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Report On

Limited Environmental Approval Testing of the
em-trak Marine Electronics Ltd
Class B AIS B100
In accordance with IEC 62287-1

Document 75912008 Report 02 Issue 1

March 2011



Product Service

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REPORT ON

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Class B AIS B100
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A handwritten signature in black ink that reads 'S Jones'.

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R Thompson
Authorised Signatory

DATED

10 March 2011





Product Service

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SECTION 1

REPORT SUMMARY

Limited Approval Testing of the
em-trak Marine Electronics Ltd B100
in accordance with IEC 62287-1



Product Service

1.1 INTRODUCTION

The information contained in this report is intended to show limited verification of the Approval Testing of the em-trak Marine Electronics Ltd B100 to the requirements of IEC 62287-1.

| | |
|-------------------------------|---|
| Objective | To perform Type Approval Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out. |
| Manufacturer | em-trak Marine Electronics Ltd |
| Model Number(s) | B100 |
| Serial Number(s) | Not serialised. TUV REF: 75912008-TSR0022 |
| Number of Samples Tested | One |
| Test Specification/Issue/Date | IEC 62287-1: Ed 2 2010 IEC 60945: 2002 |
| Order Number | 1715 |
| Date | 02 December 2010 |
| Start of Test | 09 February 2011 |
| Finish of Test | 15 February 2011 |
| Name of Engineer(s) | S Dennison S Mooney |



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1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with IEC 62287-1 is shown below.

| Section | Spec Clause | Test Description | Result | Comments |
|---------|-------------|-----------------------|--------------|----------|
| 2.1 | 9.1 | Dry Heat (Storage) | Satisfactory | - |
| 2.2 | 9.1 | Dry Heat (Functional) | Satisfactory | - |
| 2.3 | 9.1 | Damp Heat | Satisfactory | - |
| 2.4 | 9.2 | Vibration | Satisfactory | - |



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1.3 DECLARATION OF BUILD STATUS

| | |
|------------------------------|---------------------------------------|
| Manufacturer | <u>em-trak Marine Electronics Ltd</u> |
| Country of origin | <u>England</u> |
| UK Agent | <u>SRT Marine Technology Ltd</u> |
| Technical Description | <u>Class B CSTDMA AIS Transponder</u> |
| Model No | <u>B100</u> |
| Part No | <u>411-0002</u> |
| Serial No | <u>01</u> |
| Drawing Number | <u>LD3566</u> |
| Build Status | <u>Mod 0</u> |
| Software Issue | <u>1295_07FEB2011</u> |
| FCC ID | <u>N/A</u> |

Signature Nathan Emery

Date 17th February 2010

Note: This document has been prepared to enable manufacturers with no mechanism for producing their own Declaration of Build Status, to declare the build state of the equipment submitted for test.

No responsibility will be accepted by TÜV SÜD Product Service as to the accuracy of the information declared in this document by the manufacturer.

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a em-trak Marine Electronics Ltd B100 as shown in the photograph below. A full technical description can be found in the manufacturer's documentation.



Equipment Under Test



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1.5 DEVIATIONS FROM THE STANDARD

No deviations from the applicable test standards or test plan were made during testing.

1.6 MODIFICATION RECORD

The table below details modifications made to the EUT during the test programme. The modifications incorporated during each test are recorded on the appropriate test pages.

| Modification State | Description of Modification still fitted to EUT | Modification Fitted By | Date Modification Fitted |
|--------------------|---|------------------------|--------------------------|
| 0 | As supplied by the customer | N/A | N/A |
| 1 | External connections to the serial port were permanently 'potted' by high temperature setting glue as the standard connector was not available. | SRT Marine Limited | 15 February 2011 |



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SECTION 2

TEST RESULTS

Limited Approval Testing of the
em-trak Marine Electronics Ltd B100
in accordance with IEC 62287-1



2.1 DRY HEAT (STORAGE)

2.1.1 Specification Reference

IEC 62287-1, Clause 9 (IEC 60945 Clause 8.2.1 with variation as detailed in IEC 62287-1)

2.1.2 Equipment Under Test

Class B AIS B100: TUV ref: 75912008-TSR0022

2.1.3 Date of Test and Modification State

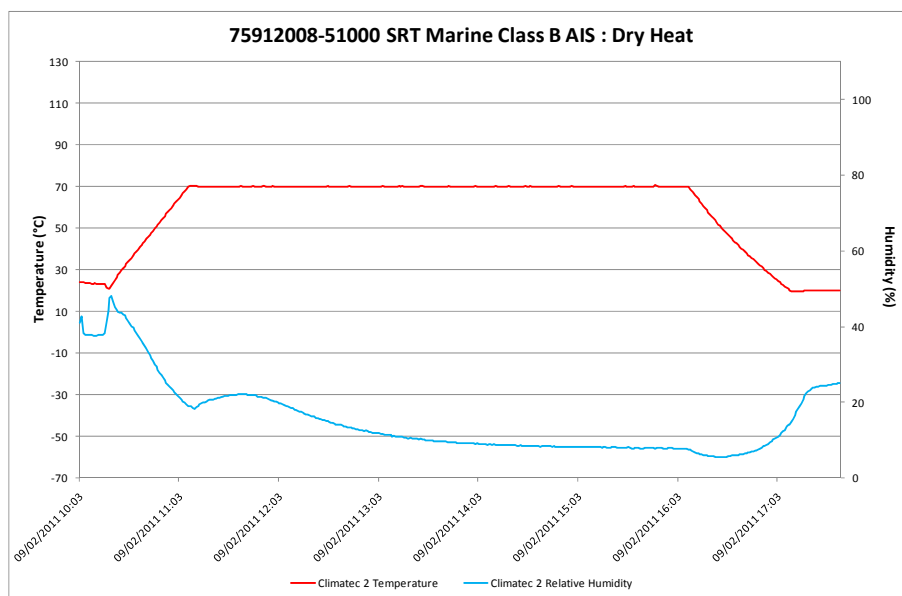
09 February 2011 - Modification State 0

2.1.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

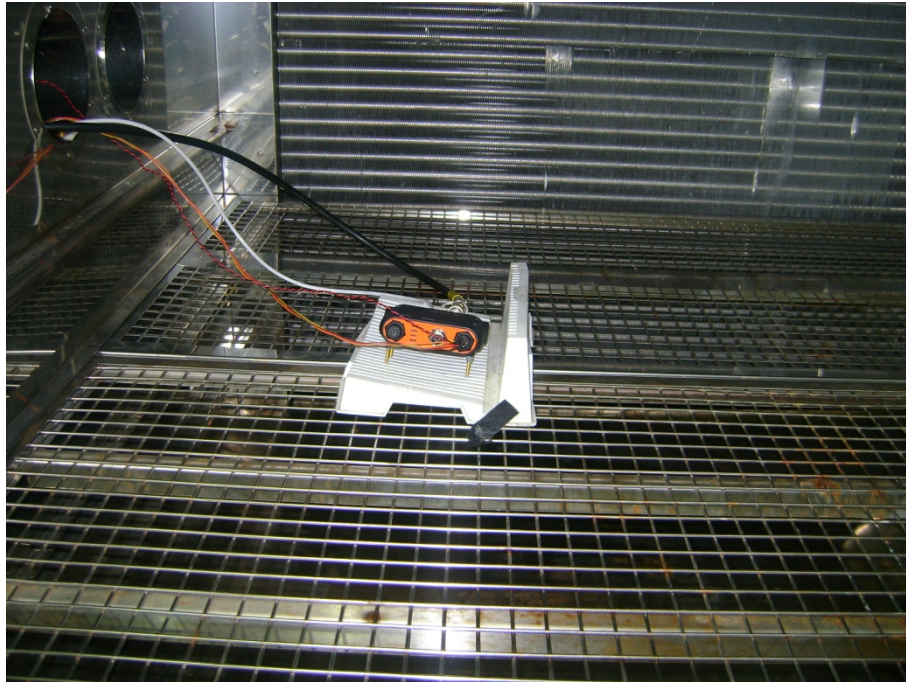
2.1.5 Test Procedure

The EUT was placed in the environmental chamber at laboratory ambient conditions. The temperature of the chamber was then raised to +70 °C. The temperature of the chamber was maintained for a period of 5 hours after which time the temperature of the chamber was returned to lab ambient. The performance check was then carried out.



2.1.6 Test Set-up and Operating Modes

The test was performed with the EUT in the following mode(s): Idle.



Test Set-up – Dry Heat (Storage)

2.1.7 Test Results

Performance Check

The customer declared that the post test performance check was carried out satisfactorily.



2.2 DRY HEAT (FUNCTIONAL)

2.2.1 Specification Reference

IEC 62287-1, Clause 9 (IEC 60945 Clause 8.2.2)

2.2.2 Equipment Under Test

Class B AIS B100: TUV ref: 75912008-TSR0022

2.2.3 Date of Test and Modification State

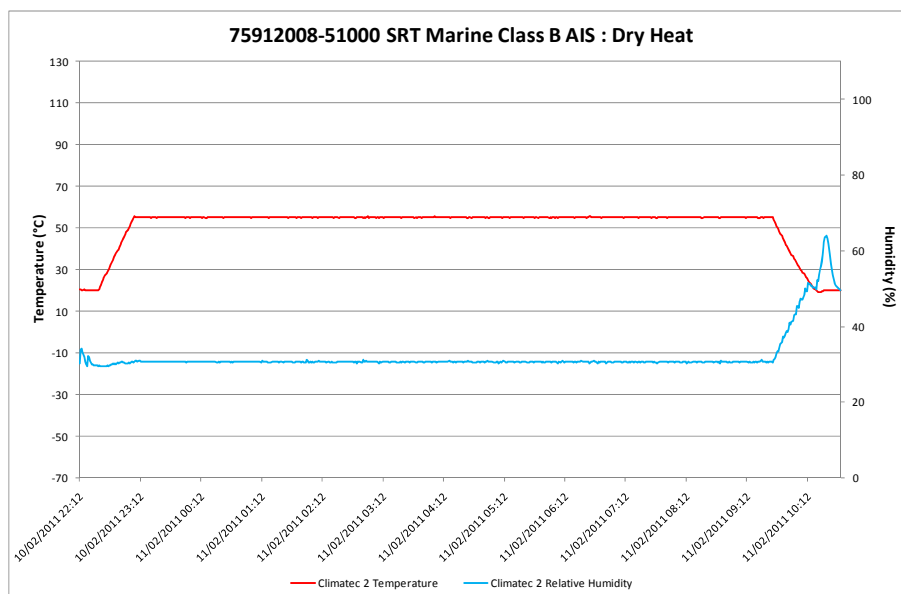
10 to 11 February 2011 - Modification State 0

2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

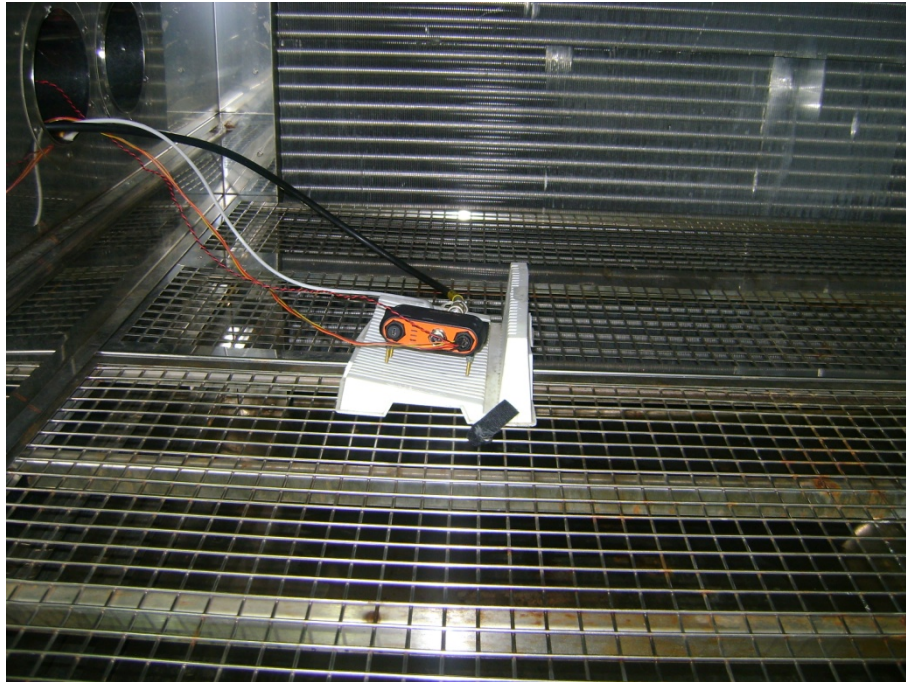
2.2.5 Test Procedure

The EUT was placed in the environmental chamber at laboratory ambient conditions and switched on. The temperature of the chamber was then raised to +55 °C for a period of 10 hours. The performance check was then carried out whilst at temperature. Following completion of the performance check the chamber conditions were returned to laboratory ambient.



2.2.6 Test Set-up and Operating Modes

The test was performed with the EUT in the following mode(s): Active.



Test Set-up – Dry Heat (Functional)

2.2.7 Test Results

Performance Check

The customer declared that the performance check was carried out satisfactorily whilst at temperature.



2.3 DAMP HEAT

2.3.1 Specification Reference

IEC 62287-1, Clause 9 (IEC 60945 Clause 8.3)

2.3.2 Equipment Under Test

Class B AIS B100: TUV ref: 75912008-TSR0022

2.3.3 Date of Test and Modification State

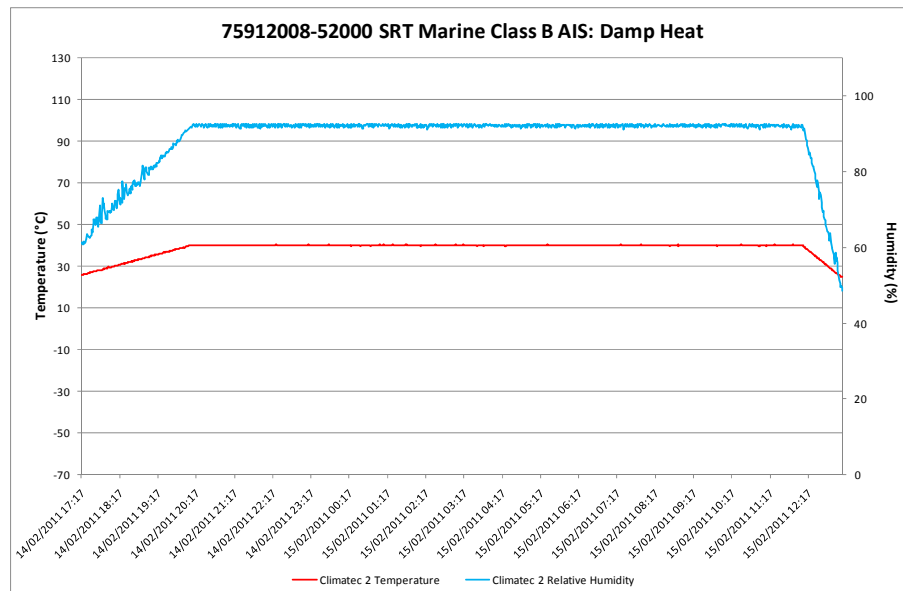
14 to 15 February 2011 - Modification State 0

2.3.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

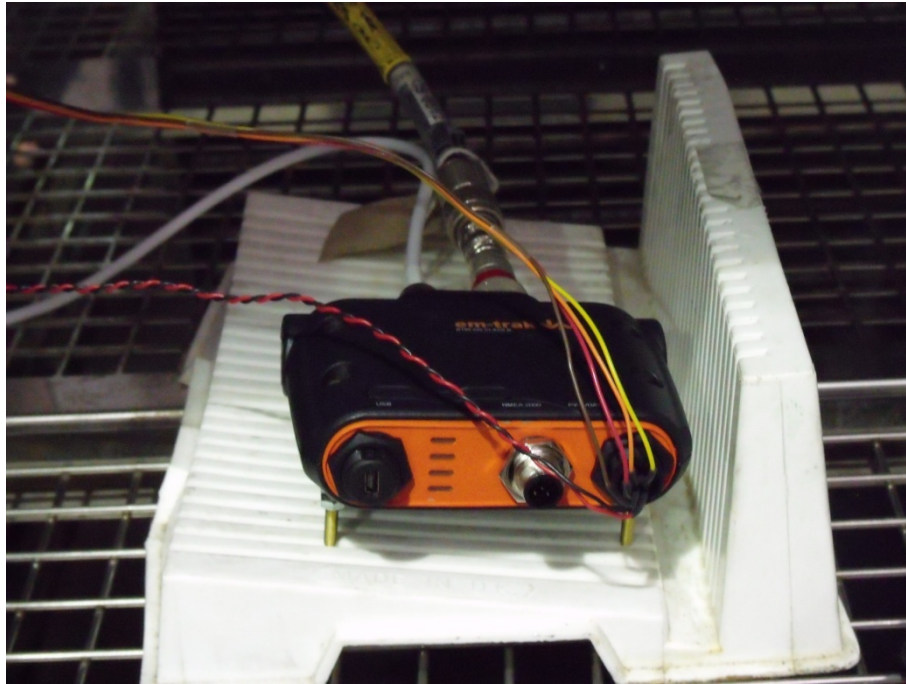
2.3.5 Test Procedure

The EUT was placed in the environmental chamber at laboratory ambient conditions. The temperature of the chamber was then raised to +40 °C and the relative humidity raised to 93% over a period of 3 hours. The conditions were maintained for a period of 13.5 hours after which time the performance check was carried out. The EUT continued to operate for a period of 2 hours and 20 minutes. Once the performance check was complete the chamber conditions were returned to laboratory ambient.



2.3.6 Test Set-up and Operating Modes

The test was performed with the EUT in the following mode(s): Idle.



Test Set-up – Damp Heat

2.3.7 Test Results

Performance Check

The customer declared that the performance check was carried out satisfactorily during the operational period.



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2.4 VIBRATION

2.4.1 Specification Reference

IEC 62287-1 Clause 9.2

2.4.2 Equipment Under Test

Class B AIS B100: TUV ref: 75912008-TSR0022

2.4.3 Date of Test and Modification State

11 February 2011 - Modification State 0 (vertical axis)

15 February 2011 - Modification State 1 (longitudinal and lateral axes)

2.4.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.4.5 Test Procedure

The EUT was fixed to the vibration table and was subject to the following vibration profile:

- 5 Hz and up to 13.2 Hz with an excursion of ± 1 mm (7 m/s² maximum acceleration at 13.2 Hz);
- above 13.2 Hz and up to 100 Hz with a constant maximum acceleration of 7 m/s².

The sweep rate was 0.2 octaves / minute.

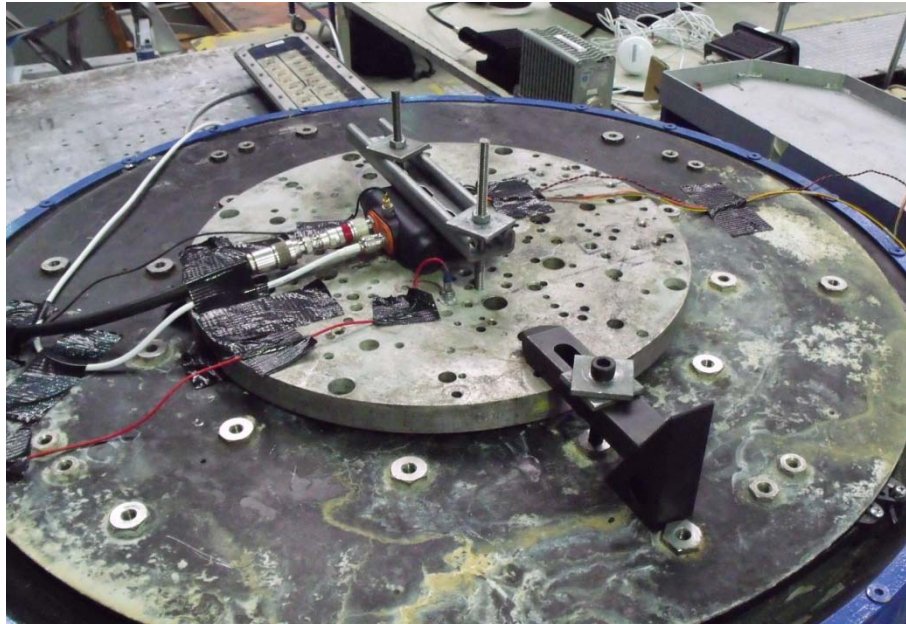
One sweep cycle was performance consisting of 2Hz to 100Hz to 2Hz.

The test above was then repeated with the EUT installed in each axis.

The equipment was operational throughout the test.

2.4.6 Test Set-up and Operating Modes

The test was performed with the EUT in the following mode(s): Powered.



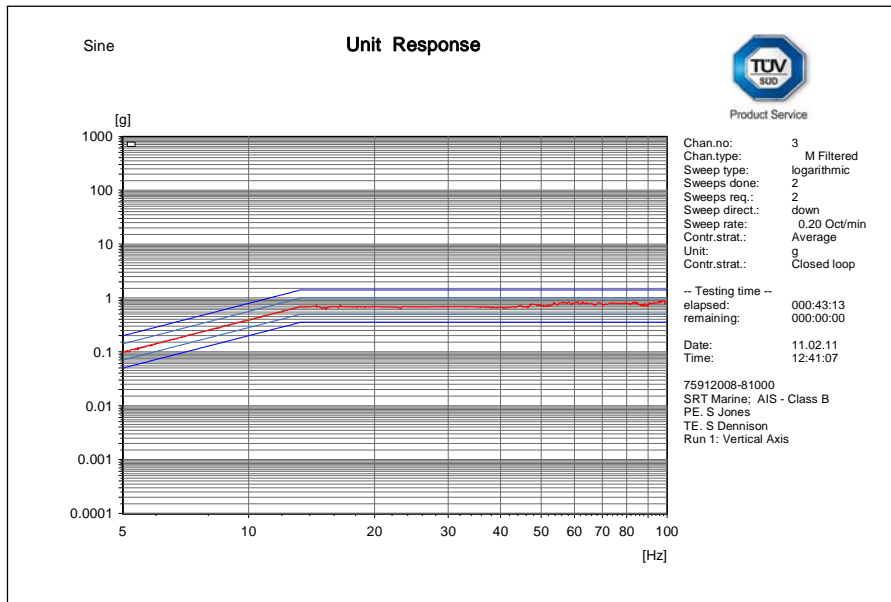
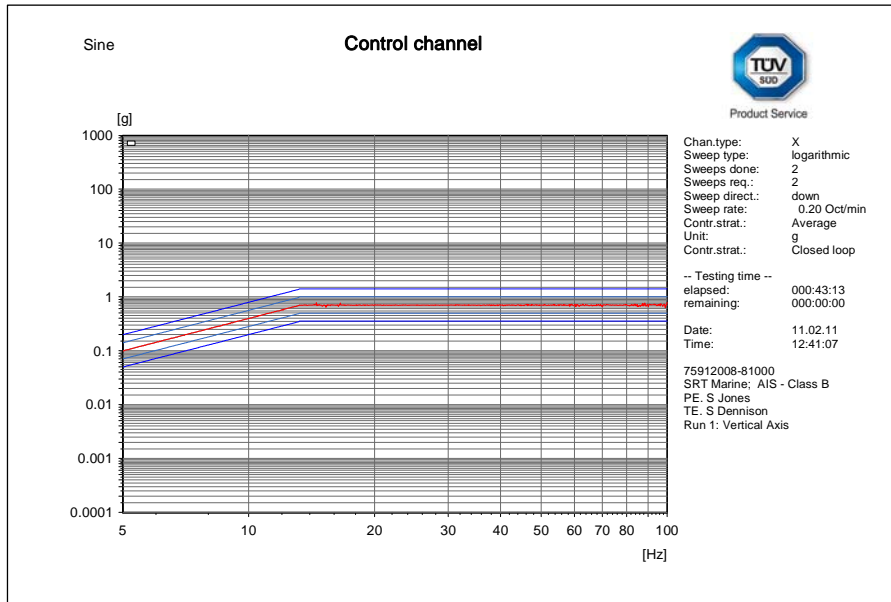
Test Set-up – Vibration (vertical axis)



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2.4.7 Test Results

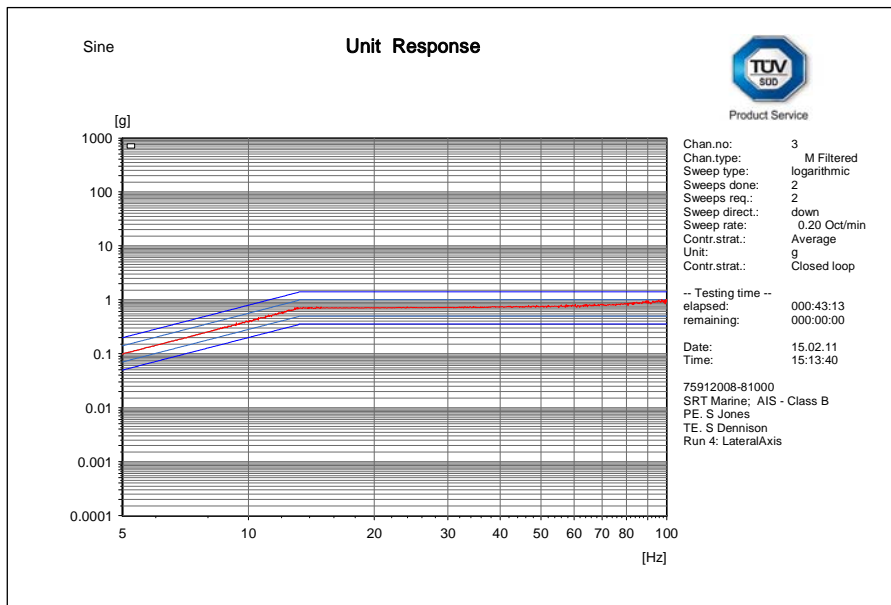
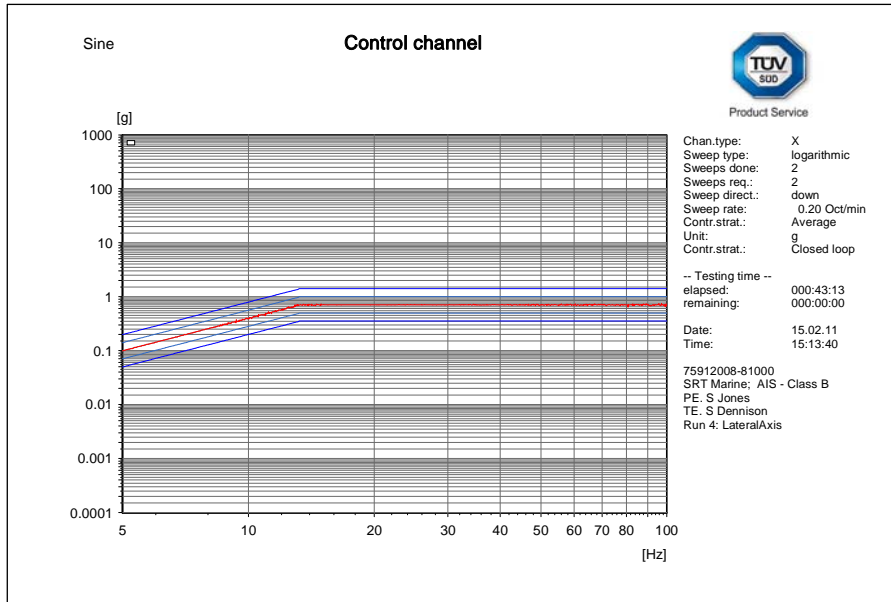
Vertical Axis – Resonance Search





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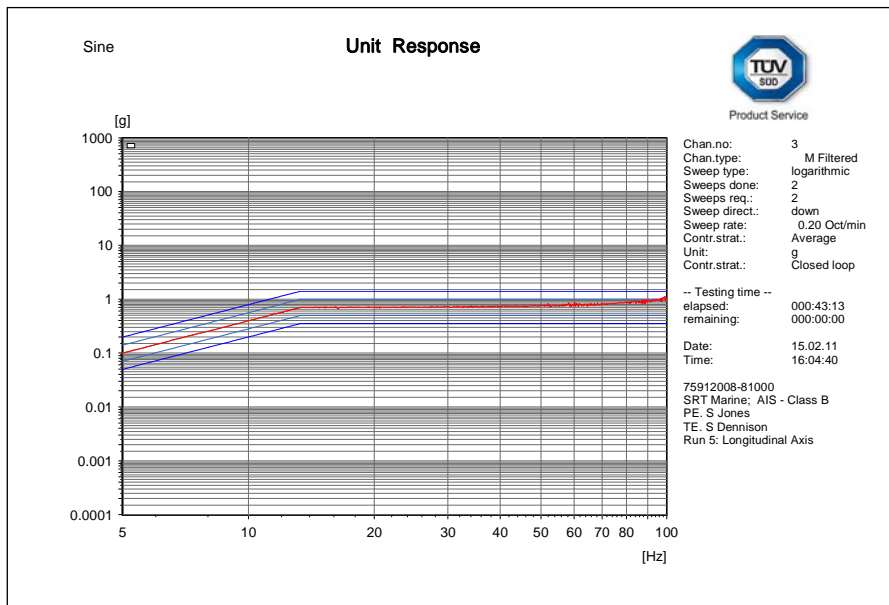
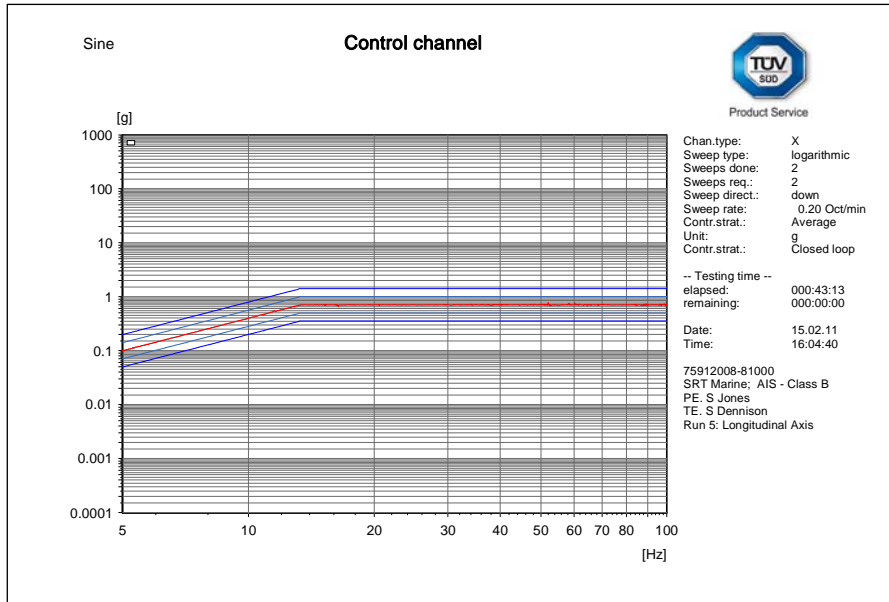
Lateral Axis – Endurance Run





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Longitudinal Axis – Resonance Search



Performance Check

The customer declared that the performance check was carried out satisfactorily during each axis.



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SECTION 3

TEST EQUIPMENT USED



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3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

| Instrument | Manufacturer | Type No. | TE No. | Calibration Period (months) | Calibration Due |
|--|------------------|--------------|--------|-----------------------------|-----------------|
| Section 2.1, 2.2, 2.3 Climatic – Dry Heat and Damp Heat | | | | | |
| Chamber | Climatec | CLIMATEC 2 | 2845 | 12 | 20-Dec-2011 |
| Section 2.4 Vibration - Sine | | | | | |
| Vibrator | Derritron | VP400 | 2286 | 6 | 23-May-2011 |
| Isotron Accelerometer | Endevco | 256-10 | 3114 | 6 | 12-Jul-2011 |
| Isotron Accelerometer | Endevco | 256-10 | 3382 | 6 | 14-Jul-2011 |
| Vibration & Shock Controller | Muller & Partner | VibPilot VP8 | 3730 | 12 | 26-Aug-2011 |



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SECTION 4

PHOTOGRAPHS

4.1 PHOTOGRAPHS OF EQUIPMENT UNDER TEST (EUT)



Equipment under test



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SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



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5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA (Not UKAS Accredited).

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