

THERMAL SHOCK AND SOLAR RADIATION TEST REPORT

Company : Alltek Marine Electronics Corp.
Address : 7F, No. 605, Ruei Guang Rd., Neihu Dist., Taipei 114, Taiwan, R.O.C.
Model Name : PLOMO-500
Date Received : AUG 23, 2011
Date Tested : AUG 23, 2011 ~ SEP 05, 2011

TESTING LABORATORY IS ACCREDITED BY:

IEC/IECQ 17025 certificate of independent test laboratory approval

Certificate No. : T1091

ISO 17025 accredited in respect of laboratory is approved by TAF

Certificate No. : L0835-090819

ISO 9001 certificate is approved by TUV CERT certification body of TUV NORD Cert GmbH

WE HEREBY CERTIFY THAT:

The test(s) shown in the attachment were conducted according to the indicating procedures. We assume full responsibility for the accuracy and completeness of these tests and vouch for the qualifications of all personnel performing them.

	Name	Signature	Date
Test Engineer	Vincent Hung	<i>Vincent Hung</i>	Sep 07, 2011
Manager	General Lee	<i>General</i>	Sep 07, 2011

NOTE :

1. This report will be invalid if reproduced in part or altered in any way.
2. This report refers only to the specimen(s) submitted to test, and is invalid if used otherwise.
3. This report is ONLY valid with the examination seal and signature of this institute.
4. The tested specimen(s) will only be preserved for thirty days from the date issued, if not collected by the applicant.



TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1 DESCRIPTION OF UNIT 2

1.2 UNIT OPERATING CONDITION 2

2. THERMAL SHOCK TEST

2.1 TEST EQUIPMENT 3

2.2 LABORATORY AMBIENCE CONDITION 3

2.3 REFERENCE DOCUMENT 3

2.4 TEST CONDITION 3

2.5 SUMMARY OF TEST 3

3. SOLAR RADIATION TEST

3.1 TEST EQUIPMENT 4

3.2 LABORATORY AMBIENCE CONDITION 4

3.3 REFERENCE DOCUMENT 4

3.4 TEST CONDITION 4

3.5 SUMMARY OF TEST 4

ATTACHMENTS 5

1. GENERAL INFORMATION

1.1 DESCRIPTION OF UNIT

Manufacturer : Alltek Marine Electronics Corp.

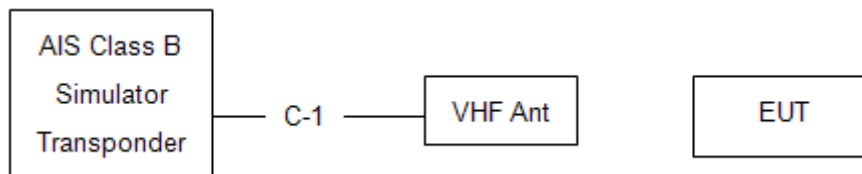
Sample name : PLOMO-500

Hardware : M-PCB-SARTV03

Software : SART Ver. 1.1

Sample quantity : 1 unit

1.2 UNIT OPERATING CONDITION:



Cable Type		Signal Cable description
C-1	VHF cable	Shielded, 0.3m

2. THERMAL SHOCK TEST

2.1 TEST EQUIPMENT

Model	Serial Number	Calibration Date
KSON THS-B4C-150	3135	APR 07 2011

2.2 LABORATORY AMBIENCE CONDITION

Temperature : $23 \pm 3^{\circ}\text{C}$

Relative humidity : $55\% \pm 3\%$ (RH)

2.3 REFERENCE DOCUMENT

The test is based on IEC60945 CH8.5

2.4 TEST CONDITION

Unit is non-operating.

The unit shall be placed in an atmosphere of $+70^{\circ}\text{C} \pm 3^{\circ}\text{C}$ for 1 hour. It shall then be immersed in water at $+25^{\circ}\text{C} \pm 3^{\circ}\text{C}$ to a depth of $100\text{mm} \pm 5\text{mm}$, measured from the highest point of the unit to the surface of the water, for a period of 1 hour.

At the end of the test the unit shall be subjected to a performance check, and shall then be examined for damage and for unwanted ingress of water. Following examination, the unit shall be resealed in accordance with the manufacture's instructions. Alternatively, if there are no external signs of unwanted ingress of water, an internal examination of the unit, which involves disturbance to seals, may be carried out after all environmental tests have been completed.

2.5 SUMMARY OF TEST

After testing, visual inspection showed no water permeated into unit inner and function was normal.

Appearance - label wrinkling (page8 marked by red circle).

3. SOLAR RADIATION TEST

3.1 TEST EQUIPMENT

Model	Serial Number	Calibration Date
ATLAS-SC 1000 MHG Solar Climatic Test	59566059650010	JAN 04, 2011

3.2 LABORATORY AMBIENCE CONDITION

Temperature : $23\pm 3^{\circ}\text{C}$

Relative humidity : $55\%\pm 3\%$ (RH)

3.3 REFERENCE DOCUMENT

The test is based on IEC60945 CH8.10

3.4 TEST CONDITION

Unit is non-operating.

Test temperature : 55°C

Irradiation : 1120 W/m^2 (Wavelength : 280~3000 nm)

Duration of irradiation : Solar radiation on for 80 hours

3.5 SUMMARY OF TEST

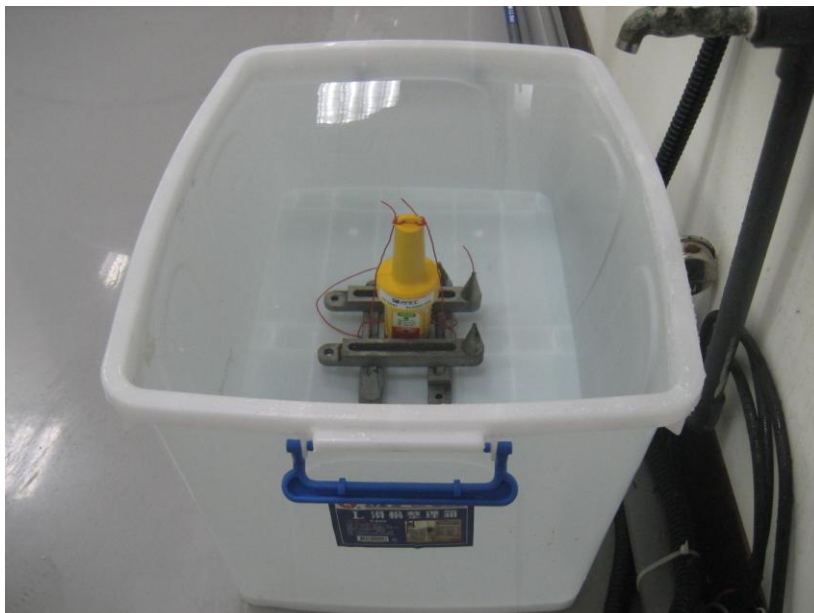
After testing, the unit function was normal. Appearance - label wrinkling (page14 marked by red circle), label changing color (page 14 marked by blue circle).

Attachment 1 : Photo of thermal shock test setup

Setup



Immersed in water



Attachment 2 : Photo of unit after thermal shock test

Function was normal



Function was normal

IEC-61162/NMEA-0183 DATA LOGGER

File Edit View Tools Analysis Option Help

Serial Port: 4 Data Bits: 8 Map: None
 Baud Rate: 115200 Stop Bits: 1
 Parity: None ☒ Enable Log Clear Log Mark

Disconnect Command GPS Sim RX TEST Play Log
 Open .. Play > X 1 EXIT

SHIP LIST: 2 RX SUMMARY

NO	MMSI	CLASS	RX	TX	Rx%	R(nm)	NAME	MSG01	CH:B#
(002)	0000000000	[N/A]	(0)	(0)	0%	[0]			
(002)	970160009	[SART]	(14)	(0)	0%	[-1]			

DYNAMIC REGISTRY MESSAGE TDMA GPS AtoN BinMsg

MMSI: 970160009
 Nav. Status: (14)Undefined!
 ROT: N/A Heading: N/A
 SOG: N/A COG: N/A
 Longitude: 181 Latitude: 91
 RAIM: 0 T.Stamp: 63 Pos. Accu.: Lo
 Class B Flag: N/A
 Assign Mode: N/A Comm.ST.Sel: N/A
 Country: 未知國家
 Record Time: 12:03:23.00
 Start RX Time: 11/09/05 12:02:08

Open \\.\COM4 OK 11/09/05 16:14:56 (58) (x,y) Log: None

No water permeated into unit inner



No water permeated into unit inner



Blank

Attachment 3 : Photo of unit before solar radiation test

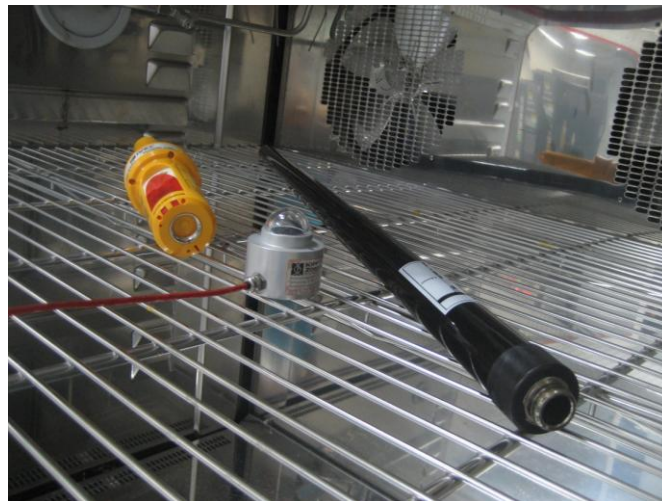
Appearance for unit



Blank

Attachment 4 : Photo of solar radiation test setup

Setup



Irradiation



Attachment 5 : Photo of unit after solar radiation test

Function was normal



Function was normal

IEC-61162/NMEA-0183 DATA LOGGER

File Edit View Tools Option Help

Serial Port: 8 Data Bits: 8 Map: None
 Baud Rate: 115200 Stop Bits: 1
 Parity: None ☒ Enable Log Clear Log Mark

Disconnect Command GPS Sim RX TEST Play Log Open .. Play > EXIT

SHIP LIST : 2 **RX SUMMARY**

NO	MMSI	CLASS	RX	TX	Rx%	R(nm)	NAME	MSG16	CH/B/D
(001)	416002819	[B]	CS	[0]	[0]	[0]	[0]	[0]	[1]
(002)	970160009	[SART]	(108)	[0]	[0]	[0]	[0]	[0]	[1]

000013 4 4 0 0 94 0 11/08/30 16:46:17
 000014 4 4 0 0 102 0 11/08/30 16:47:17

DYNAMIC **REGISTRY** **MESSAGE** **TDMA** **GPS** **AtoN**

MMSI: 416002819
 Nav. Status: (0) Under way using engine

ROT: N/A Heading: N/A
 SOG: N/A COG: N/A
 Longitude: 181 Latitude: 91
 RAIM: 0 T.Stamp: 60 Pos. Accu: Lo

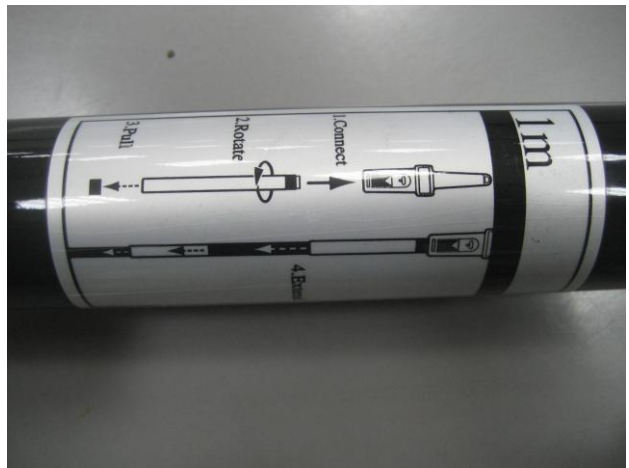
Class B Flag: Unit: 1, Disp: 0, DSC: 0, Band: 1, MSG22: 1
 Assign Mode: 0 Comm. ST. Sel: 1
 Country: 台灣
 Record Time: 12:15:37.00
 Start RX Time: 11/08/30 16:33:19

Open \\\COM8 OK 11/08/30 16:48:09 (51) (x,y) Log: None

Appearance for unit



Appearance for unit



Attachment 6 : Graph of thermal shock test

