RODNEY STEVENS ACOUSTICS

Noise Test Report: R240966R2

Date: 7 May 2025

Client Name	Company	email
Michael Jennings	Zenith Engineering	michael@zenith.net.au

INTRODUCTION

RSA completed outdoor machinery noise testing of 1 marine generator model Vortum 18.5 on Wednesday 16th April 2025. The tests were carried out in the outdoor area of Zenith Engineering site at 50 Barku Court, Hemmant, Queensland.

The noise measurements were conducted at various distances and elevations with respect the generator.

SAMPLE DETAILS

1 Zenith marine generator serial number 3384V.

SAMPLE SPECIFICATIONS

Sample Description	
Manufacturer	Zenith Engineering
Type	Marine Generator
Model	Vortum 18.5
Year of Manufacture	2024
Engine Speed (rpm)	1500

ENVIRONMENTAL CONDITIONS

At the time of testing there were clear skies with no rain and wind speeds in the range of 1.3 m/s.

Environmental Conditions			
Wind Speed (m/s)	1.3	**Temperature, C**	26
Cloud Amount (oktas)	0	**Relative Humidity (%)**	48
Precipitation (mm)	0	**Surface**	Concrete (non-porous)
Test environment	Free field		

TEST INSTRUMENTATION

Tests were performed with the following equipment:

Equipment	Brand / Type	Serial No.	Calibration Due Date
Sound Level Meter	Brüel & Kjær / Type 2250	3023504	29/01/26
Microphone	Brüel & Kjær / Type 4189	3100361	29/01/26
Calibrator	01dB / Stell Cal 21	00730594 (2003)	29/01/25

RESULTS

A summary of the measured Sound Pressure Levels (L_p) and calculations are presented below.

The determined Mean Sound Pressure Level is: **61 dB L_{pA}.**

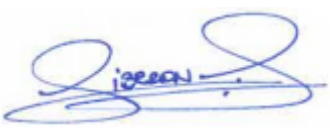
The calculated Sound Pressure Level for No Load operating mode at 1 m is: **64 dB L_{pA}.**

The calculated Sound Pressure Level for No Load operating mode at 7 m is: **56 dB L_{pA}.**

The calculated Sound Pressure Level for Full Load operating mode at 1 m is: **66 dB L_{pA}.**

The calculated Sound Pressure Level for Full Load operating mode at 7 m is: **57 dB L_{pA}.**

Prepared by:



Alvaro Liberona

Senior Acoustic Engineer (MAAS)

Approved by:

Desmond Raymond

Director

RODNEY STEVENS ACOUSTICS

Test Date	16/04/2025
Tests Location	Zenith Engineering - Shed 42 The Yard, 50 Barku Court, Hemmant, QLD 4207
Tested by	Alvaro Liberona
Witnesses	Marshall Luscombe

Background Noise Correction (K_{1A}) Test A	0.32
Background Noise Correction (K_{1A}) Test B	0
Environmental correction (K_{2A})	0.5

Machine **Marine Generator - Vortum 18.5**
Machine Serial No. **3384**

TEST A - No load

	1	2	3	4	5	6	7	8	9	10	11	12	Mean time-average Lp (dB, L_{Aeq})
Reading 1A	59.33	60.56	60.21	60.97	63.55	62.50	61.75	60.80	59.48	60.13	62.33	61.18	61.24
Reading 2A	59.67	60.76	60.23	61.03	63.58	62.78	61.53	60.78	59.61	60.46	62.31	61.26	61.33
Reading 3A	59.68	60.73	60.25	61.02	63.54	62.70	61.69	60.84	59.31	60.45	62.34	61.27	61.32
Background Noise Level	52.27	50.92	53.64	44.86	44.57	44.32	51.33	50.09	50.43	45.94	44.42	51.44	49.87
												A-weighted surface Lp from the 2 highest values	61.33
												Corrected Level for Background noise	60.50

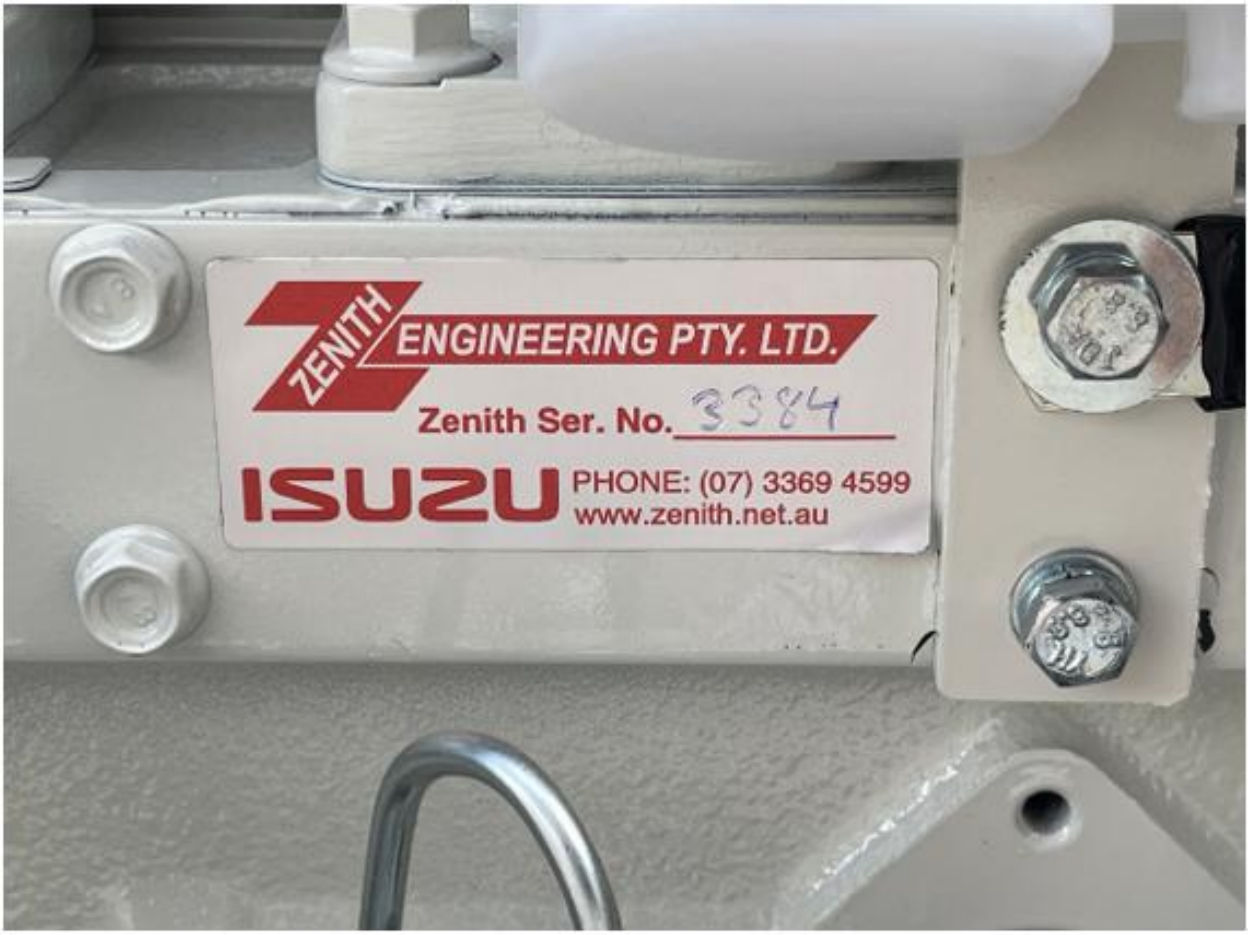
TEST B - Full load

	1	2	3	4	5	6	7	8	9	10	11	12	Mean time-average Lp (dB, L_{Aeq})
Reading 1B	60.85	60.83	62.3	64.04	65.82	63.92	63.36	60.46	59.16	61.2	64.93	60.69	62.76
Reading 2B	60.63	60.89	62.2	63.82	65.6	63.37	63.19	60.52	59.15	61.1	64.26	60.56	62.51
Reading 3B	60.62	60.97	62.32	63.88	65.52	63.72	63.2	60.39	59.13	61.23	64.4	60.54	62.57
Background Noise Level	45.3	45.46	45.19	44.61	45.26	44.84	44.04	45.06	46.17	45.54	44.71	44.68	45.10
												A-weighted surface Lp from the 2 highest values	62.66
												Corrected Level for Background noise	62.16

Mean Level (LPAeq,T)	61.41	dB	Combined operation modes

No load operation mode		
Calculated L_{PA} at 1m	64	dB
Calculated L_{PA} at 7m	56	dB

Full load operation mode		
Calculated L_{PA} at 1m	66	dB
Calculated L_{PA} at 7m	57	dB


ZENITH
ENGINEERING PTY. LTD.
Zenith Ser. No. 3384
ISUZU
PHONE: (07) 3369 4599
www.zenith.net.au

THE CALIBRE TECHNOLOGY
ACOUSTIC & VIBRATION CALIBRATION CENTRE

CERTIFICATE OF CALIBRATION

Certificate Number: 7542

NATA Accreditation No: 20688

Customer: Rodney Stevens Acoustic Pty Ltd

Test Object:	Manufacturer:	Model:	Serial No:	ID:
Sound Level Meter	Bruel & Kjaer	2250-4189	3023504	7542
Microphone	Bruel & Kjaer	4189	3100361	
Preamplifier	Bruel & Kjaer	ZC0032	26417	7542
Calibrator	01dB	CAL21	00730594	7543
Connecting Cable	None			

Information:

Test Configuration:	Microphone on preamp
Instrument Manual:	Instruction Manual-Hand-Held Analyzer Types 2250, 2250-L and 2270 BE1712−23
Firmware Version:	4.7.6.244
Class of Instrument:	Class 1
Source of Correction Data:	Bruel & Kjaer
Reference Level:	114 dB
Reference Level Range:	55 - 130 dB

Environmental Conditions:	Pressure	Temperature	Relative Humidity
Reference Conditions:	101.325 kPa	23.0 °C	50.0 % RH
Conditions Before Measurement:	100.53 kPa	25.2 °C	55.2 % RH
Conditions After Measurement:	100.53 kPa	25.2 °C	55.2 % RH

The laboratory environmental conditions remained within the acceptable limits as defined in IEC 61672.3 and IEC 61260 throughout the calibration test.

The measurements are performed according to the *IEC 61672 Sound level meters – Part 3: Periodic tests (2013)*, and *DIN 45657 Sound Level Meters – Requirements for Special Applications (2015)*. Where applicable testing has also been completed in accordance with *IEC 61260 Electroacoustics – Octave-band and fractional-octave-band filters (2016)*.

This certificate only relates to the test object calibrated. This certificate shall only be reproduced in full with the permission of Calibre Technology.

Accredited for compliance with ISO/IEC 17025 - Calibration.
The results of the tests, calibrations and/or measurements included in this document are traceable to the International System of Units (SI) via international or 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.

Date of Calibration: 29/01/2024
Date of Issue: 30/01/2024
Authorised Signatory:

Claire Richardson