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Report On

Type Approval Testing of the
Ocean Signal ATA100
In accordance with IEC 60945

Document 75936860 Report 03 Issue 1

January 2020



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REPORT ON

Type Approval Testing of the
Ocean Signal ATA100

Document 75936860 Report 05 Issue 1

January 2020

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DATED

14 January 2020





CONTENTS

Section	Page No
1	REPORT SUMMARY 3
1.1	Introduction 4
1.2	Brief Summary of Results 5
1.3	Application Form 6
1.4	Product Information 9
1.5	Deviations 11
1.6	Performance Monitoring 11
1.7	Modifications 12
1.8	Report Modification Record 12
2	TEST DETAILS 13
2.1	Operational Checks 14
2.2	Power Supply 15
2.3	Dry Heat Tests 18
2.4	Damp Heat Test 23
2.5	Low Temperature Tests 25
2.6	Thermal Shock 28
2.7	Drop 29
2.8	Vibration Tests 30
2.9	Rain and Spray 39
2.10	Immersion 40
2.11	Solar Radiation 41
2.12	Oil Resistance 42
2.13	Corrosion Test 43
2.14	Electromagnetic Emission 44
2.15	Immunity to Electromagnetic Emission 45
2.16	Acoustic Noise and Signals 46
2.17	Compass Safe Distance 47
2.18	Protection Against Accidental Access to Dangerous Voltages 48
2.19	Electromagnetic Radio Frequency Radiation 49
2.20	Emission from Visual Display Unit (VDU) 50
2.21	X-Radiation 51
2.22	Maintenance 52
2.23	Equipment Manuals 54
2.24	Marking and Identification 56
3	TEST EQUIPMENT USED 57
3.1	Test Equipment 58
4	PHOTOGRAPHS 59
4.1	Photographs of Equipment Under Test (EUT) 60
5	ACCREDITATION, DISCLAIMERS AND COPYRIGHT 61
5.1	Accreditation, Disclaimers and Copyright 62
ANNEX A	Customer Supplied Information A.2



SECTION 1

REPORT SUMMARY

Type Approval Testing of the
Ocean Signal
ATA100



1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Type Approval Testing of the Ocean Signal ATA100 to the requirements of IEC 60945.

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	Ocean Signal
Model Number(s)	ATA100 GPS antenna (part number 763S-02845)
Serial Number(s)	S/N TA008 / TSR0023
Number of Samples Tested	1
Test Specification/Issue/Date	IEC 60945: 2002 + Corrigendum 1: 2008
Declared Product Equipment Category	Protected Excluding GPS antenna which is declared as Exposed
Date of Receipt of Test Samples	03 April 2017
Order Number	3123-00
Date	31 October 2016
Start of Test	13 May 2019
Finish of Test	08 November 2019
Name of Engineer(s)	M Hardy B Price R Dyke S Mooney K Bryant L Bull M Adamson N Williams



1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results in accordance with IEC 60945 is shown below.

Section	Spec. Clause	Test Description	Result	Comments
2.1	6	Operational Checks	-	See TUV SUD document 75936860-06
2.2	7	Power Supply	Satisfactory	See also section 2.3 and 2.5
2.3	8.2	Dry Heat Test – Storage and Functional	Satisfactory	-
2.4	8.3	Damp Heat Test	Satisfactory	-
2.5	8.4.2.4	Low Temperature Test – Functional	Satisfactory	-
2.6	8.5	Thermal Shock	N/A	Portable equipment only
2.7	8.6	Drop	N/A	Portable equipment only
2.8	8.7	Vibration Tests	Satisfactory	-
2.9	8.8	Rain and Spray	-	GPS Antenna only See Manufacturer Supplied Data – SGS report HH40002A/2017
2.10	8.9	Immersion	N/A	Portable or submerged equipment only
2.11	8.10	Solar Radiation	-	See Waiver Request in Annex A
2.12	8.11	Oil Resistance	-	See Waiver Request in Annex A
2.13	8.12	Corrosion	-	See Waiver Request in Annex A
2.14	9	Electromagnetic Emission	-	See TUV SUD document 75936860-04
2.15	10	Immunity to Electromagnetic Emission	-	See TUV SUD document 75936860-04
2.16	11.1	Acoustic Noise and Signals	-	ISVR report 10717-jf-R01
2.17	11.2	Compass Safe Distance	-	See TUV SUD document 75936860-04
2.18	12.1	Protection Against Accidental Access to Dangerous Voltages	Pass	-
2.19	12.2	Electromagnetic Radio Frequency Radiation	-	See TUV SUD document 75936860-09
2.20	12.3	Emission from Visual Display Unit	N/A	VDU equipment only
2.21	12.4	X-Radiation	N/A	X-ray emitting equipment only
2.22	13	Maintenance	-	See section 2.22
2.23	14	Equipment Manuals	-	See section 2.23
2.24	15	Marking and Identification	-	See section 2.24

1.3 APPLICATION FORM

EQUIPMENT DESCRIPTION	
Model Name/Number	ATA100
Part Number	760S-02697
Hardware Version	900S-02698
Software Version	TBD
Technical Description (Please provide a brief description of the intended use of the equipment)	Class A AIS transponder

EXTREME TEMPERATURE RANGE (over which equipment is to be type tested)	
<input type="checkbox"/>	Not Applicable (no extreme temperature testing required)
<input checked="" type="checkbox"/>	Category I (General)
<input type="checkbox"/>	Category II (Portable equipments)
<input type="checkbox"/>	Other (please specify):

TYPE OF EQUIPMENT			
<input type="checkbox"/> Fixed Station	<input type="checkbox"/> Transmitter	<input type="checkbox"/> Simplex	<input type="checkbox"/> Integral Antenna
<input checked="" type="checkbox"/> Mobile Station	<input type="checkbox"/> Receiver	<input type="checkbox"/> Duplex	<input checked="" type="checkbox"/> Single Antenna
	<input checked="" type="checkbox"/> Transceiver		<input type="checkbox"/> Two Antenna Connector
			<input type="checkbox"/> Multiple Antenna Connectors No.
<input type="checkbox"/> Portable Station	<input type="checkbox"/>		
<input type="checkbox"/> Transponder (Tag)	<input checked="" type="checkbox"/> Active	<input type="checkbox"/> Passive	

TRANSMITTER TECHNICAL CHARACTERISTICS	
FREQUENCY CHARACTERISTICS	
Transmitter frequency alignment range	to MHz
Transmitter channel switching frequency range	156.025 to 162.025 MHz



TRANSMITTER RF POWER CHARACTERISTICS			
Maximum rated transmitter output power as stated by manufacturer (if applicable)			
12.5	W	At transmitter permanent external 50 Ω RF output connector	
and/or			
	W	Effective radiated power (for equipment with integral antenna)	
Minimum rated transmitter output power as stated by manufacturer (if applicable)			
1	W	At transmitter permanent external 50 Ω RF output connector	
and/or			
	W	Effective radiated power (for equipment with integral antenna)	
Is transmitter intended for :			
Continuous duty		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Intermittent duty only		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
If intermittent duty state DUTY CYCLE			
Transmitter ON		0.026	Seconds
Transmitter OFF			Seconds

TRANSMITTER - MODULATION			
Amplitude	<input type="checkbox"/>	Other	<input checked="" type="checkbox"/>
Frequency	<input type="checkbox"/>	Details :	GMSK
Phase	<input type="checkbox"/>	Channel Spacing	25kHz
Can the transmitter be operated without modulation? * See definition below			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

RECEIVER TECHNICAL CHARACTERISTICS	
FREQUENCY CHARACTERISTICS	
Receiver frequency alignment range	to
Receiver channel switching frequency range	156.025 to 162.025
Channel Separation (if applicable)	25kHz
State the maximum number of channels over which the equipment can operate:	



POWER SOURCE	
<input type="checkbox"/> AC mains	State voltage <input type="text"/>
AC supply frequency <input type="text"/> (Hz)	
<input type="text"/> VAC	
<input type="text"/> Max Current	
<input type="text"/> Hz	
<input type="checkbox"/> Single phase	<input type="checkbox"/> Three phase
And / Or	
<input checked="" type="checkbox"/> External DC supply	
Nominal voltage <input type="text"/> V	Max Current <input type="text"/> A
Extreme upper voltage <input type="text"/> V	
Extreme lower voltage <input type="text"/> V	
Battery	
<input type="checkbox"/> Nickel Cadmium	<input type="checkbox"/> Lead acid (Vehicle regulated)
<input type="checkbox"/> Alkaline	<input type="checkbox"/> Leclanche
<input type="checkbox"/> Lithium	<input type="checkbox"/> Other Details : <input type="text"/>
<input type="text"/> Volts nominal.	
End point voltage as quoted by equipment manufacturer <input type="text"/> V	

AUTOMATIC EQUIPMENT SWITCH OFF	
If the equipment is designed to automatically switch off at a predetermined voltage level which is higher or lower in value than the battery minimum and minimum calculated values this shall be clearly stated.	
<input type="checkbox"/> Applies	<input type="text"/> V cut-off voltage
<input checked="" type="checkbox"/> Does not apply	

CHANNEL IDENTIFICATION			
Each equipment, whether one or more submitted for tests shall carry clear identification (such as a serial number), together with the frequencies associated with the channel identification displayed on the equipment.			
Equipment Identification eg Serial Number	Channel No.	Transmit Nominal Freq MHz	Receive Nominal Freq MHz
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

I hereby declare that that the information supplied is correct and complete.

Name: **David Sheekey**

Position held:

Type **Approval Manager**

Date: **28/3/2018**

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was an Ocean Signal ATA100, Class A AIS transponder as shown in the photograph below. A full technical description can be found in the manufacturer's documentation.

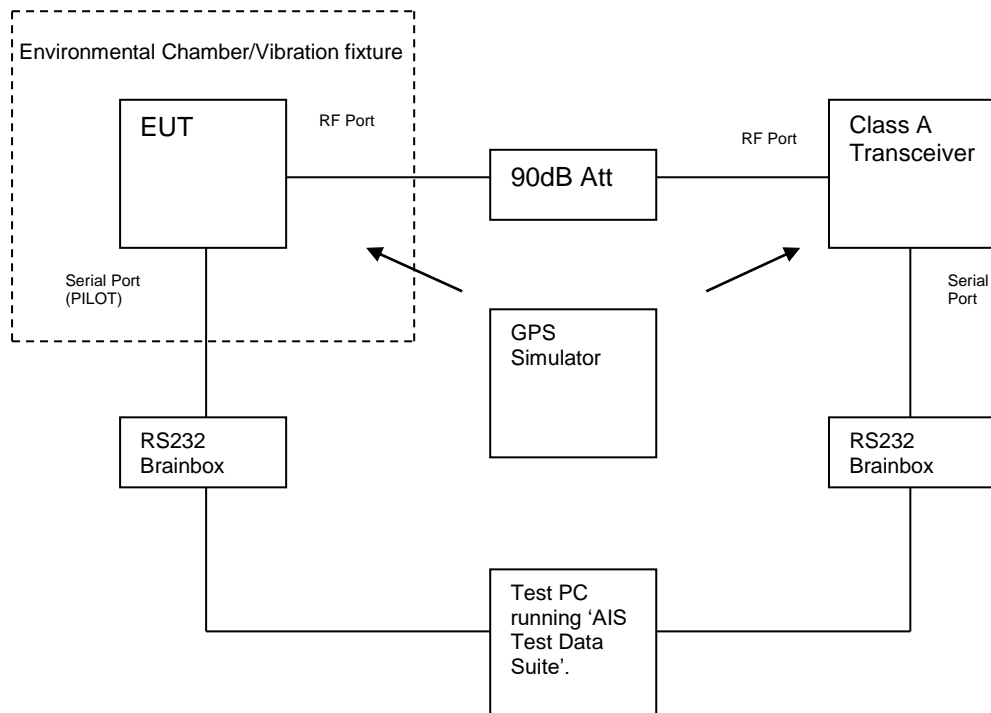


Equipment Under Test

1.4.2 Physical Test Configuration

The Equipment Under Test (EUT) was operated using an external d.c. power supply. The EUT antenna port was connected to a second Class A AIS transceiver (situated externally to the environmental test chamber), via coaxial cables and 90dB of attenuation. Performance monitoring was carried out* using TUV software 'AIS Test Data Suite', v.1.2.0. Navigation data was provided to the EUT and Class A via a GPS Simulator.

* Performance monitoring was recorded for at least 30 minutes, and checked for correct reception, content and repetition rate.





1.4.3 Equipment Category

As per IEC 60945 Clause 4.4, all parts of the EUT were declared by the manufacturer as protected by the weather ("protected") with the exception of the GPS Antenna which was declared to be exposed to the weather ("exposed").

1.5 DEVIATIONS

None.

1.6 PERFORMANCE MONITORING

Performance Checks were conducted in accordance with IEC 61993-2 Ed 3 2018-07, Clause 12: *for the performance checks (PC) to be used with the environmental tests, check that transmissions from the EUT can be received by test receiver, the transmissions of a test transmitter are output on the PI and displayed on the MKD of the EUT and verify that the transmissions from the EUT contain a valid position from the internal GNSS.*



1.7 MODIFICATIONS

The table below details modifications made to the EUT during the test program. 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
ATA100 S/N TA008 / TSR0023			
0	As supplied.	-	-
1	Software change to fix intermittent incorrect Boot Up sequence.	Ocean Signal	Returned 18/6/19
2	Mounting bracket: Mounting bracket webbed areas filled with resin to increase rigidity	Ocean Signal	Returned 19/7/19
3	Firmware modification state 15 (see report 75936860 Report 01)	Ocean Signal	30/10/19
ATA100 S/N TA007 / TSR0022			
4	Firmware version 00.2.01, modification state 6 (see report 75936960 report 01)	Ocean Signal	25/05/19

1.8 REPORT MODIFICATION RECORD

Issue 1 – First Issue



SECTION 2

TEST DETAILS

Type Approval Testing of the
Ocean Signal
ATA100



2.1 OPERATIONAL CHECKS

2.1.1 Specification Reference

IEC 60945, Clause 6.0

2.1.2 Test Details

See TÜV SÜD document 75936860-06.



2.2 POWER SUPPLY

2.2.1 Specification Reference

IEC 60945, Clause 7.0

2.2.2 Equipment Under Test and Modification State

ATA100 TA008 / TSR0023 – Modification State 3 (firmware modification 15)

2.2.3 Date of Test

08 November 2019

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 Method

The following testing is required by the specification:

Test Method, Clause 5.2.3 - Main Extract

Excessive current is defined as greater than normal working current.

Excessive voltage is greater than that specified in 5.2.2

The power supply shall be adjusted to cause activation of the protection and after EUT reset ("Over-voltage" and, although not explicitly required, "Under-voltage" was also tested), a performance check under normal test conditions shall be carried out.

Power supply misconnections are also regarded as excessive conditions. Where appropriate, the EUT shall be subjected to an input from a power supply of reversed polarity or improper phase sequence for a period of 5 min.

After completion of the test, and reset of the protection of the EUT, if required, the power supply shall be connected normally, and a performance check shall be carried out.

2.2.6 Test Setup



Test Setup

2.2.7 Environmental Conditions

Ambient Temperature	23.1 °C
Relative Humidity	38.0 %



2.2.8 Test Results

The EUT was subjected to the above test method, test variables were as per the table below. A Performance Check was carried out on completion of test.

Test Parameter	Units	Result	Limit
Test Setup Variables - Applied conditions			
Over-voltage - level at which trip occurred	V DC	32.6V-dc	-
Reverse Polarity - time applied	min	5 mins	5
EUT Responses			
Response to overvoltage	-	EUT 'tripped' (turned itself off)	Protection must activate where appropriate
Response upon removal of overvoltage	-	EUT returned to normal operation after reset and power supply was reduced back to nominal voltage	Reset allowed
Response to reverse polarity	-	Protection activated, no visual or monitored changes.	Protection must activate where appropriate
Response upon removal of reverse polarity	-	Protection deactivated, EUT booted up correctly once correct power input applied	Reset allowed
Performance Check			
Performance check result	P/F	Pass	Normal operation



2.3 DRY HEAT TESTS

2.3.1 Specification Reference

EN 60945:2002, clause 8.2

2.3.2 Equipment Under Test and Modification State

ATA100 S/N TA008 / TSR0023 - Modification State 0 (Storage)
ATA100 S/N TA008 / TSR0023 - Modification State 1 (Functional)

2.3.3 Date of Test

13 – 14 May 2019 (Storage)
20 – 21 June 2019 (Functional)

2.3.1 Test Equipment Used

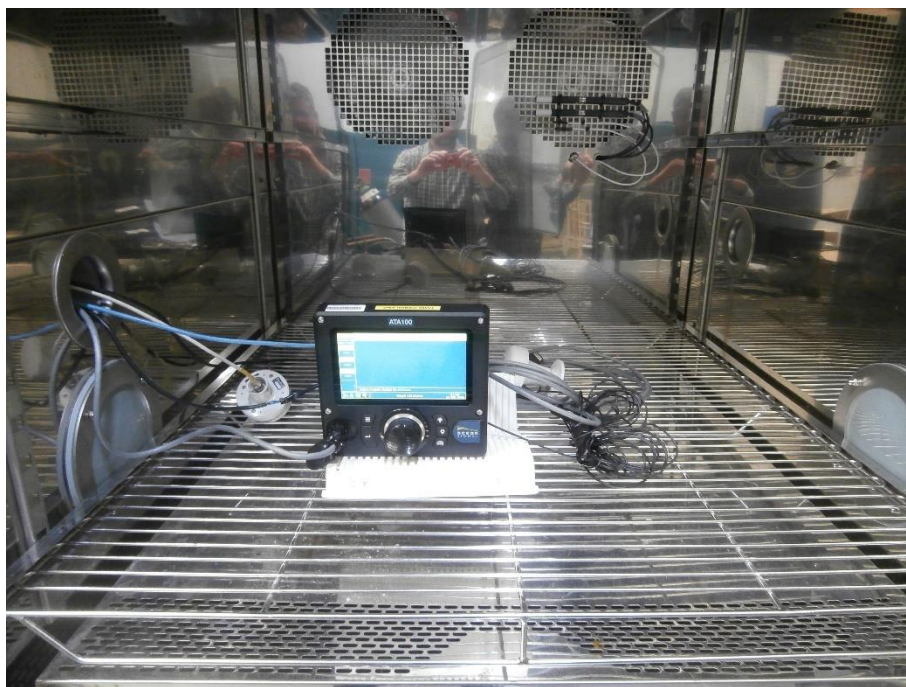
The major items of test equipment used for the above tests are identified in Section 3.1.

2.3.2 Environmental Conditions

Ambient Temperature: 22.7 – 23.9°C
Relative Humidity: 35.5 – 43.0%

2.3.3 Test Setup

Storage Test



Functional Test





2.3.4 Test Method

Storage Test

The EUT was placed in a climatic chamber where the temperature was increased from laboratory ambient temperature to +70°C. After 16 hours, the temperature was returned to ambient conditions. The EUT was subjected to a performance check at the end of the test.

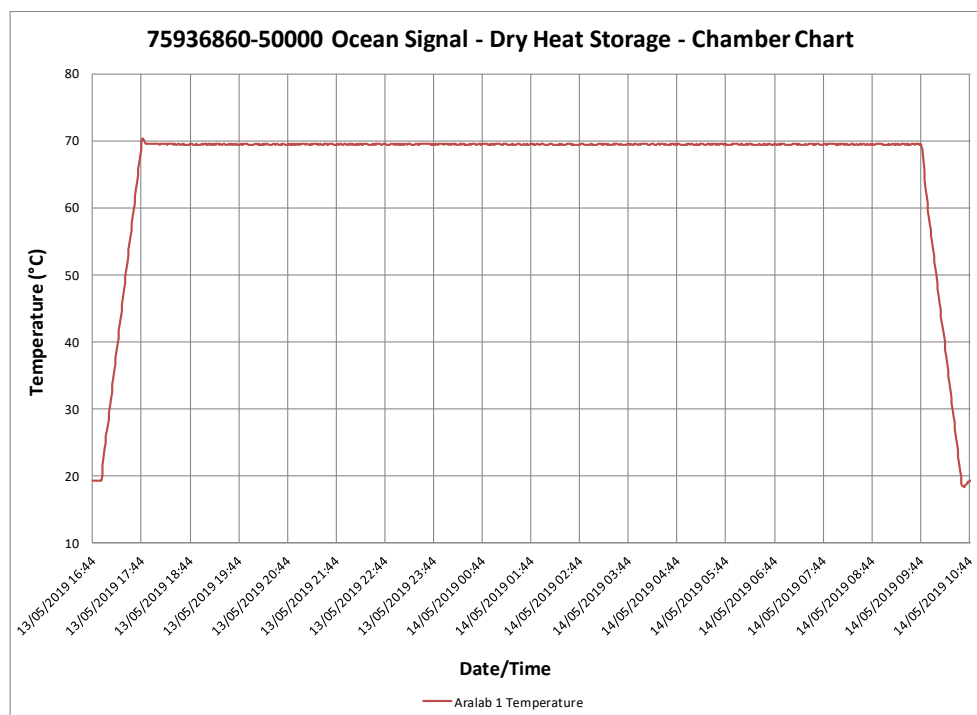
Functional Test

The EUT was switched on, and placed in a climatic chamber where the temperature was increased from laboratory ambient temperature to +55°C. After 10 hours, the EUT was subjected to a performance check. At the end of the test, the temperature was returned to laboratory ambient conditions.

2.3.5 Test Results

Storage Test

Temperature Plot

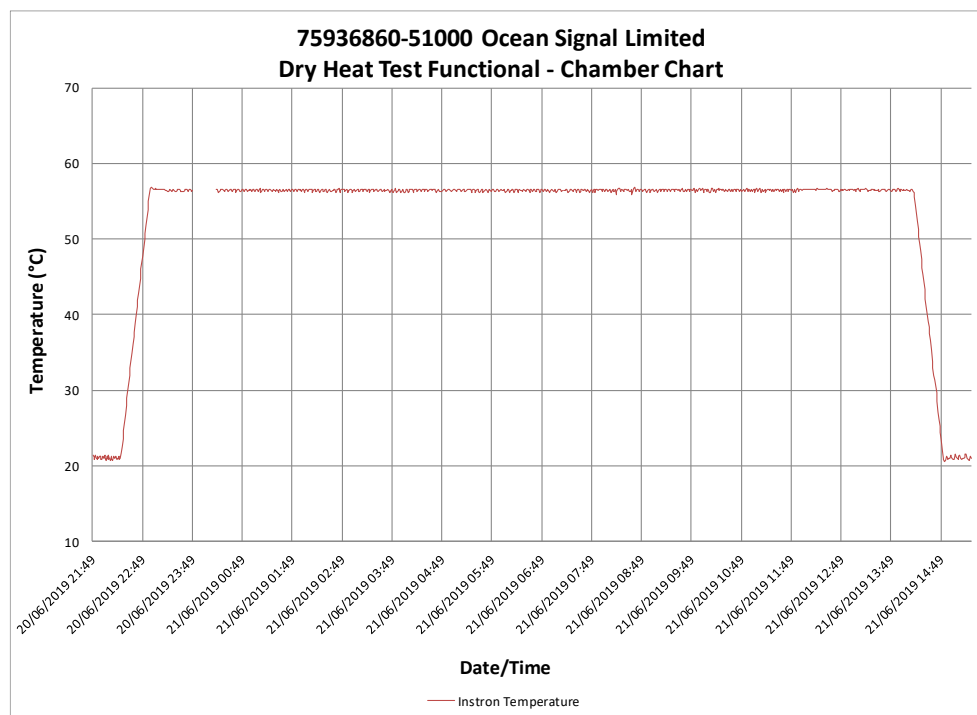


Performance Check

The EUT performance check was carried out in accordance with the product specific standard (IEC 61993-2) clause 12 at nominal voltage. The EUT met the requirements of the aforementioned clause.

Functional Test

Temperature Plot



Performance Check

The EUT performance check was carried out in accordance with the product specific standard (IEC 61993-2) clause 12 at nominal voltage. The EUT met the requirements of the aforementioned clause.

An additional performance check was carried out with extreme power supply conditions in accordance where the upper supply voltage was supplied simultaneously with the high temperature. The supply voltage of 31.2V DC was applied whilst at +55 °C. The performance check results were satisfactory.

2.4 DAMP HEAT TEST

2.4.1 Specification Reference

EN 60945:2002, clause 8.3

2.4.2 Equipment Under Test and Modification State

ATA100 S/N TA008 / TSR0023 - Modification State 0

2.4.3 Date of Test

27 – 28 May 2019

2.4.4 Test Equipment Used

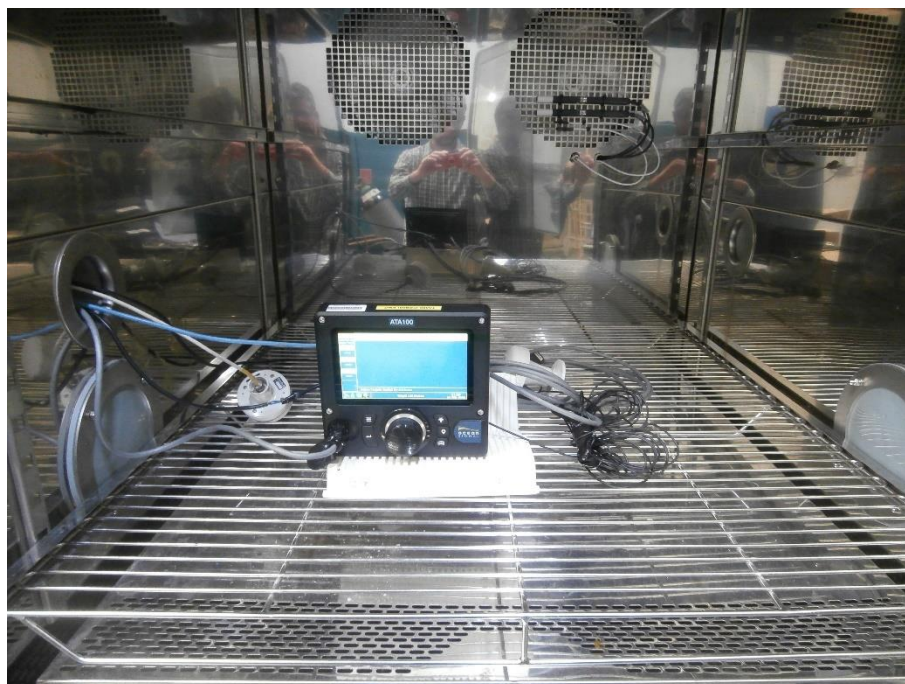
The major items of test equipment used for the above tests are identified in Section 3.1.

2.4.5 Environmental Conditions

Ambient Temperature: 23.9 – 24.4 °C

Relative Humidity: 37.4 – 38.6 %

2.4.6 Test Setup

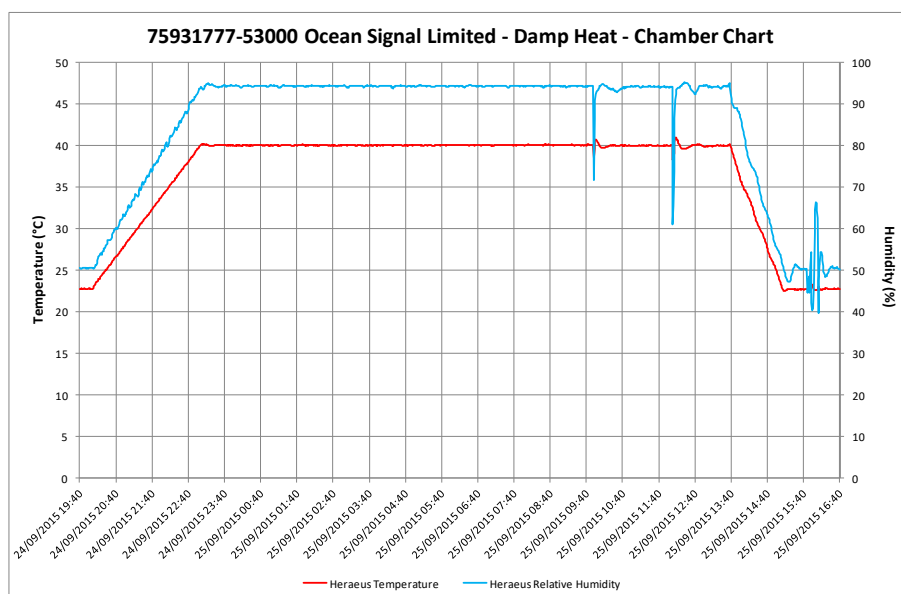


2.4.7 Test Method

The EUT was placed in a climatic chamber where the temperature was increased from laboratory ambient to +40°C and the relative humidity increased to 95%. After 10 hours, the EUT's were activated for at least 2 hours. During this period the EUT's were subjected to a performance check.

2.4.8 Test Results

Temperature Plot



Note: The variations in temperature and humidity towards the end of the plot above are due to the chamber door being opened briefly to activate/deactivate the EUT. The temperature and humidity inside the chamber was allowed to stabilise before measurements were made.

Performance Check

The EUT performance check was carried out in accordance with the product specific standard (IEC 61993-2) clause 12 at nominal voltage. The EUT met the requirements of the aforementioned clause.



2.5 LOW TEMPERATURE TESTS

2.5.1 Specification Reference

EN 60945:2002, clause 8.4

2.5.2 Equipment Under Test and Modification State

ATA100 S/N TA008 / TSR0023 - Modification State 1

2.5.3 Date of Test

18 – 19 June 2019

2.5.4 Test Equipment Used

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

2.5.5 Environmental Conditions

Ambient Temperature 22.7 – 24.4°C

Relative Humidity 42.5 – 55.9%

2.5.6 Test Setup

Functional Test



2.5.7 Test Method

Functional Test

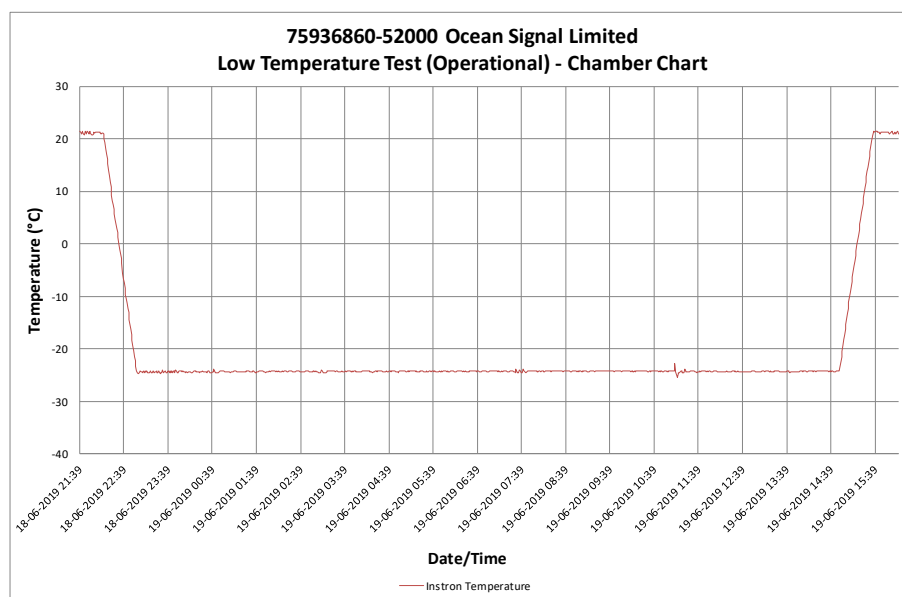
The EUT were placed in a climatic chamber where the temperature was decreased from laboratory ambient to -25°C*. After 10 hours, the EUT was activated for at least 2 hours. During this period the EUT was subjected to a performance test check.

* This exceeds the requirements for protected equipment and is regarded as a more stringent test. The GPS antenna of the EUT is declared as exposed equipment, and -25°C meets this requirement.

2.5.8 Test Results

Functional Test

Temperature Plot



Performance Check

The EUT performance check was carried out in accordance with the product specific standard (IEC 61993-2) clause 12 at nominal voltage. The EUT met the requirements of the aforementioned clause.

An additional performance check was carried out with extreme power supply conditions in accordance where the lower supply voltage was supplied simultaneously with the low temperature. The supply voltage of 10.8V DC was applied whilst at -25 °C. The performance check results were satisfactory.



2.6 THERMAL SHOCK

2.6.1 Specification Reference

IEC 60945, Clause 8.5

2.6.2 Test Details

Not applicable - this test is only applicable to equipment classed as portable.



2.7 DROP

2.7.1 Specification Reference

IEC 60945, Clause 8.6

2.7.2 Test Details

Not applicable - this test is only applicable to equipment classed as portable.

2.8 VIBRATION TESTS

2.8.1 Specification Reference

EN 60945:2002, clause 8.7

2.8.2 Equipment Under Test and Modification State

ATA100 S/N TA008 / TSR0023 - Modification State 2

2.8.3 Date of Test

19 and 29 July 2019, 19 August 2019

2.8.4 Test Equipment Used

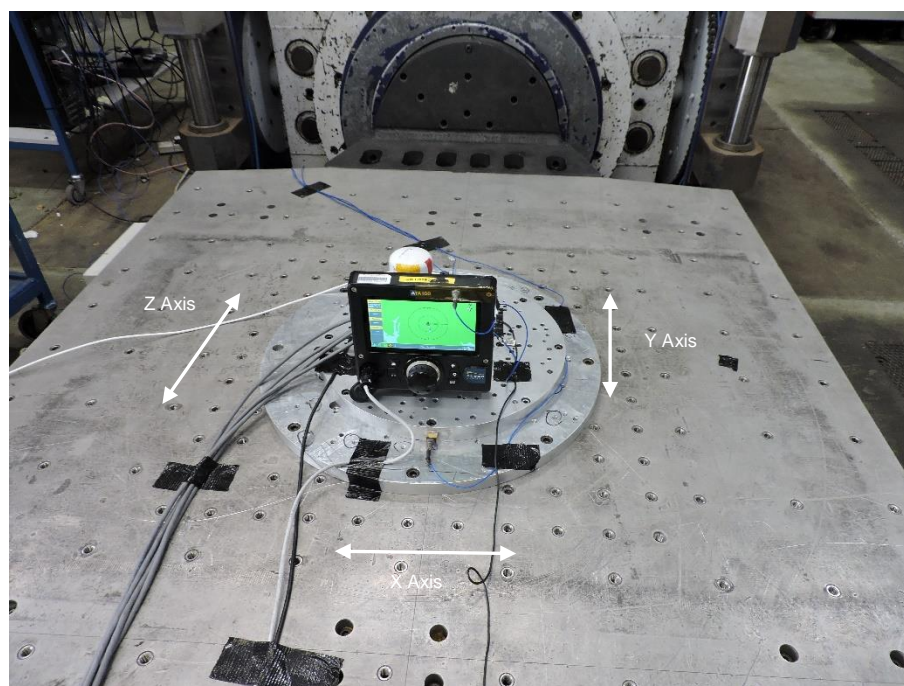
The major items of test equipment used for the above tests are identified in Section 3.1.

2.8.5 Environmental Conditions

Ambient Temperature 19.9 – 21.2°C

Relative Humidity 40.0 - 46.2%

2.8.6 Test Setup



2.8.7 Test Method

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

Resonance Sweep

- 5 Hz and up to 13.2 Hz with an excursion of ± 1 mm (7 m/s^2 maximum acceleration at 13.2 Hz);
- above 13.2 Hz and up to 100 Hz with a constant maximum acceleration of 7 m/s^2 .

One sweep was performed at a rate of 0.5 octaves / minute.

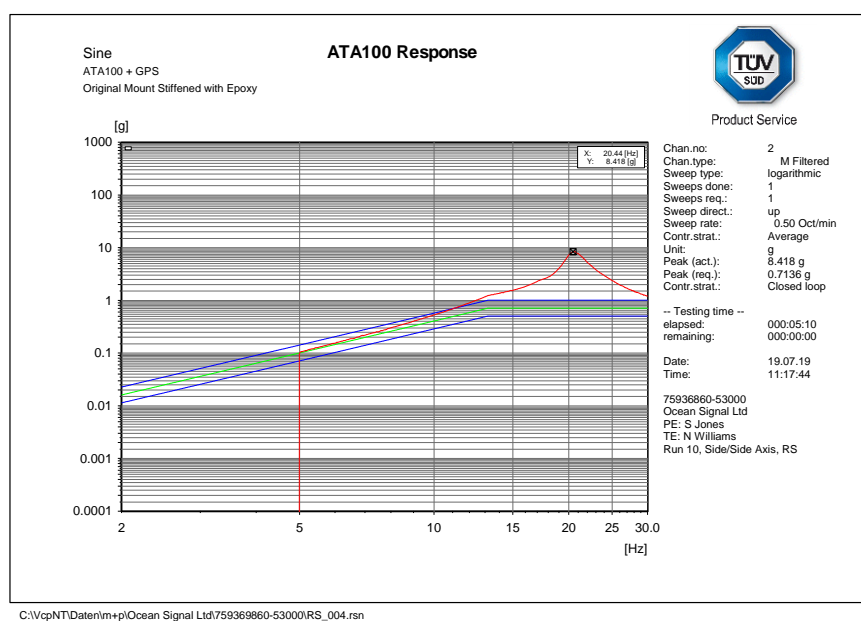
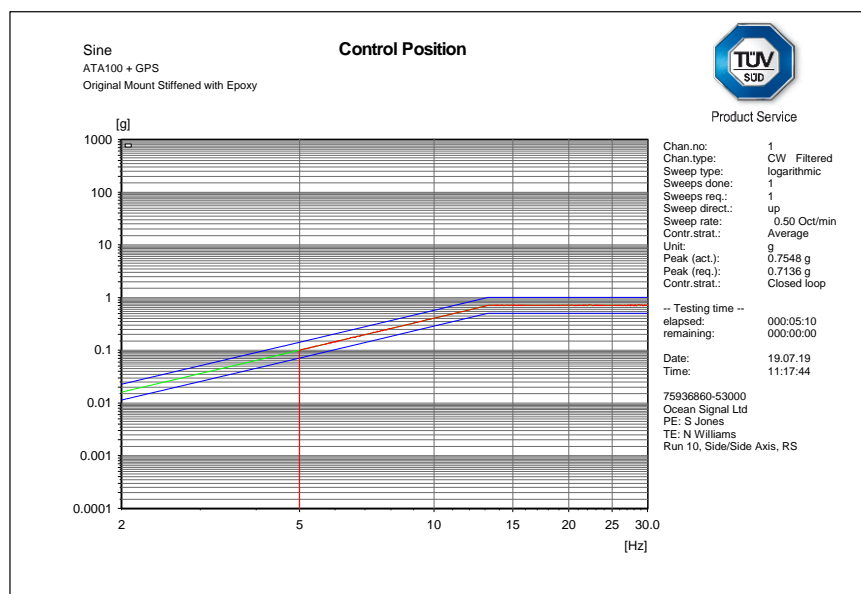
The EUT was subjected to a 2 hour dwell at each of the following resonant frequencies:

Axis	Resonant Frequency (Hz)
X	20.45
Y	73.36
Z	19.02

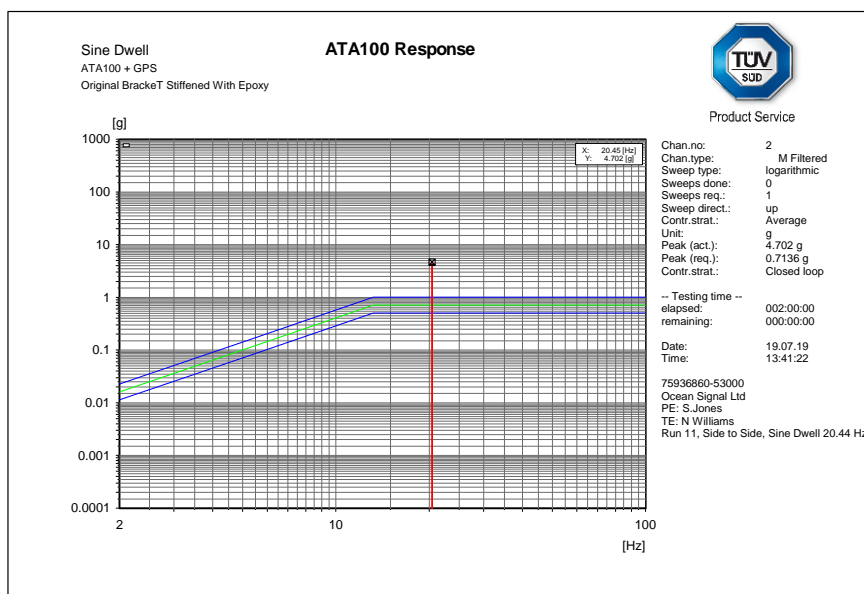
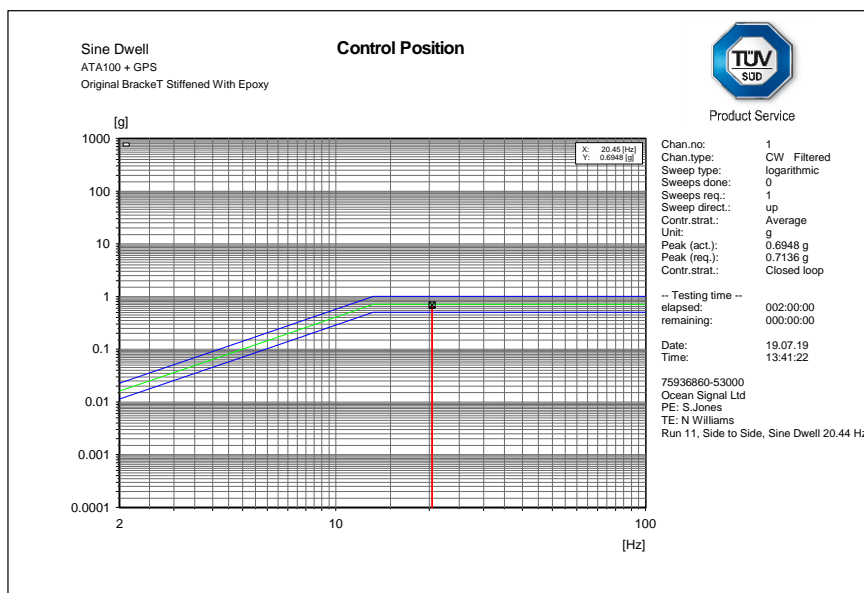
2.8.8 Test Results

X Axis

Resonant Search

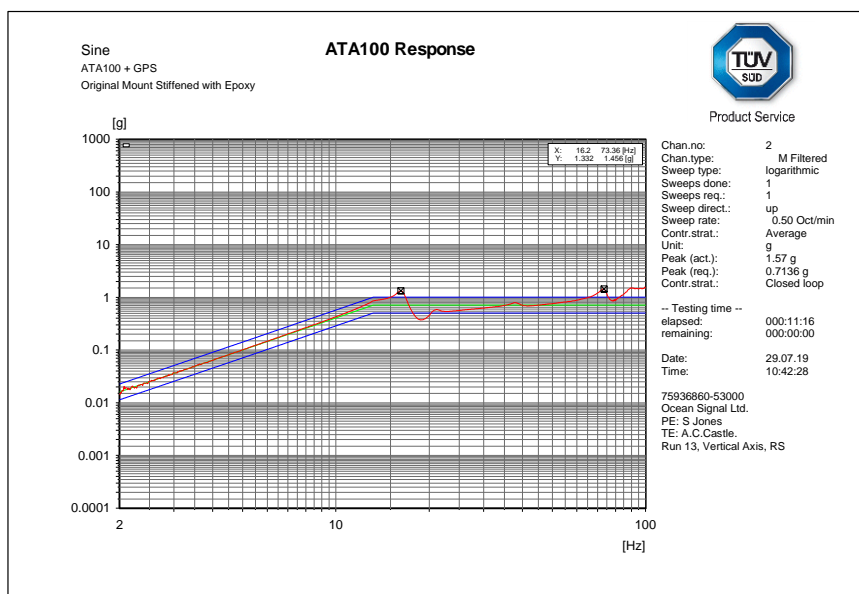
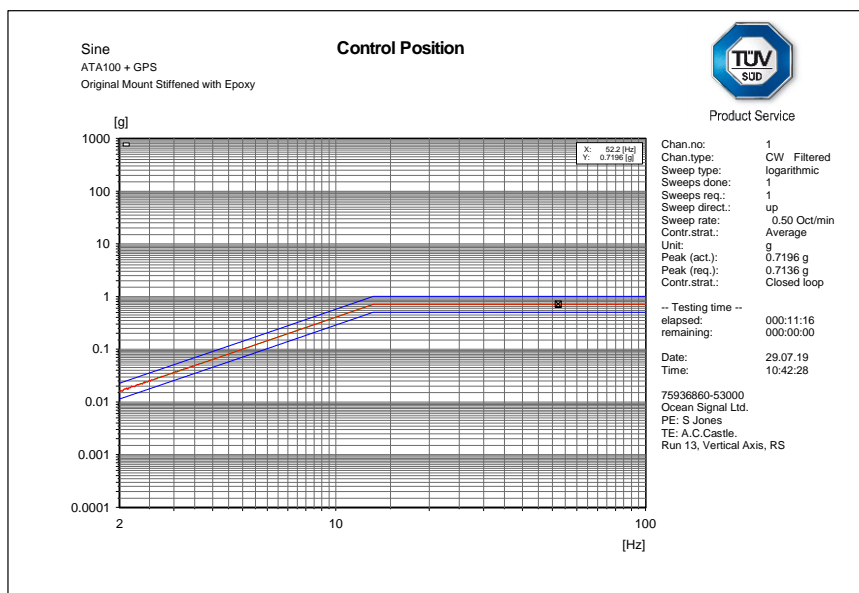


Endurance Run



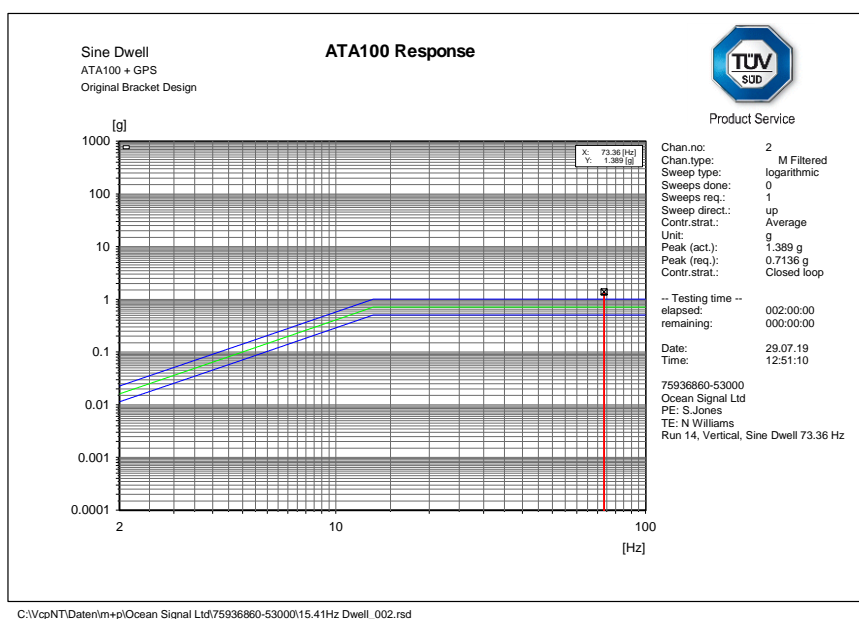
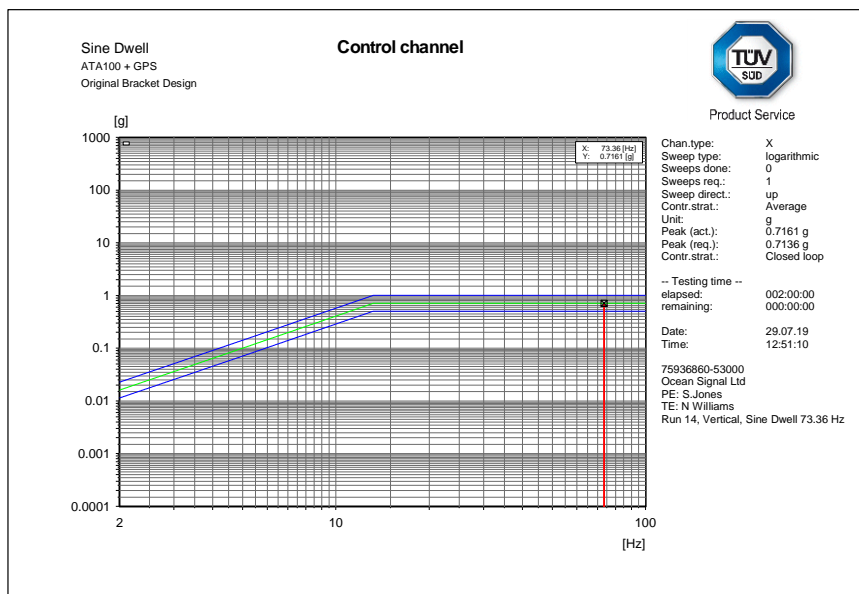
Y Axis

Resonant search



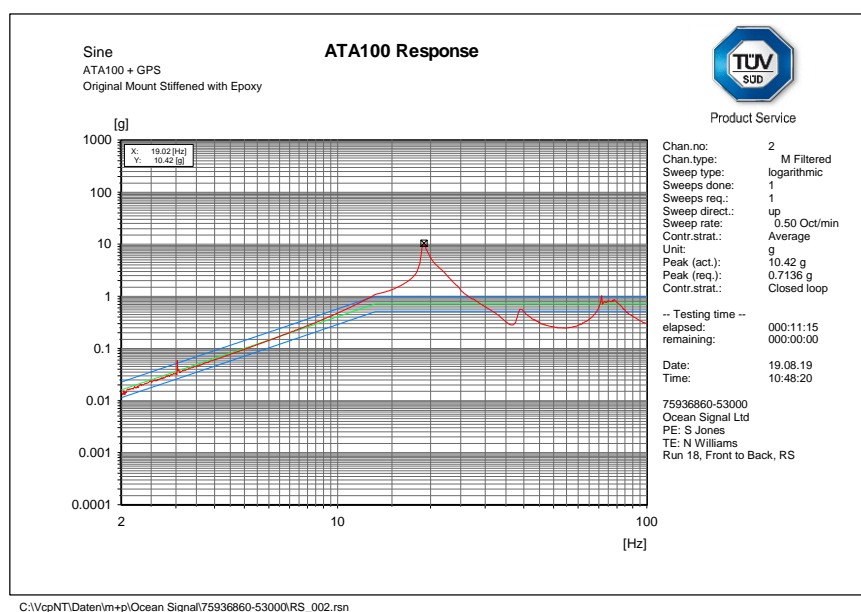
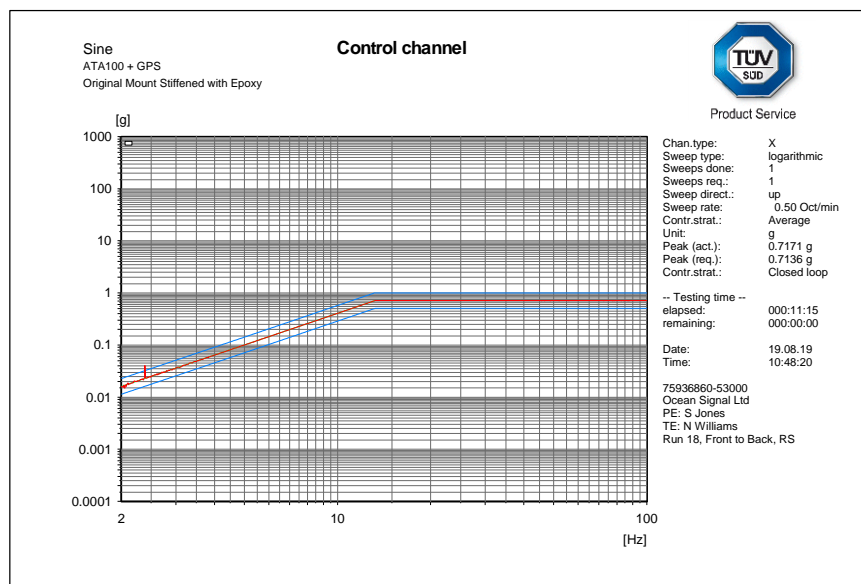


Endurance Run

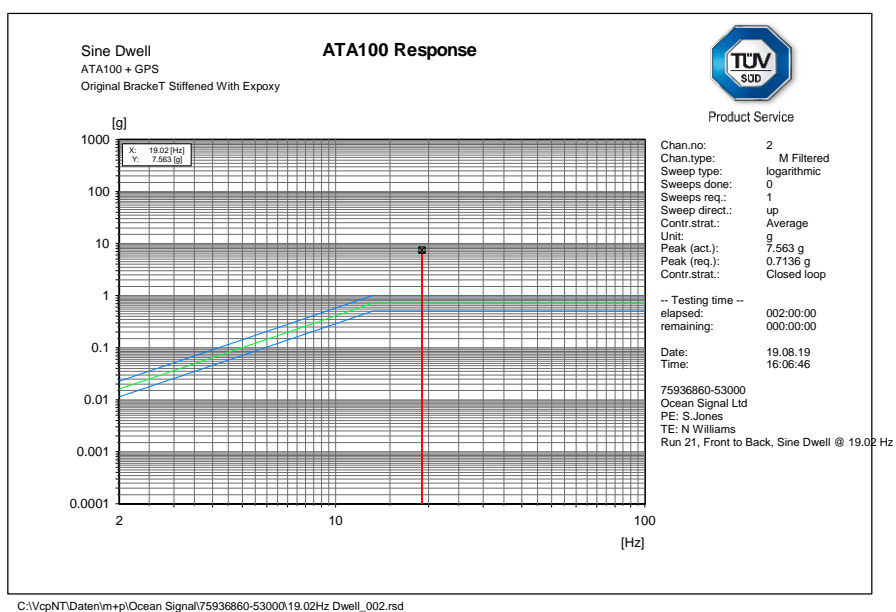
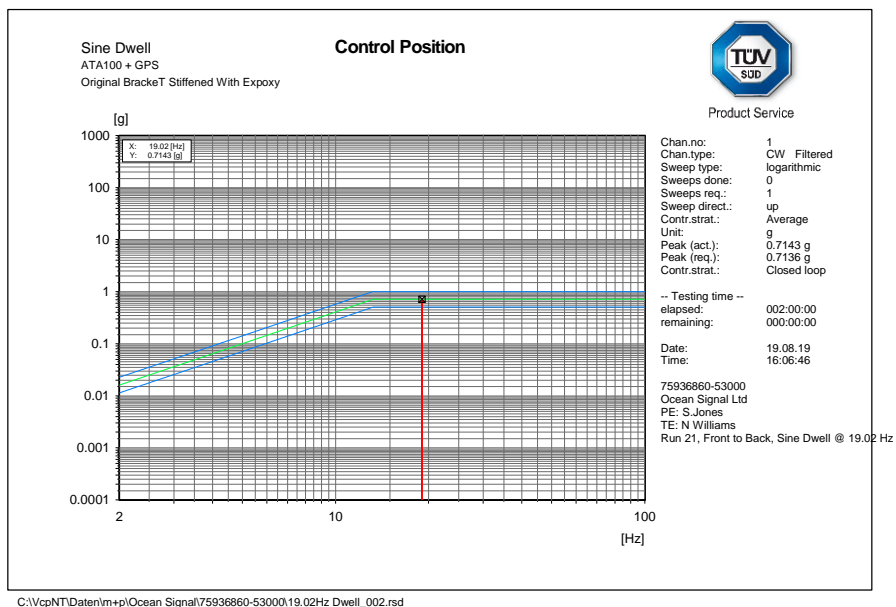


Z Axis

Resonant Search



Endurance Run



Performance checks and Summary

In accordance with section 1.6 of this report, VDL messages exchanged between the EUT and a second AIS Test Transceiver were monitored throughout the 2 hour endurance tests. The EUT continued to transmit and receive messages with valid GNSS information with the following observed percentage error rates:

Axis	Errors (%)
X	TX: 2.9%, RX: 1.3%
Y	TX: 0.0%, RX: 0.6%
Z	TX: 3.1%, RX: 1.9%

As a baseline indicator, message errors were monitored over a 15 hour period in the absence of vibration, returning the following results:

TX Errors: 0.1%

RX Errors: 2.5%

The baseline demonstrates the approximate residual TX/RX error rates inherent within the performance monitoring test setup, thereby giving an indication of vibration effects on the EUT.

The test was carried out satisfactorily.



2.9 RAIN AND SPRAY

2.9.1 Specification Reference

IEC 60945, Clause 8.8

2.9.2 Test Details

See Manufacturer Supplied Data – SGS report HH40002A/2017



2.10 IMMERSION

2.10.1 Specification Reference

IEC 60945, Clause 8.9

2.10.2 Test Details

Not applicable - this test is only applicable to equipment classed as submerged or portable.



2.11 SOLAR RADIATION

2.11.1 Specification Reference

IEC 60945, Clause 8.10

2.11.2 Test Details

Manufacturer waiver request - see Annex A.



2.12 OIL RESISTANCE

2.12.1 Specification Reference

IEC 60945, Clause 8.11

2.12.2 Test Details

Manufacturer waiver request - see Annex A.



2.13 CORROSION TEST

2.13.1 Specification Reference

EN 60945:2002, clause 8.12

2.13.2 Test Details

Manufacturer waiver request - see Annex A.



2.14 ELECTROMAGNETIC EMISSION

2.14.1 Specification Reference

IEC 60945, Clause 9

2.14.2 Test Details

See TÜV SÜD document 75936860-04.



2.15 IMMUNITY TO ELECTROMAGNETIC EMISSION

2.15.1 Specification Reference

IEC 60945, Clause 10

2.15.2 Test Details

See TÜV SÜD document 75936860-04.



2.16 ACOUSTIC NOISE AND SIGNALS

2.16.1 Specification Reference

IEC 60945, Clause 11.1

2.16.2 Test Details

Refer to ISVR report 10717-jf-R01



2.17 COMPASS SAFE DISTANCE

2.17.1 Specification Reference

IEC 60945, Clause 11.2

2.17.2 Test Details

See TUV SUD document 75936860-04.



2.18 PROTECTION AGAINST ACCIDENTAL ACCESS TO DANGEROUS VOLTAGES

2.18.1 Specification Reference

IEC 60945, Clause 12.1

2.18.2 Equipment Under Test and Modification State

ATA100 S/N TA007 / TSR0022 - Modification State 4

2.18.3 Date of Test

09 July 2019

2.18.4 Test Equipment Used

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

2.18.5 Test Method

The EUT is supplied from SELV and therefore has no hazardous parts inside.

The outer case of the equipment was examined with the test finger. The EUT contained no openings that permitted ingress of the test finger.

2.18.6 Test Results

The test was carried out satisfactorily.



2.19 ELECTROMAGNETIC RADIO FREQUENCY RADIATION

2.19.1 Specification Reference

IEC 60945, Clause 12.2

2.19.2 Test Details

See TÜV SÜD document 75936860 Report 09.



2.20 EMISSION FROM VISUAL DISPLAY UNIT (VDU)

2.20.1 Specification Reference

IEC 60945, Clause 12.3

2.20.2 Test Details

This test is only applicable to equipment including a VDU.



2.21 X-RADIATION

2.21.1 Specification Reference

IEC 60945, Clause 12.4

2.21.2 Test Details

This test is only applicable to equipment that may emit X-radiation.



2.22 MAINTENANCE

2.22.1 Specification Reference

IEC 60945, Clause 13 (4.7)

2.22.2 Equipment Under Test and Modification State

User Manual version 00.10

2.22.3 Date of Test

22 Oct 2019

2.22.4 Test Equipment Used

Not applicable.

2.22.5 Test Details

The Installation Manual (as identified above) was inspected and assessed against the criteria specified in the relevant clause.

IEC 60945 clause 4.7: Maintenance

4.7.1 Maintenance of hardware

(A.694/8.1) The equipment shall be so designed that the main units can be replaced readily, for on-board repair, without elaborate recalibration or readjustment.

(A.694/8.2) Equipment shall be so constructed and installed that it is readily accessible for inspection and maintenance purposes.

The manual indicates that there are no user serviceable components.

4.7.2 Maintenance of software

Equipment shall be so designed that maintenance of software can be readily carried out on board. Maintenance shall be supported by labelling in accordance with 4.9 (Marking and identification). No user retraining shall be necessary after maintenance.

On board documentation shall be updated with the software maintenance to reflect any changes introduced.

The manual provides details as to how to carry out firmware updates.



11. MAINTENANCE

11.1 Product Cleaning

- Lightly rinse or flush with clean, cool fresh water.
- Do NOT wipe the screen with a dry cloth, as this could scratch the window.
- Do NOT use: abrasive, acidic, ammonia, solvent or chemical based cleaning products.
- Do NOT use a jet wash.

11.2 Service and Maintenance

This product contains no user serviceable components. Please refer all maintenance of the product to Ocean Signal Ltd.. Unauthorised repair may affect your warranty.

! FCC Warning (Part 15.21)

Changes or modifications to this equipment not expressly approved in writing by Ocean Signal Ltd. could violate compliance with FCC rules and void the user's authority to operate the equipment.

11.3 Firmware Updates

Ocean Signal reserves the right to produce Firmware updates as required. These updates will be made available to download from www.oceansignal.com and will be accompanied with relevant documentation including updated User Manuals.

11.3.1 To update Firmware

Download the relevant file and copy it to a blank USB stick. Power down the ATA100 and use the supplied USB on-the-go cable to connect the USB stick to the USB port on the front of the unit. Power on the ATA100 and the firmware will be loaded into the unit automatically with progress reported visually on the screen. On completion power down the ATA100 and remove the USB on-the-go cable before powering up once more.

Firmware versions loaded can be viewed:



Bootloader Version (RF Display)	02.0.00 134216.4
Firmware Version (RF Display)	00.2.03 00.2.03
Modem Firmware	01.2.51
Mapping Version	00.0.03
Serial Number	025090000T
Build (RF Display)	e006a725 922415ee
Tag (RF Display)	master master
Release Date (RF Display)	Aug 30 2019 Aug 30 2019

Ocean Signal 2019



2.23 EQUIPMENT MANUALS

2.23.1 Specification Reference

IEC 60945, Clause 14 (4.8)

2.23.2 Equipment Under Test and Modification State

ATA 100 Installation Manual 190703.pdf (4 July 2019)

ATA 100 user Manual 191113.pdf

2.23.3 Date of Test

09 July 2019

2.23.4 Test Equipment Used

Not applicable.

2.23.5 Test Details

The Installation and User Manual (as identified above) was inspected and assessed against the criteria specified in the relevant clause.

IEC 60945 Clause 4.8: *...Operating and servicing manuals shall:*

a) *Be written in English:*

The Installation Manual and User Manual are written in English.

b) *Identify the category of the equipment or units to which they refer (4.4):*

The IEC 60945 category is stated in the Installation Manual (*Protected* for the Class A transceiver and / or *Exposed* for the GPS antenna).

c) *In the case of equipment so designed that fault diagnosis and repair down to component level are practicable, provide full circuit diagrams, component layouts and a component parts list:*

The EUT is not designed such that fault diagnosis and repair down to component level are permissible. The Manufacturer advises that the EUT should be returned to the Manufacturer / Authorised trained persons for service and repair. Furthermore, the Installation manual indicates that there are no user serviceable components.

d) *In the case of equipment containing complex modules in which fault diagnosis and repair down to component level are not practicable, contain sufficient information to enable a defective complex module to be located, identified and replaced. Other modules and those discrete components which do not form part of modules shall also meet the requirements of 4.8 c) above.*

The EUT is not designed such that complex modules should be replaced whilst in service; the Installation manual indicates that there are no user serviceable components.



For further assessment of installation instructions in line with clause 14.0 of IEC 60945, refer to TÜV SÜD document 75936860 report 06.

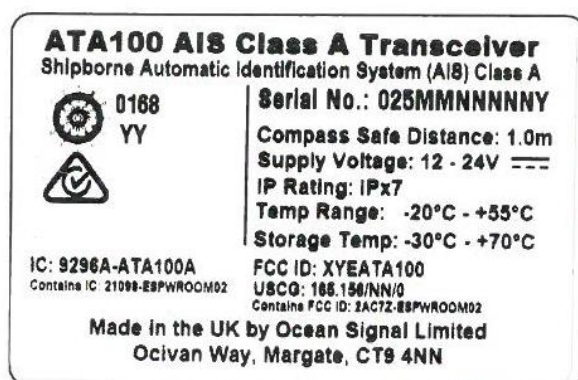
2.24 MARKING AND IDENTIFICATION

2.24.1 Specification Reference

IEC 60945, Clause 15 (4.9)

2.24.2 Test Details

EUT sample labels can be seen below:



The Manufacturer, equipment type, model identification under which it was type tested and serial number of the unit is clearly identified.

The compass safe distance value is presented on the label.

The details of the firmware version are displayed on the EUT screen during powerup, on the main screen.



SECTION 3

TEST EQUIPMENT USED



3.1 TEST EQUIPMENT

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

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.3 Climatic - High Temperature					
Temperature Chamber	Instron	906	2128	12	17-Jan-2020
Climatic Chamber	Aralab	Aralab 1, 1000 ECP75	4718	12	02-Jan-2020
Section 2.4 Climatic – Humidity					
Climatic Chamber	Aralab	Aralab 1, 1000 ECP75	4718	12	12-Jun-2018
Section 2.5 Climatic - Low Temperature					
Temperature Chamber	Instron	906	2128	12	17-Jan-2020
Section 2.17 EMC - Compass Safe Distance					
Power Supply Unit	Hewlett Packard	6267B	109	-	TU
Sussex Helmholtz Coil	Various	88771	327	-	TU
Power Supply	Farnell	LT30/2	3422	-	TU
Compass Verification Unit	TUV SUD	CVU	3579	-	TU
Marine Binnacle Compass with Repeater Display	Cassens & Plath	Compass: Type 11	3834	-	TU
Section 2.18 Safety					
Fig 7 Test Probe 11 IEC/EN 61032	Retrac Productions Ltd	Un-Jointed test finger	3630	24	06-Feb-2021
Hygrometer	Rotronic	HP21	3718	12	27-Jun-2020
Section 2.8 Vibration - Sine					
Charge Amp	Endevco	133	2500	12	20-Jun-2020
Charge Amp	Endevco	133	2501	12	20-Nov-2019
Vibration System	Ling Dynamic Systems	875	3170	6	15-Aug-2019
Isotron Accelerometer	Endevco	256-10	3380	6	05-Oct-2019
Isotron Accelerometer	Endevco	256-10	3393	12	17-Oct-2019
Accelerometer	Endevco	256-10	3435	6	04-Oct-2019
Vibration Controller	m + p International	Vibpilot 8	3771	12	10-Jul-2020
Vibration Controller (8 Ch)	m + p International	VibPilot 8		12	15-Nov-2019
Vibration Controller (8 Ch)	m + p International	VibPilot 8	3780	12	15-Nov-2019
Accelerometer	Meggitt	256-10		6	13-Nov-2019
Shaker	Ling Dynamic Systems	A340	4294	6	09-Sep-2019
IEPE Accelerometer	Dytran	3049E1	5089	6	18-Oct-2019
IEPE Accelerometer	Dytran	3049E1	5123	6	18-Oct-2019

TU – Traceability Unscheduled



SECTION 4

PHOTOGRAPHS

4.1 PHOTOGRAPHS OF EQUIPMENT UNDER TEST (EUT)



Front View



Rear View



SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



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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ANNEX A

MANUFACTURER SUPPLIED INFORMATION



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9 October 2019

Subject RescueME Material Waiver and Disclosure Information Tests

To Whom It May Concern:

IEC 60945 stipulates that where a manufacture can produce evidence that the components, materials and finishes employed in the equipment would satisfy the following tests then the tests shall be waived:

- Corrosion (Salt Mist) IEC 60945 (8.12)
- Solar Radiation IEC 60945 (8.10)
- Oil resistance IEC 60945 (8.11)

In this instance Ocean Signal Limited claim, for one or more of the reasons listed below that these criteria are met for the ATA100 class A AIS transceiver and therefore make application that the tests be waived.

- 1 The materials have a proven history of service in a marine environment, either from use in Ocean Signal's existing approved product range, or by implication from a long-established history of exposure without effect e.g. Stainless steel).
- 2 The material manufacturer has conducted equivalent testing and has declared the product as being immune to these effects in the relevant data sheet.
- 3 Ocean Signal Limited, in house testing has proven the materials to be immune to the cause of degradation (e.g. oil resistance)
- 4 Ocean Signal Limited has previously had the materials tested on other approved products which demonstrated the materials conformance to the test requirements.

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Ocean Signal Limited hereby declares that the materials used in the construction of the ATA100 as here-in listed are not affected by the degrading agents listed above.

Signed on behalf of Ocean Signal Limited.



David Sheekey

Type Approval and QMS Facilitator

The following is a list of components and materials used in the ATA100 that are in direct contact with the marine environment.

Mount Bracket Base	Nylon GF30
Mount bracket interface	Nylon GF30
Mount bracket knob	Nylon GF30
UNF connector	Brass, Plated
UNF connector nut	Brass, Plated
TNC Connector	Brass, Plated
TNC connector nut	Brass, Plated
Jogstick body	ABS
Jogstick body bottom	ABS
Jogstick body top	ABS
Jogstick dust seal	Silicone Rubber
Jogstick O-ring retainer	ABS
Jogstick cap	PMMA
Jogstick grip	Silicone Rubber
Keypad RH	Silicone Rubber
Keypad LH	Silicone Rubber
Connector font	Nylon GF
Pilot plug bung	Silicone Rubber
Case seal connector cover	Silicone Rubber
Case Rear	PC
Case front	PC/ABS
Case seal main	Silicone Rubber
Connector cover	PC
Cable grommet	Silicone Rubber
Cable grommet retainer	PC
Brass inserts	Brass
Screws	Stainless Steel A2
Labels	Lexan