

TEST REPORT

Report No.: HC50044E/2016

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Date: March 29, 2017

ALLTEK MARINE ELECTRONICS CORP.
14F-2, NO.237, SEC. 1, DATONG RD., XIZHI DISTRICT,
NEW TAIPEI CITY, TAIWAN

The following merchandise was submitted and identified by the vendor as:

Product Description: AIS Class B Transponder
Style/ Item No.: WideLink B600W/ No.1
Manufacturer/ Vendor: Alltek Marine Electronics Corp.
Country of Origin: Taiwan
Quantity: Total 1 set
Testing Period: May 15, 2016 to Dec. 13, 2016
Note: (Client's declaration) The setup of equipment under test with WideLink B600W are shown in appendix I

We have tested the submitted sample(s) as requested and the following results were obtained:

Test Required: (According to client's test specification, please see following sheets in detail.)

1. Dry Heat Storage Test
2. Dry Heat Functional Test
3. Damp Heat Functional Test
4. Low Temperature Functional Test
5. Vibration Test

Test Results: -PLEASE SEE ATTACHED SHEETS-

*HC50044D/2016, dated on January 18, 2017, is hereby canceled and replaced by HC50044E/2016.

Signed for and on behalf of
SGS TAIWAN Ltd.



Hank Chiou
Supervisor

TEST REPORT

1. Dry Heat Storage Test:

Test Equipment:

Name	Brand	Model	Serial No.
Programmable Temperature & Humidity Chamber	KSON	THS-D6TS-150+LN2	A0495

Lab Environmental Conditions:

Ambient temperature: $(25 \pm 3) ^\circ\text{C}$

Ambient humidity: $(55 \pm 20) \% \text{RH}$

Test Method/ Specification:

Test method: IEC 60945: 2002, Dry Heat Storage Test

Sample condition: Non-operating

Step	Temperature ($^\circ\text{C}$)	Time (minutes)	Sample condition
1	25→70	45	Non-operating
2	70	600	Non-operating
3	70→25	45	Non-operating
4	25	30	Operating and perform functional check

Test cycle: Total 1 cycle

- Examine the appearance of specimen(s) by visual check and perform functional check after dry heat storage test.
- Functional check: Turn on the power of specimen then examine whether the GPS 3D fixed and AIS transmitting/receiving functions of specimen(s) could work normally or not.

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Specimen:

Style/ Item No.: WideLink B600W/ No.1

Quantity: Total 1 set

Test Result:

Style/ Item No.	Check Item	Appearance check (Visual check)	Functional Check
	WideLink B600W/ No.1		No visible damage

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2. Dry Heat Functional Test:

Test Equipment:

Name	Brand	Model	Serial No.
Programmable Temperature & Humidity Chamber	KSON	THS-D6TS-150+LN2	A0495

Lab Environmental Conditions:

Ambient temperature: $(25 \pm 3) ^\circ\text{C}$

Ambient humidity: $(55 \pm 20) \% \text{RH}$

Test Method/ Specification:

Test method: IEC 60945: 2002, Dry Heat Functional Test

Sample condition: Operating (Perform GPS locating Test)

Step	Temperature ($^\circ\text{C}$)	Time (minutes)	Sample condition
1	25→55	30	Operating
2	55	600	Operating
3	55	30	Operating and perform functional check

Test cycle: Total 1 cycle

- Examine the appearance of specimen(s) by visual check and perform functional check after dry heat functional test.
- Functional check: Turn on the power of specimen then examine whether the GPS 3D fixed and AIS transmitting/receiving functions of specimen(s) could work normally or not.

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Specimen:

Style/ Item No.: WideLink B600W/ No.1

Quantity: Total 1 set

Test Result:

<div style="text-align: center;">Check Item</div> Style/ Item No.	Appearance check (Visual check)	Functional Check
WideLink B600W/ No.1	No visible damage	Normal

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3. Damp Heat Functional Test:

Test Equipment:

Name	Brand	Model	Serial No.
Programmable Temperature & Humidity Chamber	KSON	THS-D6TS-150+LN2	A0495

Lab Environmental Conditions:

Ambient temperature: $(25 \pm 3) ^\circ\text{C}$

Ambient humidity: $(55 \pm 20) \% \text{RH}$

Test Method/ Specification:

Test method: IEC 60945: 2002 Damp Heat Functional Test

Sample condition: Non-Operating & Operating (Perform GPS locating Test)

Step	Temperature ($^\circ\text{C}$)	Humidity (%RH)	Time (minutes)	Sample condition
1	25→40	→93	180	Non-Operating
2	40	93	600	Non-Operating
3	40	93	30	Non-Operating
4	40	93	120	Operating and perform functional check
5	40→25	93→	60	Operating

Test cycle: Total 1 cycle

- Examine the appearance of specimen(s) by visual check and perform functional check during and after damp heat functional test.
- Functional check: Turn on the power of specimen then examine whether the GPS 3D fixed and AIS transmitting/receiving functions of specimen(s) could work normally or not.

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Specimen:

Style/ Item No.: WideLink B600W/ No.1

Quantity: Total 1 set

Test Result:

<div style="text-align: center;">Check Item</div> <div style="text-align: left;">Style/ Item No.</div>	<div style="text-align: center;">Appearance check (Visual check)</div>	<div style="text-align: center;">Functional Check</div>
<div style="text-align: center;">WideLink B600W/ No.1</div>	<div style="text-align: center;">No visible damage</div>	<div style="text-align: center;">Normal</div>

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4. Low Temperature Functional Test:

Test Equipment:

Name	Brand	Model	Serial No.
Programmable Temperature & Humidity Chamber	KSON	THS-D6TS-150+LN2	A0495

Lab Environmental Conditions:

Ambient temperature: $(25 \pm 3) ^\circ\text{C}$

Ambient humidity: $(55 \pm 20) \% \text{RH}$

Test Method/ Specification:

Test method: IEC 60945: 2002 Low Temperature Functional Test

Sample condition: Operating (Perform GPS locating Test)

Step	Temperature ($^\circ\text{C}$)	Time (minutes)	Sample condition
1	25→-15	40	Non-operating
2	-15	30	Non-operating
3	-15	600	Operating
4	-15	30	Operating and perform functional check
Test cycle: Total 1 cycle			

- Examine the appearance of specimen(s) by visual check and perform functional check during and after low temperature functional test.
- Functional check: Turn on the power of specimen then examine whether the GPS 3D fixed and AIS transmitting/receiving functions of specimen(s) could work normally or not.

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Specimen:

Style/ Item No.: WideLink B600W/ No.1

Quantity: Total 1 set

Test Result:

<div style="text-align: center;">Check Item</div> <div style="text-align: left;">Style/ Item No.</div>	<div style="text-align: center;">Appearance check (Visual check)</div>	<div style="text-align: center;">Functional Check</div>
<div style="text-align: center;">WideLink B600W/ No.1</div>	<div style="text-align: center;">No visible damage</div>	<div style="text-align: center;">Normal</div>

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5. Vibration Test:

Test Equipment:

Name	Brand	Model	Serial No.
Vibration Test System	King Design	EM-5000F2K-75N600	10923742
Controller	Crystal	spider	1001664
Control Accelerometer	WR	793-6	A4632
Accelerometer	PCB	356A24/NC	162319
Vibration Test System	King Design	EM-800F2K-50N120	RU104080389
Controller	Dactron	LASER	7110357
Control Accelerometer	PCB	353B34	139174

Lab Environmental Conditions:

Ambient temperature: $(25 \pm 3) ^\circ\text{C}$

Ambient humidity: $(55 \pm 20) \% \text{RH}$

Test Method/ Specification:

1. Resonance Search:

Test method: IEC 62287-2: 2013, section 9.2 Vibration Test and client requests

Sample condition: Operating (Perform GPS locating Test)

Wave form: Sinusoidal

Frequency: (2~100) Hz

Frequency (Hz)	Displacement: D_{p-p} (mm)	Velocity (m/s)	Acceleration (m/s^2)
2	2	-	-
13.2	2	-	7
100	-	-	7

Sweep Rate: 0.2 octaves/ minute

Direction: X, Y, Z axes

Test duration: ~60 minutes

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Test Method/ Specification--Continued:**2. Dwell Vibration test:**

Test method:	<u>Refer to IEC 6945: 2002, section 9.2 Dwell Vibration test and client requests</u>
Sample condition:	<u>Operating (Perform GPS locating Test)</u>
Frequency:	<u>Frequency of major peaks where the magnitude ratio ≥ 5 (if it appears) during Resonance Search in each direction. If no resonance frequency found, dwell at 30 Hz.</u>
Acceleration:	<u>Same condition as specified in resonance search.</u>
Dwell:	<u>2 hours/ peak</u>
Requirement:	<u>Functional check shall be carried out at least once during each endurance test period and once before the end of each endurance test period.</u>

- Examine the appearance of specimen(s) by visual check and perform functional check during and after vibration test.
- Functional check: Turn on the power of specimen then examine whether the GPS 3D fixed and AIS transmitting/receiving functions of specimen(s) could work normally or not.

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Specimen:

Style/ Item No.: WideLink B600W/ No.1

Quantity: Total 1 set

Test Result:

1. Resonance Search Result:

Style/ Item No.	Test Item	Major Resonance Frequency
		Unit: Hz
WideLink B600W/ No.1	X axis	No resonance found
	Y axis	No resonance found
	Z axis	No resonance found

2. Examination of produce (Appearance check and functional check):

Check Item	Appearance check (Visual check)	Functional Check
Style/ Item No.		
WideLink B600W/ No.1	No visible damage	Normal

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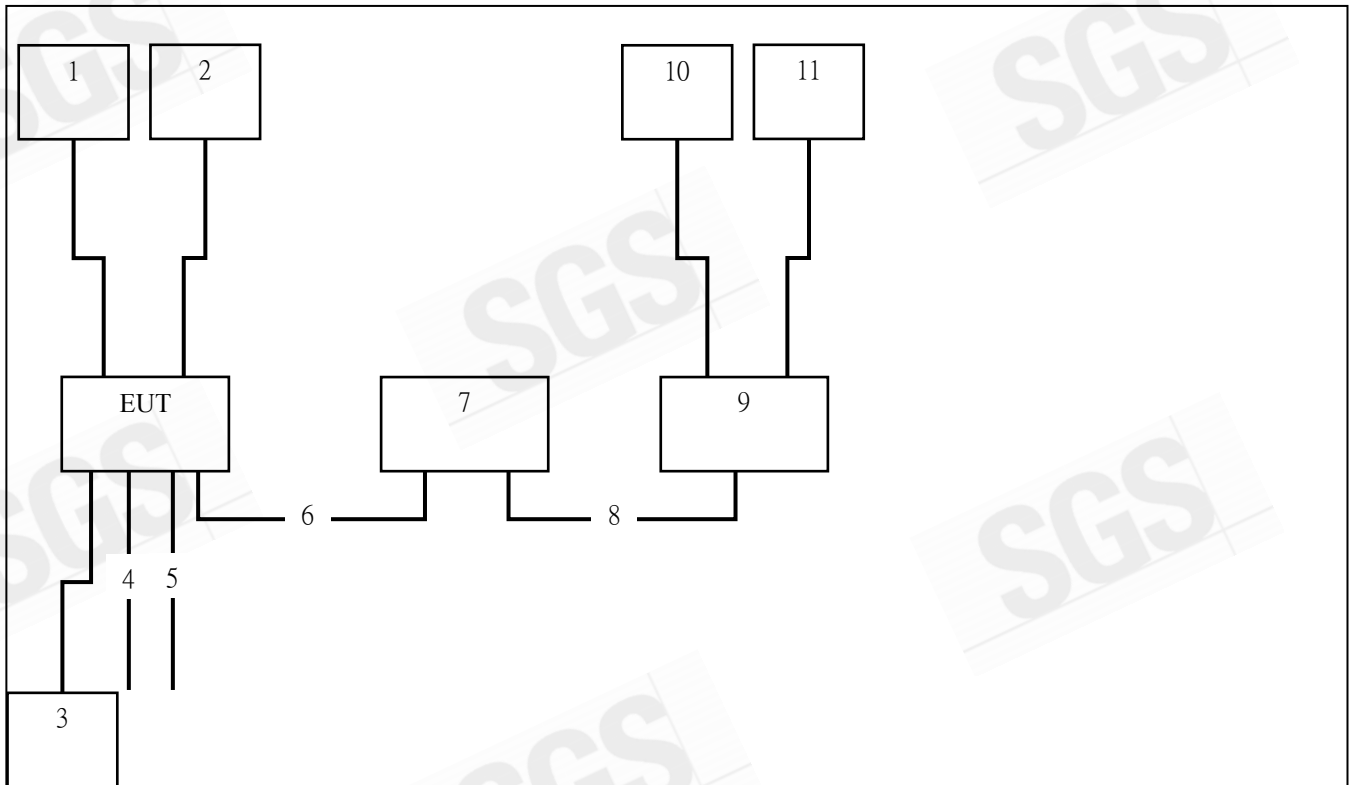
Appendix I:

Setup of Equipment Under Test (By client)

No.	Equipment	Model No.	Brand	Cable
1	GPS Antenna	ANT-21 (AGGRESSOR-21) (AGGRESSOR-111-C) (AMEC P/N:M-ANT-C1283-570001-A)	AMEC	Shielded, 10m
2	VHF Antenna	ANT-11(TENTA-11) (AMEC P/N:AMEC-ANT-MFB-1200V)	AMEC	Shielded, 10m
3	Power Supply	62012P-80-60	Chroma	Unshielded, 1.8m
4	NMEA 0183 Cable	N/A	AMEC	Unshielded, 0.9m
5	NMEA 2000 Cable	N/A	AMEC	Unshielded, 0.9m
6	Mini USB to USB Cable	N/A	AMEC	Shielded, 1.8m
7	Laptop	SL410	Lenovo	N/A
8	Mini USB to USB Cable	N/A	AMEC	Shielded, 1.8m
9	AIS Transponder	CAMINO-108	AMEC	Shielded, 1.4m
10	GPS Antenna	ANT-21 (AGGRESSOR-21) (AGGRESSOR-111-C) (AMEC P/N:M-ANT-C1283-570001-A)	AMEC	Shielded, 10m
11	VHF Antenna	N/A	N/A	Shielded, 0.6m

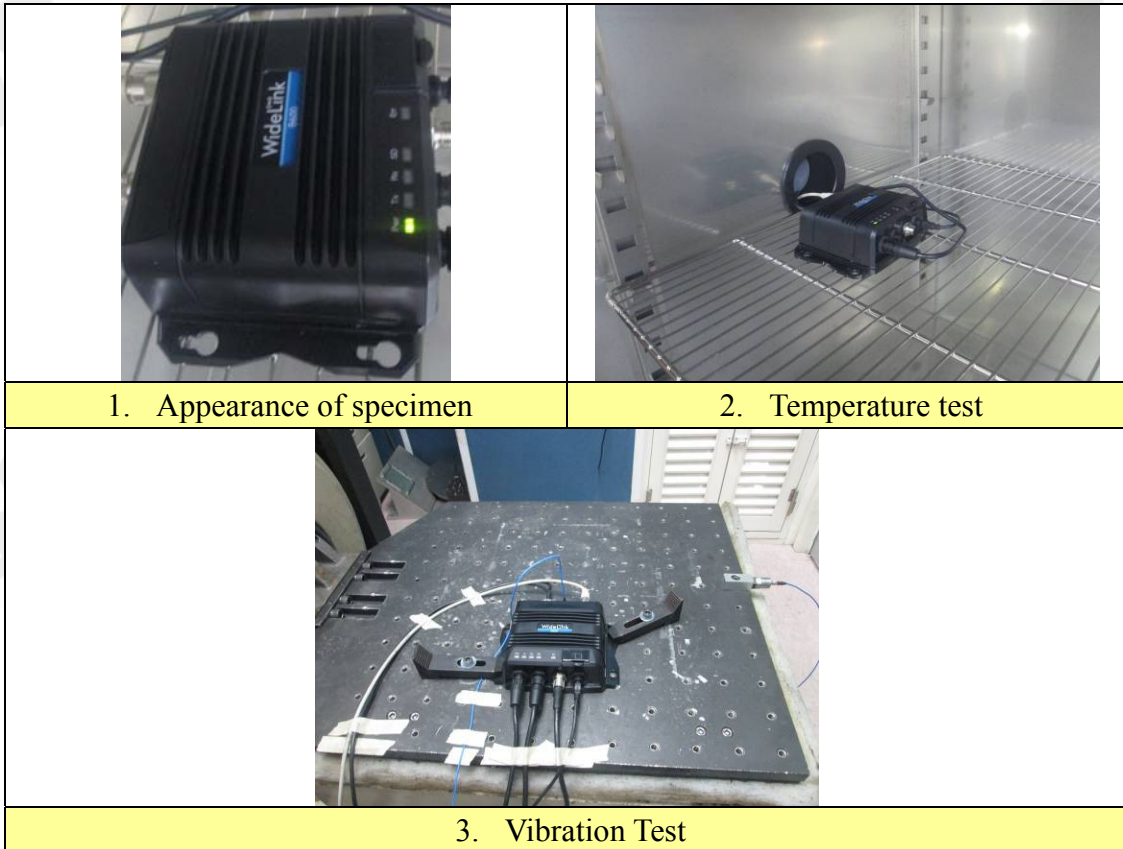
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Appendix I--Continued:



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Test Photos:



— — —The End of Test Report — — —

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