Technician: Lucky Jaiswal Secondary Check: Sandra Minto Report Issue Date: 05/07/2017 Calibration Date: 04/07/2017

Approved Signatory :

Juan Aguero

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 2 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full requirements of IEC 61672-1:2002 because evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002 and because the periodic tests of IEC 61672-3:2006 cover only a limited subset of the specifications in IEC 61672-1:2002.

Least Uncertainties of Measurement

**Environmental Conditions** Acoustic Tests 31.5 Hz to 8kHz 12.5kHz ±0.16dB Temperature Relative Humidity ±0.2dB ±0.46% ±0.29dB Barometric Pressure ±0.017kPa 16kH= **Electrical Tests** 

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

±0.12dB

31.5 Hz to 20 kHz

This calibration certificate is to be read in conjunction with the calibration test report. Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172. Accredited for compliance with ISO/IEC 17025.

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Australian/national standards

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# Sound Level Meter IEC 61672-3.2013

# **Calibration Certificate**

Calibration Number C17321

Rodney Stevens Acoustics Pty Ltd Client Details

1 Majura Close

St Ives Chase NSW 2075

Rion NL-42EX Equipment Tested/ Model Number: 00572559 Instrument Serial Number: 170395 Microphone Serial Number: Pre-amplifier Serial Number: 72897

**Pre-Test Atmospheric Conditions** Ambient Temperature: 21.4°C Relative Humidity: 42.9% Barometric Pressure: 99.19kPa Post-Test Atmospheric Conditions Ambient Temperature: 21.5°C Relative Humidity: 42.3% Barometric Pressure: 99.15kPa

Calibration Technician: Lucky Jaiswal Calibration Date: 04/07/2017

Secondary Check: Riley Cooper Report Issue Date: 04/07/2017

Approved Signatory:

Juan Aguero

	MI.		
Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 2 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full requirements of IEC 61672-1:2002 because evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1.2002 and because the periodic tests of IEC 61672-3:2006 cover only a limited subset of the specifications in IEC 61672-1:2002.

Least Uncertainties of Measurement -

**Environmental Conditions** 

±0.05°C Relative Humidity ±0.46% ±0.017kPa Barometric Pressure

16kHz ±0.29dB Electrical Tests 31.5 Hz to 20 kHz

Acoustic Tests 31.5 Hz to 8kHz

12.5kH=

±0.12dB

±0.16dB

±0.2dB

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

WORLD RECOGNISE ACCREDITATION

This calibration certificate is to be read in conjunction with the calibration test report. Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172. Accredited for compliance with ISO/IEC 17025.

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# Sound Level Meter IEC 61672-3.2013

# **Calibration Certificate**

Calibration Number C17323

Client Details Rodney Stevens Acoustics Pty Ltd

1 Majura Close

St Ives Chase NSW 2075

Rion NL-42EX Equipment Tested/ Model Number:

Instrument Serial Number: 00572542 Microphone Serial Number: 170370 Pre-amplifier Serial Number: 72880

**Pre-Test Atmospheric Conditions** 

Ambient Temperature: 23.4°C Relative Humidity: 37.2%

Relative Humidity: 37.8% Barometric Pressure: 99.52kPa

**Post-Test Atmospheric Conditions** 

Ambient Temperature: 23.3°C

±0.05°C

±0.46%

±0.017kPa

Calibration Technician: Lucky Jaiswal Calibration Date: 03/07/2017

Barometric Pressure: 99.65kPa

Secondary Check: Riley Cooper Report Issue Date: 04/07/2017

Approved Signatory:

Juan Aguero

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 2 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full requirements of IEC 61672-1:2002 because evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002 and because the periodic tests of IEC 61672-3:2006 cover only a limited subset of the specifications in IEC 61672-1:2002.

Least Uncertainties of Measurement -

**Environmental Conditions** Acoustic Tests 31.5 Hz to 8kHz 12.5kHz ±0.16dB Temperature ±0.2dB Relative Humidity

Electrical Tests 31.5 Hz to 20 kHz ±0 12dB

16kHz

±0.29dB

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

This calibration certificate is to be read in conjunction with the calibration test report.



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Barometric Pressure

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### **NATacoustic**

Acoustic Calibration & Testing Laboratory
Level 1, 418A Elizabeth Street., Surry Hills NSW 2010 AUSTRALIA
Ph. (02) 8218 0570 email: service@natacoustic.com.au website: www.natacoustic.com.au
Advision of Renzo Tonin & Associates (NSW) Phy Ltd ABN 29 117 462 861

### **Certificate of Calibration Sound Level Meter**

Calibration Date 29/11/2017	Job No	RB588	Operator	AM	
Client Name RODNEY STEVENS ACOUSTICS PTY	LTD				
Client Address PO BOX 552, WAHROONGA, NSW 20	76				

### Test Item

Accessories Nil		Firmware	1.39.3
Ext'n Cable Make Nil	Model N/A	Serial No	1411
Preamplifier Make SVANTEK	Model SV17	Serial No	#25290
Microphone Make GRAS	Model 40AE	Serial No	#178253
Instrument Make SVANTEK	Model 979	Serial No	

SLM Type	1
Filters Class	1

Environmental	Meas	ured
Conditions	Start	End
Air Temp. (°C)	24.1	22.8
Rel. Humidity (%)	53.5	50.4
Air Pressure (kPa)	101.3	100.5

Applicable Standards:
Periodic tests were performed in accordance with procedures from IEC 61672-3:2013

Laboratory Equipment : B&K4226 Multifunction Acoustic Calibrator SN 2288472 Agilent Function Generator Model 33220A SN MY43004013 Agilent Digital Multimeter Model 34401A SN MY41004386

Uncertainty:
The uncertainty is stated at a confidence level of 95% using a k factor of 2.

Calibration Statement:
The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3-2013, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organization responsible for approxing the results of pattern evaluation tests performed in accordance with ASIEC 61672-2013, to demonstrate that the model of sound level emeter fully conformed to the class 1 specifications in ASIEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of ASIEC 61672-1:2013.



NATA Accredited Laboratory Number 14966

Authorized Signatory:

RB588F03 (rev 4) NATA CALIBRATION OF SVANTEK TYPE 979 #34075

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