

Test Report

Report No.: SZES200700466701

Date: 2020-10-22

Applicant: Navico Auckland Ltd.
44 Arrenway Drive, Rosedale, Auckland 0632, New Zealand.

Manufacturer: Same as applicant

Factory: Shenzhen Fastrain Technology Co., Ltd.
No.3 Baolong 4th Rd., Baolong Industrial Area, Longgang District, Shenzhen, China.

Test object: MARINE BLACK BOX DSC/AIS VHF RADIO SYSTEM

Trade mark: NAVICO

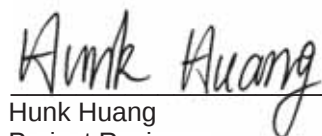
Item No.: NRS-1, NRS-2

Test specifications /
Test standard: Clause 8 of IEC 60945: 2002

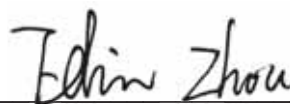
Environmental
condition category: B (Protected)

Test result: See following page(s) of this report for reference.

Remark: The results given in this report are related to the tested specimen of the described electrical apparatus.



Hunk Huang
Project Reviewer
Safety Laboratory



Edwin Zhou
Project Engineer



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1. Function / Description:

Both models in this report are identical except for mode no. and AIS board (NRS-2 has AIS board inside the main unit and while NRS-1 not). All tests were carried out on model NRS-2 were considered representative. The accessories used in the NRS-2 test are Simrad HS100 (Wired Headset) and SP100 (Wired Speaker).

2. Test:

The tests were done in the Electrical Safety Laboratory of SGS-CSTC in Shenzhen.

2 sets of samples were provided for testing.

Test item was received on 2020-07-31.

Tests were performed on 2020-08-20 to 2020-09-30.

Possible test case verdicts:

Test case does not apply to the test object:	N/A
Test item does meet the requirement:	P(ass)
Test item does not meet the requirement:	F(ail)

3. Test detail:

Clause	Test item description	Requirement	Verdict
8.2.1	Dry heat test (Storage)	+70 C, 16 hours. See "Test data 1".	P
8.2.2	Dry heat test (Functional)	+55 C, 16 hours. See "Test data 2".	P
8.3	Damp heat test	+40 C, 93%, 16 hours. See "Test data 3".	P
8.4.1	Low temperature (Storage)	--	N/A
8.4.2	Low temperature (Functional)	-25 C, 16 hours. See "Test data 4".	P
8.5	Thermal shock	--	N/A
8.6.1	Drop on hard surface	--	N/A
8.6.2	Drop into water	--	N/A
8.7	Vibration	See "Test data 5".	P
8.8	Rain and spray	See "Test data 6".	P
8.9.1	Immersion (Submerged equipment)	--	N/A
8.9.2	Immersion (Portable equipment)	--	N/A
8.9.3	Immersion (temporary immersion of Portable equipment)	--	N/A
8.10	Solar radiation	--	N/A
8.11	Oil resistance	--	N/A
8.12	Corrosion (Salt mist)	Document provided by client. See "Test data 7".	P



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Sample photos



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Shenzhen Branch (Public Sector) Laboratory

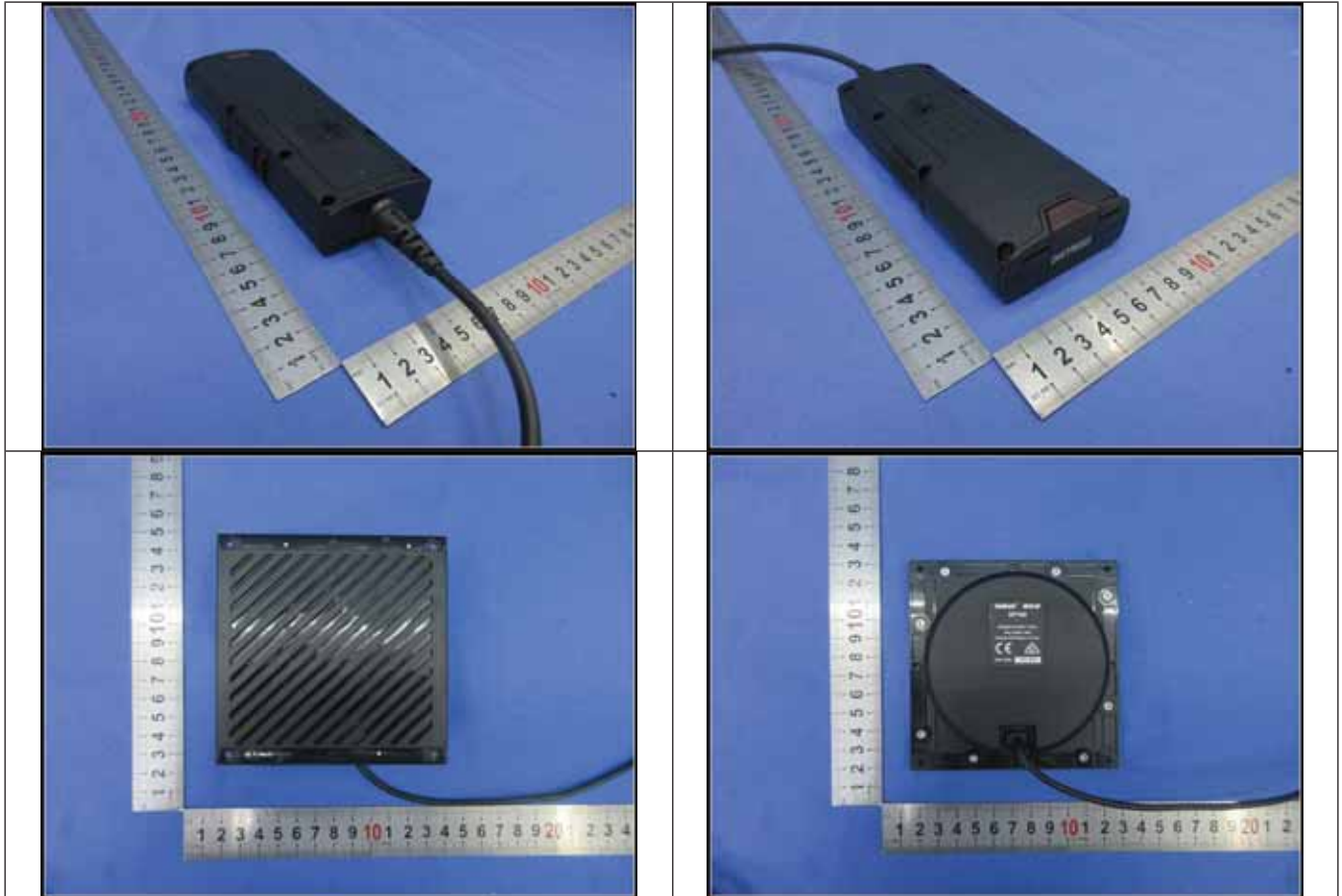
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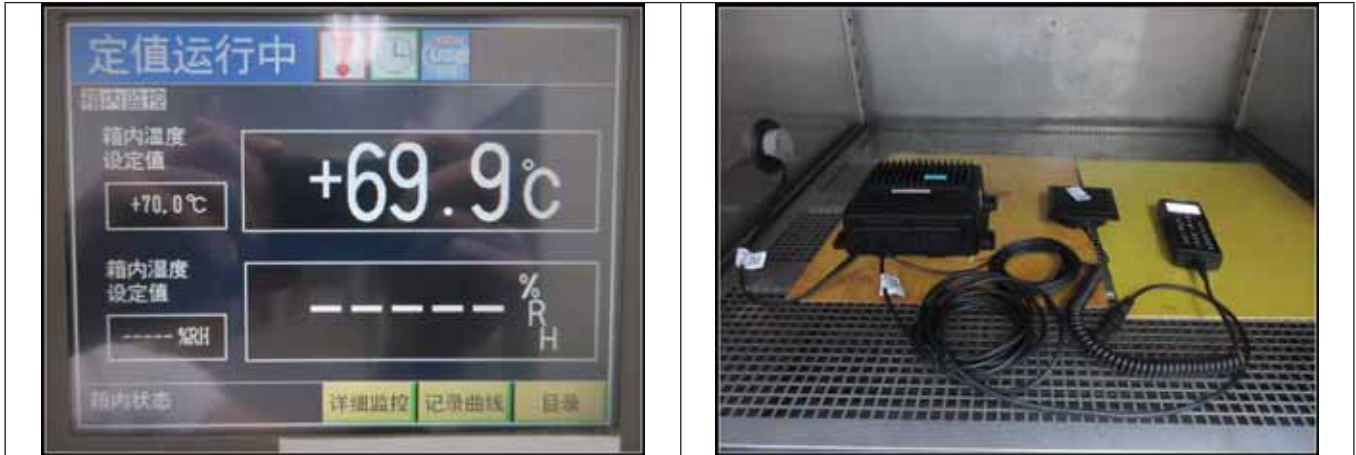
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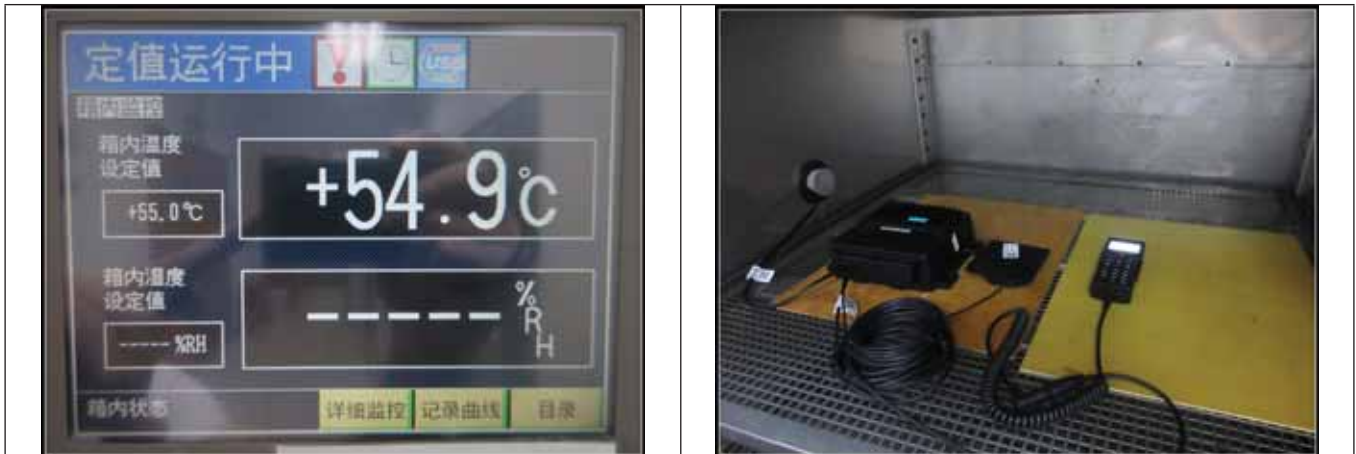
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Test data 1:



Note: After test, the appearance, structure, display function, RF function is normal.

Test data 2:



Note: After test, the appearance, structure, display function, RF function is normal.



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Test data 3:



Note: After test, the appearance, structure, display function, RF function is normal, kept operations for at least 2 hours.

Test data 4:



Note: After test, the appearance, structure, display function, RF function is normal, kept operations for at least 2 hours.



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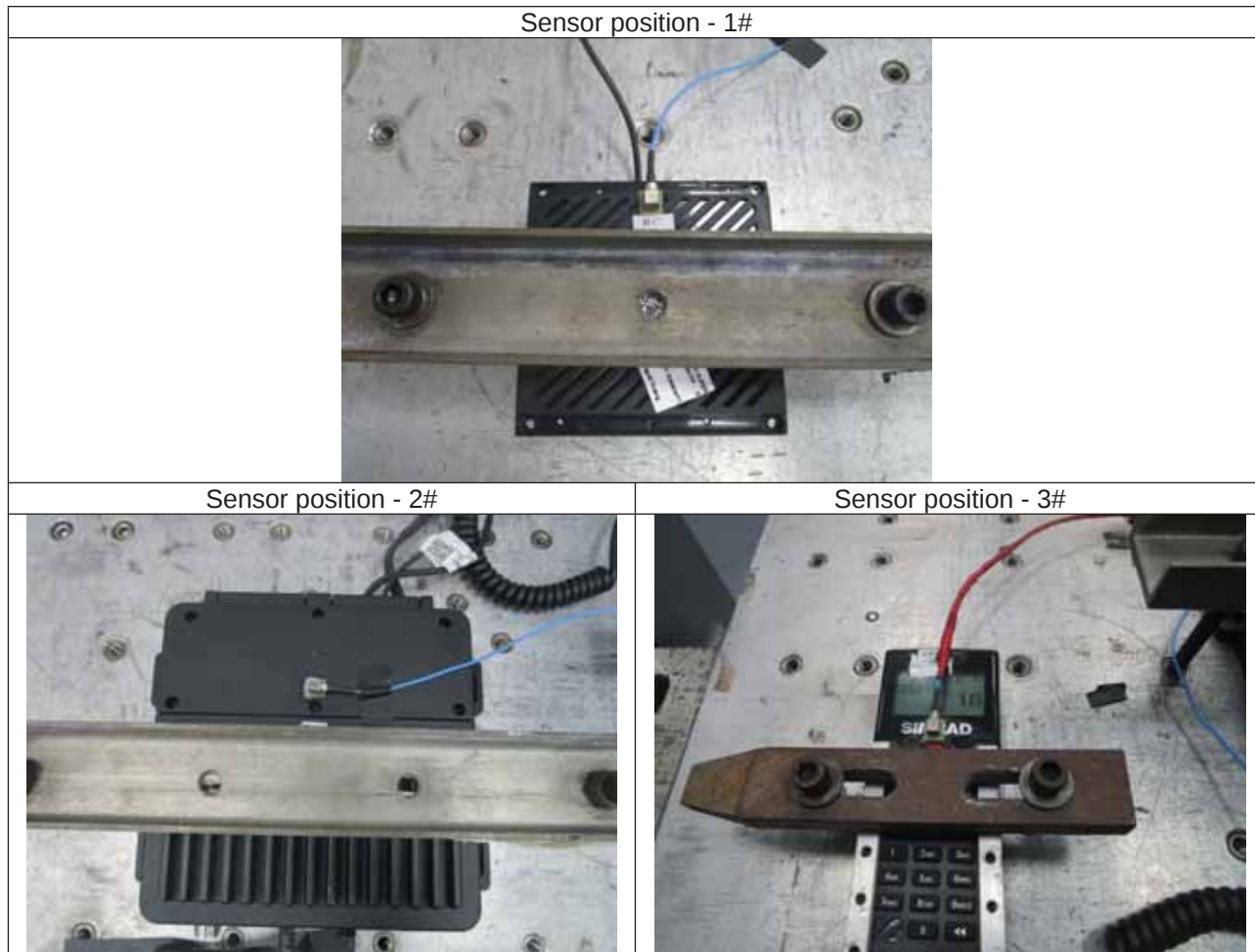
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Test data 5:

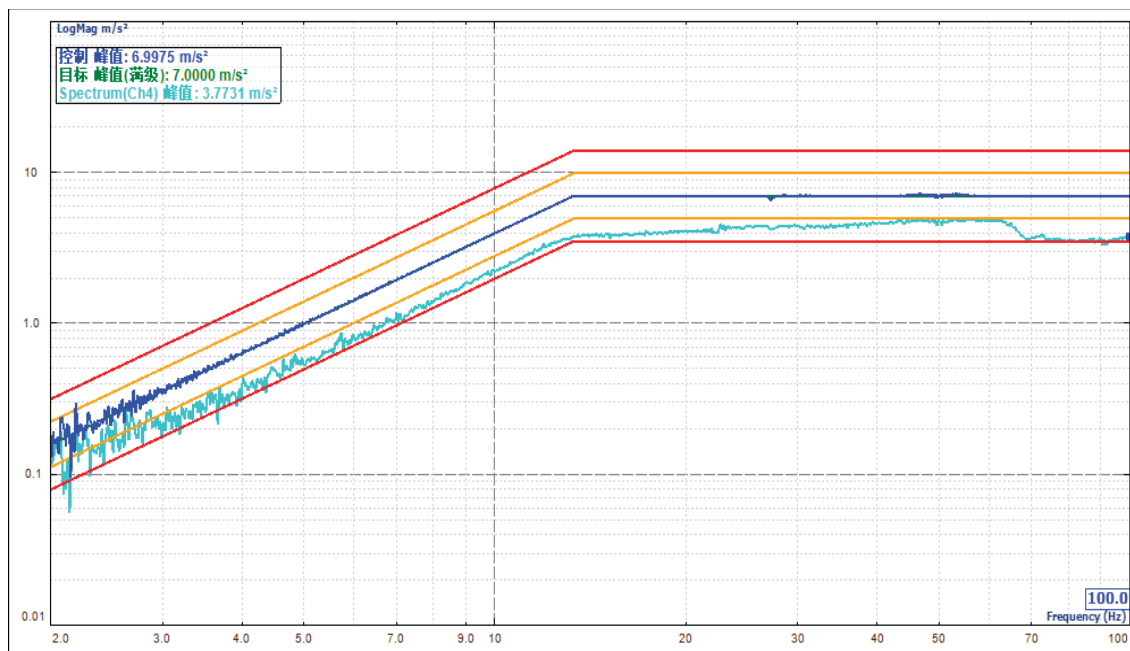
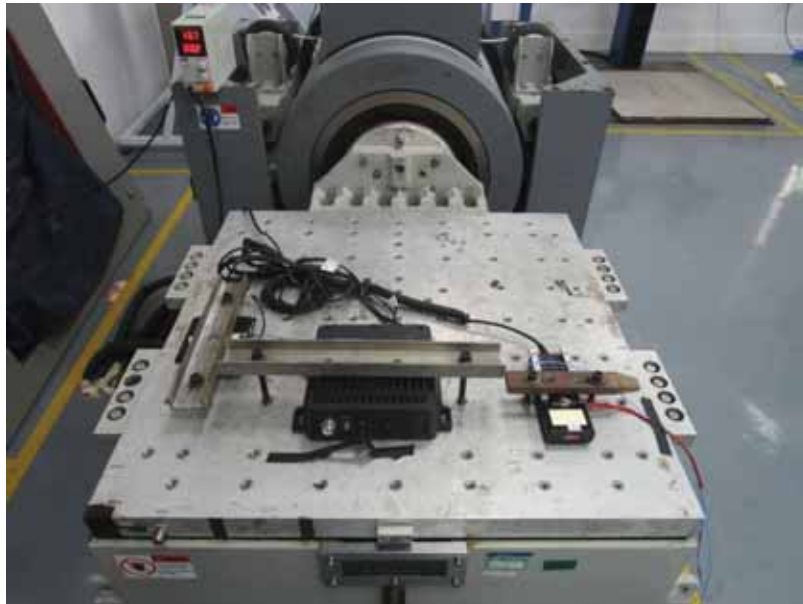


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X AXIS



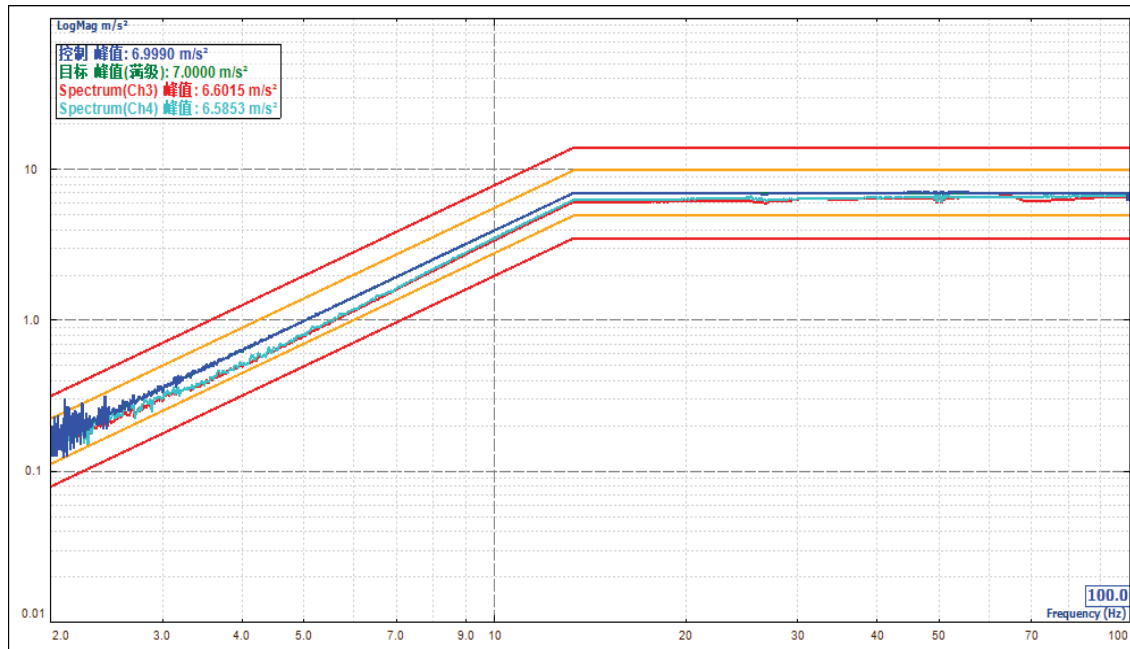
Resonance search spectrum - 1#

Test Report

Report No.: SZES200700466701

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X AXIS



Resonance search spectrum - 2# & 3#

Control Peak	6.998~6.999 m/s2
Frequency	100.0 Hz
Sweep Rate	0.5 Oct/Min
Sweep Type	Log
Total Elapsed Time	00:11:28

Note: After test, the appearance, structure, display function, RF function is normal.

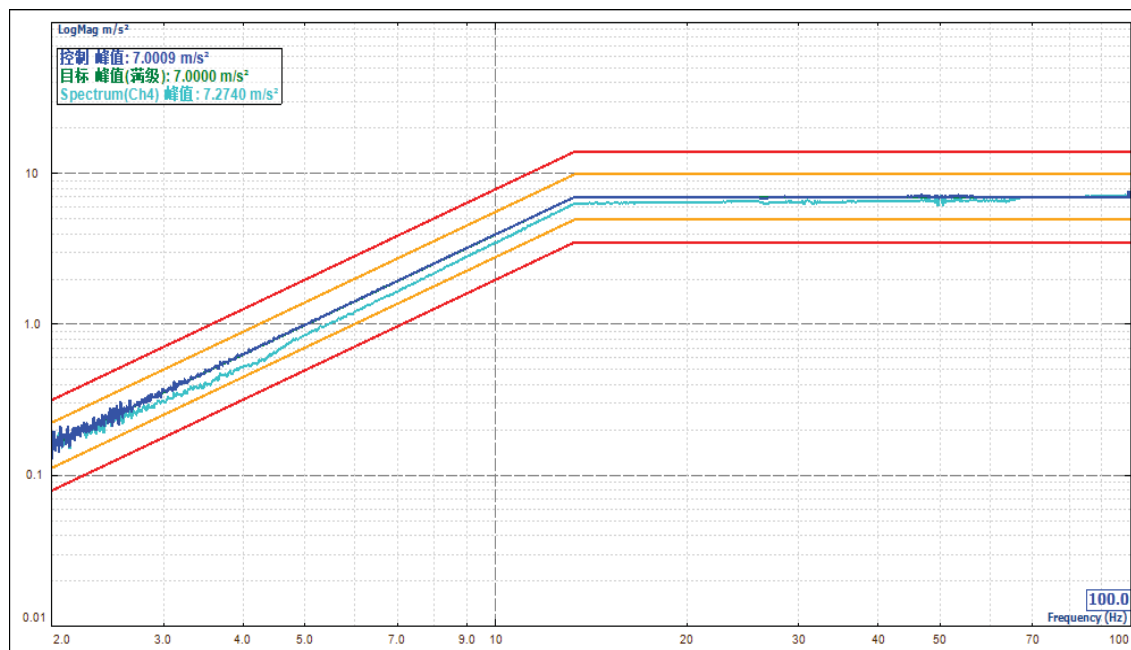


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Y AXIS



Resonance search spectrum - 1#

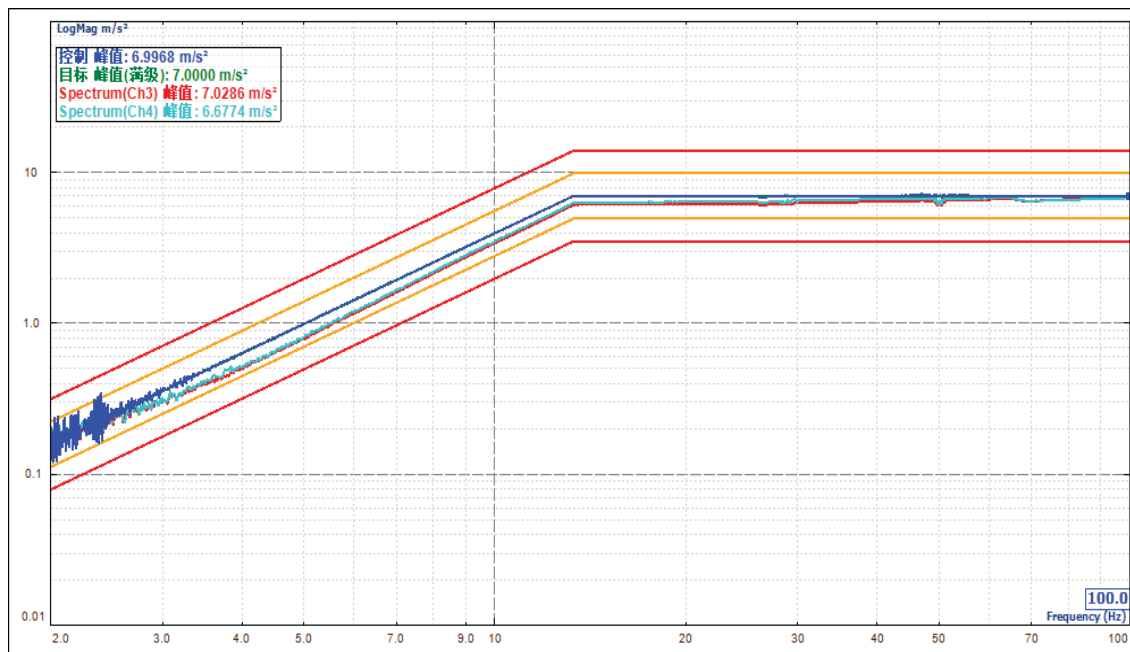


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Y AXIS



Resonance search spectrum -2# & 3#

Control Peak	6.997~7.001 m/s2
Frequency	100.0 Hz
Sweep Rate	0.5 Oct/Min
Sweep Type	Log
Total Elapsed Time	00:11:28

Note: After test, the appearance, structure, display function, RF function is normal.



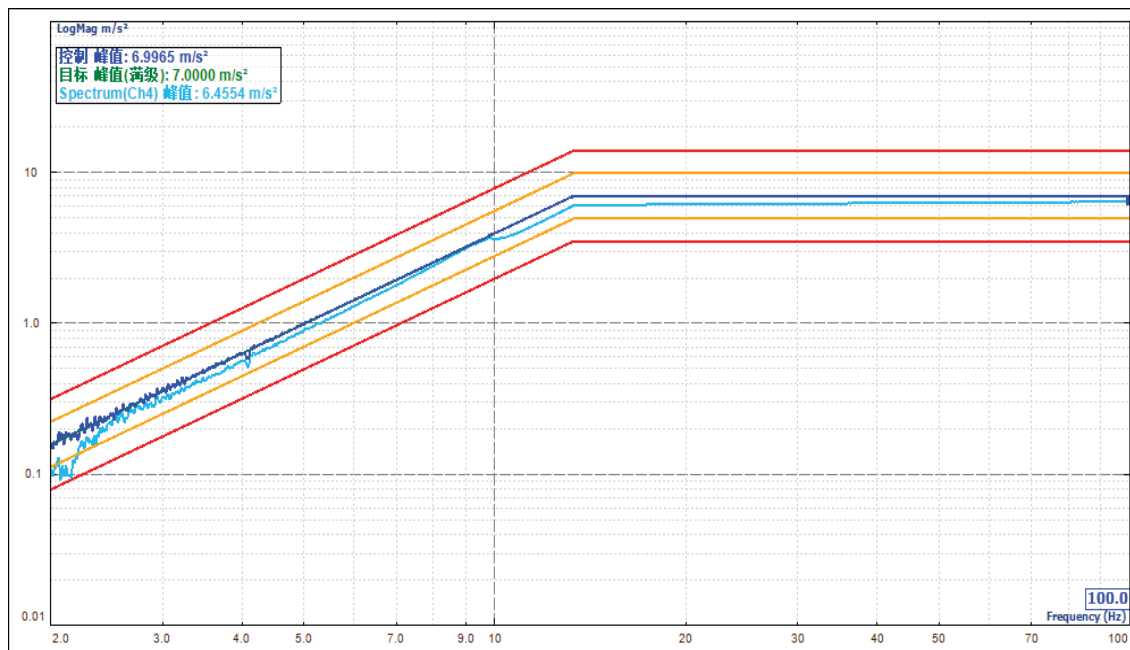
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Z AXIS



Resonance search spectrum - 1#

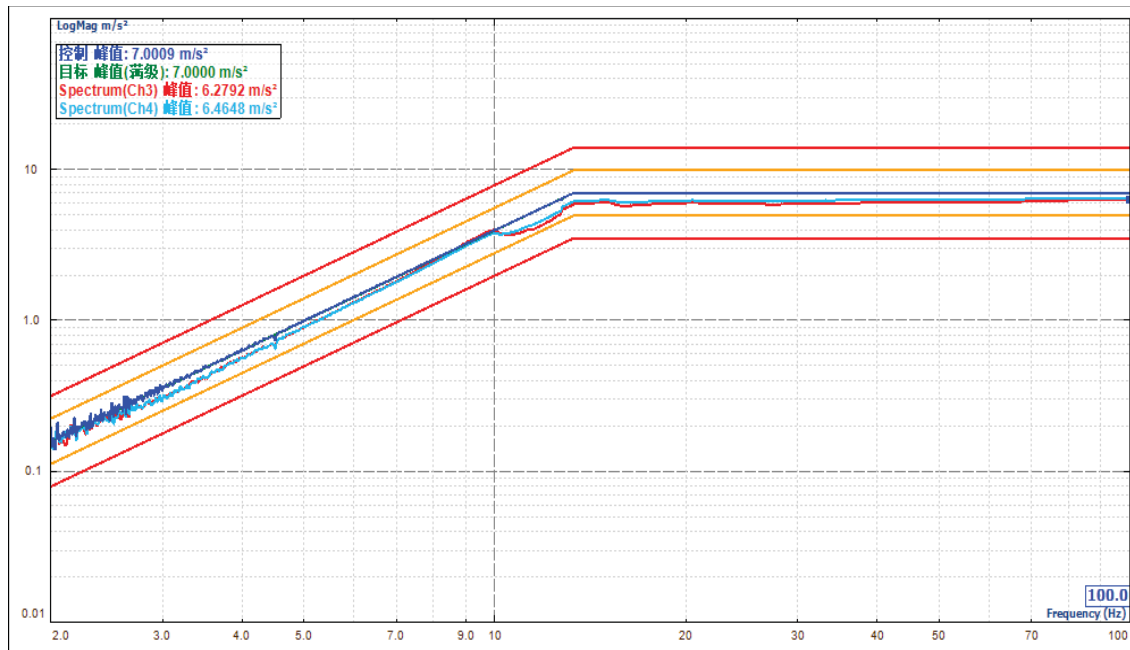


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Z AXIS



Resonance search spectrum -2# & 3#

Control Peak	6.997~7.0001 m/s ²
Frequency	100.0 Hz
Sweep Rate	0.5 Oct/Min
Sweep Type	Log
Total Elapsed Time	00:11:29

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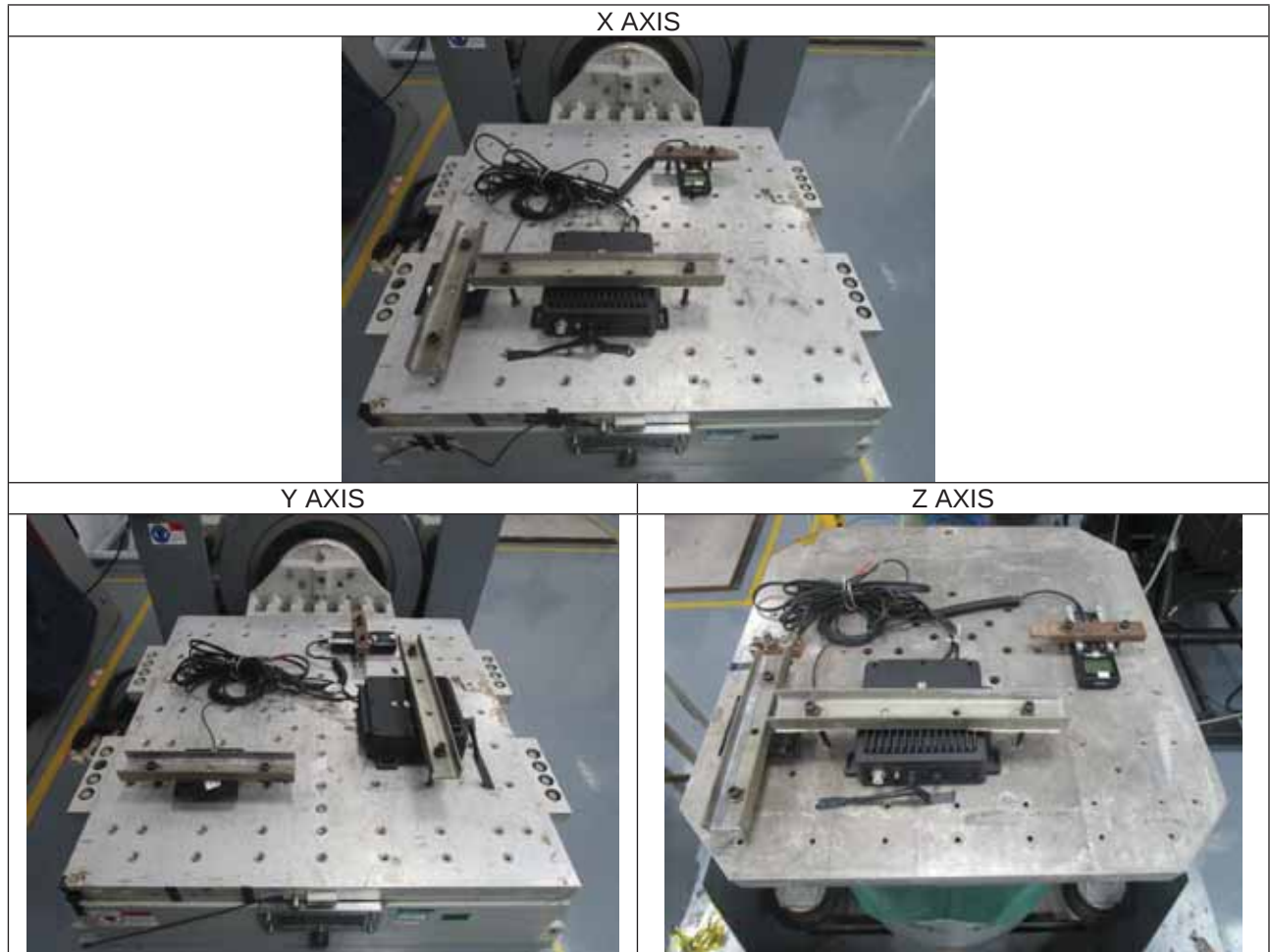
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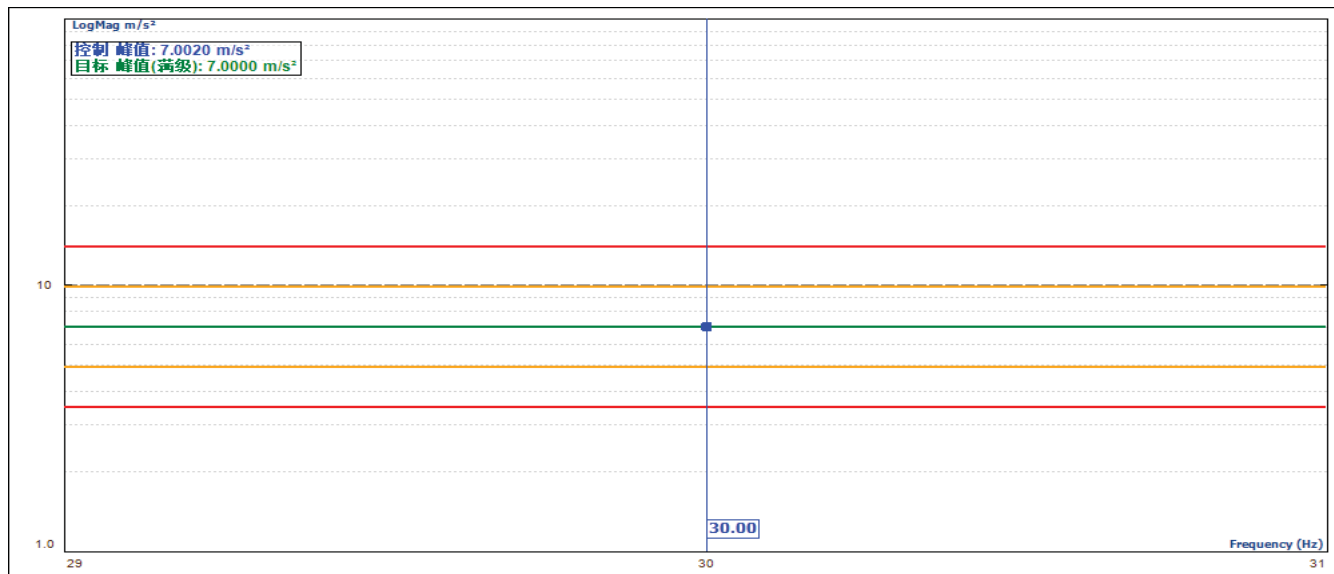
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Control Peak	7.002 m/s ²
Frequency	30.0 Hz
Sweep Rate	0.5 Oct/Min
Sweep Type	Log
Total Elapsed Time	02:00:07

Note: After test, the appearance, structure, display function, RF function is normal.



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Test data 6:

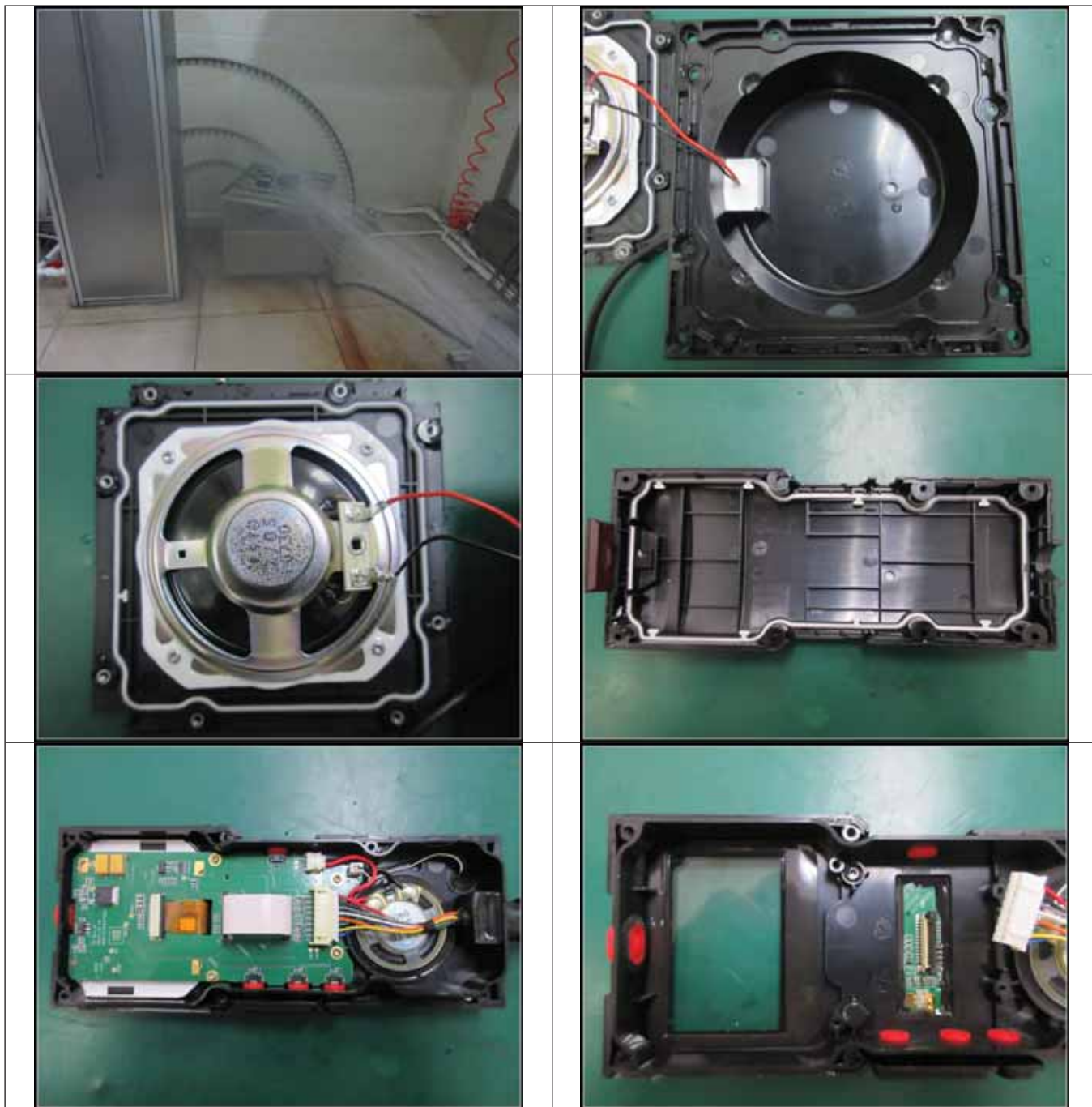


Note: No visible external indications of damage or of unwanted ingress of water.

Test Report

Report No.: SZES200700466701

Date: 2020-10-22



Note: No visible external indications of damage or of unwanted ingress of water.



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Test data 7:

Photo documentation

Materials Declaration

As required by IEC 60945; the FASTRAIN product NRS-1,NRS-2 is required to be tested and to meet the specific test

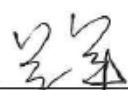
- Corrosion (Salt Mist) IEC 60945, Clause 8.12

IEC 60945 stipulates that where a manufacturer can produce evidence that the components, materials and finishes employed in the equipment would satisfy the test requirement then the teste shall be waived.

In this instance Shenzhen Fastrain Technology Co., Ltd. claim, for the one or more of the reasons listed below that the criterion is met and therefore make application that the test be waived.

1. The materials have a proven history of service in a marine environment. Either from use in FASTRAIN's existing approved marine equipment range, or by implication from a long established history of exposure without effect.
2. The material manufacturer has conducted equivalent testing and has declared the product as being immune to these effects in the relevant internal test report.
3. FASTRAIN in-house testing has proven the materials to be immune to the cause of degradation.

Shenzhen Fastrain Technology Co., Ltd. hereby declares that the materials used in the construction of the NRS-1,NRS-2 product as listed in Annex A are not affected by the degrading agents listed above.

(Signature) 
(Title) Project Manager
(Date) 2020-09-30
Company Chop



SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch

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Annex A

Components and materials listed below are in contact with the marine environment while in use. (Only exposed metal parts are considered for the Corrosion test.)

Component description	Model/Type	Test report provided	History of service in a marine environment
Aluminum shell	ADC12&Spray paint	Yes	Yes Used in model of RS20 for a long period more than half a year.
DISTRESS Spring	SUS304	Yes	Yes Used in model of LINK9 for a long period more than half a year.
1.DISTRESS shaft (Φ 1.2mm) 2. DISTRESS bracket 3. screw	SUS316 passivation	Yes	Yes Used in model of LINK9 for a long period more than half a year.
antenna connector	Brass nickel-plating	Yes	Yes Used in model of LINK6 for a long period more than half a year.
Aluminum cover	AL5052&Spray paint	Yes	Yes Used in model of RS20 for a long period more than half a year.

(Signature)

(Title)

(Date)

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Equipment information:

Equipment No.	Equipment Name	Model No.	Calibration Date	Next Calibration Date
SZE015-1	Temp.& Humidity Chamber	EL-10KA	2020-06-23	2021-06-22
SZE041-3	Strong Flush Test Apparatus (IPX5,6)	JL-1/2	2020-03-23	2021-03-22
SZREL-149	Vibration Test System	DC-2200-26	2019-10-31	2020-10-30
SZREL-149E	Charge Accelerometer	4371 V	2020-07-15	2021-07-14
SZREL-119H	Acceleration Sensor	HT356A01	2020-03-13	2021-03-12
SZREL-268	Piezoelectric Accelerometer	HT356B01	2020-07-15	2021-07-14
SZREL-195	4T Vibration Test System	DC-4000-40	2019-10-30	2020-10-29
SZREL-195C	Sensor	YMC2107CM	2020-01-16	2021-01-15

- - - End of Report - - -



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