

Schedule

Absolute Laboratories Pte Ltd
11 Kallang Place
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Certificate No. : LA-2015-0589-C
Issue No. : 9
Date : 20 Jun 2024
Expiry of Certificate : 16 April 2027
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FIELD OF TESTING: Calibration and Measurement

SCOPE / INSTRUMENTS / LOCATION / METHOD	RANGE TO BE CALIBRATED / MEASURED QUANTITIES / FREQUENCY	CALIBRATION AND MEASUREMENT CAPABILITY (CMC *)
<p>Vibration and Acoustics</p> <p>1. Sound Level Meter and Noise Analyser In-house procedure WI-47 (Rev 7)</p>	<p>a. Acoustic Response 94 dB & 114 dB</p> <p>125 Hz 250 Hz 500 Hz 1000 Hz 2000 Hz 4000 Hz 8000 Hz</p> <p>b. Electrical Response</p> <p>i. "A" weighting</p> <p>63 Hz 125 Hz 250 Hz 500 Hz 1000 Hz 2000 Hz 4000 Hz 8000 Hz 16000 Hz</p> <p>ii. Linearity Test</p> <p>125.0 dB 119.0 dB 114.0 dB 109.0 dB 104.0 dB 99.0 dB 94.0 dB 89.0 dB 84.0 dB 79.0 dB</p>	<p>0.3 dB 0.2 dB 0.2 dB 0.2 dB 0.3 dB 0.3 dB 0.4 dB</p> <p>0.2 dB 0.2 dB 0.2 dB 0.2 dB 0.2 dB 0.2 dB 0.2 dB 0.2 dB 0.2 dB 0.2 dB</p> <p>0.2 dB 0.2 dB 0.2 dB 0.2 dB 0.2 dB 0.2 dB 0.2 dB 0.2 dB 0.2 dB 0.2 dB</p>

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<p>2. Sound Calibrator</p> <p>2.1 Using reference mic & meter In-house procedure WI-11 (Rev 6)</p> <p>2.2 Using B&K Microphone System In-house procedure WI-44 (Rev 4)</p>	<p>a. Acoustic Response 94 dB & 114 dB 63 Hz 125 Hz 250 Hz 500 Hz 1000 Hz 2000 Hz 4000 Hz 8000 Hz</p> <p>b. Electrical Output 1000 mV AC 63 Hz 125 Hz 250 Hz 500 Hz 1000 Hz 2000 Hz 4000 Hz 8000 Hz</p> <p>a. Acoustic Response 94 dB & 114 dB 63 Hz 125 Hz 250 Hz 500 Hz 1000 Hz 2000 Hz 4000 Hz 8000 Hz</p>	<p>0.28 dB, 0.09 Hz 0.24 dB, 0.16 Hz 0.24 dB, 0.29 Hz 0.24 dB, 0.58 Hz 0.24 dB, 1.2Hz 0.24 dB, 2.4Hz 0.28 dB, 4.7 Hz 0.28 dB, 9.3 Hz</p> <p>1.1 mV AC 0.09 Hz 0.16 Hz 0.29 Hz 0.58 Hz 1.2 Hz 2.4Hz 4.7 Hz 9.3Hz</p> <p>0.18 dB, 0.09 Hz 0.18 dB, 0.16 Hz 0.18 dB, 0.29 Hz 0.18 dB, 0.58 Hz 0.18 dB, 1.2 Hz 0.18 dB, 2.4Hz 0.18 dB, 4.7Hz 0.19 dB, 9.3Hz</p>

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<p>3. Geophone In-house procedure, WI-67 (Rev 1)</p> <p>a. Transverse Axis b. Longitudinal Axis</p> <p>a. Vertical Axis</p> <p>b. Power Supply Test i. 6V Power Supply Current ii. Signal Comm Ground Current</p>	<p>b. Electrical Output 1000 mV AC 63 Hz 125 Hz 250 Hz 500 Hz 1000 Hz 2000 Hz 4000 Hz 8000 Hz</p> <p>25.4 mm/sec @ 2 Hz 25.4 mm/sec @ 4 Hz 25.4 mm/sec @ 10 Hz 25.4 mm/sec @ 80 Hz 25.4 mm/sec @ 125 Hz 25.4 mm/sec @ 250 Hz</p> <p>25.4 mm/sec @ 2 Hz 25.4 mm/sec @ 4 Hz 25.4 mm/sec @ 10 Hz 25.4 mm/sec @ 80 Hz 25.4 mm/sec @ 125 Hz 25.4 mm/sec @ 250 Hz</p>	<p>1.1mV AC 0.09 Hz 0.16 Hz 0.29 Hz 0.58 Hz 1.2Hz 2.4 Hz 4.7 Hz 9.3 Hz</p> <p>2.8% 2.7 % 2.2 % 1.7 % 1.2 % 1.5 %</p> <p>2.8 % 2.7 % 1.4 % 1.9 % 1.6 % 1.6 %</p> <p>2.3 µA 2.3 µA</p>

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<p>4. Personal Sound Exposure Meters In-house procedure, WI-06 (Rev 5)</p> <p>4.1 Using Quest-Cal</p> <p>a. Acoustic Response</p> <p>b. Acoustic signal tests of frequency weighting "A"</p> <p>c. Linearity Test of Electrical Response</p>	<p>114dB at 1000Hz 94dB at 1000Hz</p> <p>125 Hz 250 Hz 500 Hz 1000 Hz 2000 Hz 4000 Hz</p> <p>125.0 dB 119.0 dB 114.0 dB 109.0 dB 104.0 dB 99.0 dB 94.0 dB 89.0 dB 84.0 dB 79.0 dB</p>	<p>0.3 dB 0.3 dB</p> <p>0.3 dB 0.3 dB 0.3 dB 0.3 dB 0.3 dB 0.3 dB</p> <p>0.2 dB 0.2 dB 0.2 dB 0.2 dB 0.2 dB 0.2 dB 0.2 dB 0.2 dB 0.2 dB 0.2 dB</p>

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4.2 Using B&K Type 4226		
a. Acoustic Response		
	114dB at 1000Hz	0.2 dB
	94dB at 1000Hz	0.2 dB
b. Acoustic signal tests of frequency weighting "A"		
	63 Hz	0.3 dB
	125 Hz	0.3 dB
	250 Hz	0.2 dB
	500 Hz	0.2 dB
	1000 Hz	0.2 dB
	2000 Hz	0.3 dB
	4000 Hz	0.3 dB
	8000 Hz	0.4 dB
c. Linearity Test of Electrical Response		
	125.0 dB	0.2 dB
	119.0 dB	0.2 dB
	114.0 dB	0.2 dB
	109.0 dB	0.2 dB
	104.0 dB	0.2 dB
	99.0 dB	0.2 dB
	94.0 dB	0.2 dB
	89.0 dB	0.2 dB
	84.0 dB	0.2 dB
	79.0 dB	0.2 dB

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5. Accelerometer In-house procedure, WI-68 (Rev 1) 25.4 mm/sec at	2 Hz 4 Hz 10 Hz 15 Hz 30 Hz 60 Hz 80 Hz 100 Hz 125 Hz 160 Hz 250 Hz 315 Hz 350 Hz 500 Hz	2.9 % 2.8 % 1.9 % 1.9 % 1.7 % 1.8 % 2.2 % 2.1 % 2.0 % 1.9 % 2.2 % 2.1 % 2.3 % 1.9 %

* CMC is expressed as an expanded uncertainty estimated at a level of confidence of approximately 95 %.

Approved signatories

Mr Ng Teck Sing	Full Scope
Mr Rodrigo Manansala	Full Scope
Mr Ang Siong Cheaw	Items 3 and 5
Mr Han Chun Keong	Items 1, 2, 4

Note:

This laboratory is accredited in accordance with the recognised International Standard ISO/IEC 17025. A laboratory's fulfilment of the requirements of ISO/IEC 17025 means the laboratory meets both the technical competence requirements and **management system requirements** that are necessary for it to consistently deliver technically valid calibration results. The **management system requirements** in ISO/IEC 17025 are written in language relevant to laboratory operations and operate generally in accordance with the principles of ISO 9001.