TESTING CENTER «OMEGA»

Approved by

Head of TC

TC "OMEGA"

_____Bogach S.V.

June 29, 2016

TEST REPORT No. 16/224

Issue 3

Emergency Position Indicating Radio Beacon (EPIRB)
for compliance with RTCM Standard 11000.2

Model	**MT603G** **MT603FG**
Manufacturer	**Standard Communications Pty Ltd, Australia**

TESTING CENTER «OMEGA»	ACCREDITATION
P.O.B. No.37, Sevastopol, 299053 **Phone: +7 8692 537 072** **Fax: +7 8692 469 679** **E-mail: stcomega@stc-omega.biz**	**COSPAS-SARSAT Secretariat** **Reference No. CS497/F530 dated 21/09/1994**
	National Accreditation Agency Certificate of accreditation for compliance ISO 17025:2006 No. 2H339 valid until 17.05.2019
	Letter of FCC acceptance #181479 dated July 24, 2014
	IC registration of 3/10m OATS #8780A-1 dated May 29, 2013
	IC registration of 3m alternative test site #8780A-2 dated May 29, 2013
	Letter of USCG Acceptance for testing EPIRBs #16714/161.011/OMEGA dated February 7, 2008

Report on:	Emergency Position Indicating Radio Beacon (EPIRB) 406 MHz COSPAS–SARSAT model MT603G, MT603FG
Prepared for:	Beacon Manufacturer: Standard Communications Pty Ltd 17 Gibbon Road, Winston Hills, NSW 2153, Australia Manufacturer representative: Kevan Wilson-Elswood Technical Compliance Manager Telephone number: +61 (0)2 8867 6063 kelswood@gme.net.au
Test commencement date	29.07.2015
Test completion date	25.05.2016

The results of this report shall be applied only to the tested samples

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Report Issue History		
No	**Data of issue**	**Report reissue reason**
1	June 16, 2016	The initial issue
2	June 22, 2016	Editorial corrections
3	June 29, 2016	Editorial corrections

1. EQUIPMENT UNDER TEST

1.1 Equipment category	Emergency Position Indicating Radio Beacon (EPIRB) 406 MHz COSPAS–SARSAT
1.2 Equipment type	Emergency Position Indicating Radio Beacon (EPIRB)
1.3 Equipment model	MT603G, MT603FG
1.4 Cospas-Sarsat equipment class	Class 2 (operating temperature range - 20°C to +55°C)
1.5 RTCM EPIRB category	Category 1 EPIRB model MT603FG with a float free mechanism: - with Manual Release Housing (MRH) Category 2 EPIRB model MT603G with a non-float free mechanism: - with Manual bracket
1.6 Equipment serial number	1410407573 (MT603G) 1410407582 (MT603FG)
1.7 Equipment destination	Alarm message transmission of distressed accident via COSPAS-SARSAT satellite system
1.8 Equipment software/firmware version	OS0021 ver 1.00 (8/12/2014)

2. TEST PURPOSE

The purpose of tests is to confirm compliance of EPIRB model MT603FG, MT603G with RTCM Standard 11000.2 (2002) for 406 MHz satellite Emergency Position Indicating Radio Beacon (EPIRBs).

3. TEST CONDITIONS AND METHODS

Procedures, conditions and methods of testing correspond to requirements and methods of RTCM Standard 11000.2 (2002).

4. TEST PROGRAM

No.	Test name	Requirements RTCM 11000.2	Methods RTCM 11000.2
1.	Initial Aliveness Test	A1.0	A1.0
2.	Dry heat cycle	A3.0	A3.0
3.	Damp heat cycle	A4.0	A4.0
4.	Vibration test	A5.0	A5.0
5.	Bump test	A6.0	A6.0
6.	Salt fog test	A7.0	A7.0
7.	Drop test (on hard surface)	A8.1	A8.1
8.	Drop test (in water)	A8.2	A8.2
9.	Leakage and immersion test	A9.0	A9.0
10.	Spurious emissions test	A10.0	A10.0
11.	Thermal shock test	A11.0	A11.0
12.	COSPAS-SARSAT type approval tests	A12.0	C/S T.007
13.	Operational life test	A13.1	A13.1
14.	Strobe light test	A13.2	A13.2
15.	Self test	A13.3	A13.3
16.	Automatic release mechanism and automatic activation tests	A14.0	A14.0
17.	Stability and buoyancy test	A15.0	A15.0
18.	Inadvertent activation test	A16.0	A16.0
19.	Auxiliary radio-locating device transmitter test	A17.0	A17.0
20.	Humidity test	A18.0	A18.0
21.	Orientation test	A19.0	A19.0

5. TEST SCHEDULE

No.	Test name	Dates of test	Notes
1.	Initial Aliveness Test	14.12.2015, 15.12.2015	
2.	Dry heat cycle	15.12.2015, 16.12.2015	
3.	Damp heat cycle	17.12.2015, 18.12.2015,	
4.	Vibration test	11.01.2016, 12.01.2016, 13.01.2016	
5.	Bump test	15.01.2016	
6.	Salt fog test	15.01.2016-19.01.2016	
7.	Drop test (on hard surface)	19.01.2016	
8.	Drop test (in water)	20.01.2016	
9.	Leakage and immersion test	23.01.2016	
10.	Spurious emissions test	17.05.2016	
11.	Thermal shock test	26.01.2016	
12.	COSPAS-SARSAT type approval tests	27.01.2016 – 29.03.2016	Note 2
13.	Operational life test	15.02.2016-18.02.2016	Note 1
14.	Strobe light test	24.05.2016-25.05.2016	
15.	Self test	27.01.2016-29.01.2016	
16.	Automatic Release Mechanism and Automatic Activation Tests	21.04.2016-22.04.2016	
17.	Stability and buoyancy test	19.04.2016	
18.	Inadvertent activation test	18.04.2016	
19.	Auxiliary radio-locating device transmitter test	18.05.2016	
20.	Humidity test	05.05.2016	
21.	Orientation test	15.12.2015	

Note 1. Test was combined with A.2.3 C/S T007 as it is allowed in RTCM 11000.2.
Note 2. C/S type approval tests for MT603FG were conducted separately and test report 16/116 was issued.

6. CONCLUSION

Name and Location of Beacon Test Facility: **TESTING CENTER «OMEGA»**
Vakulenchuka, 29
Sevastopol, 299053

Date of Submission for Testing: **29.07.2015**

Applicable Standard:

Document	Edition
RTCM 11000.2	Version 2.1 (2002)

I hereby confirm that the 406 MHz beacon model MT603G, MT603FG described above have been successfully tested in accordance with the applicable standard and complies with the requirements as demonstrated in the attached report.

Dated June 29, 2016 Signed

V. Kovalenko
Department manager

7. SUMMARY OF TEST RESULTS

PARAMETERS TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS			COMMENTS
			Tmin (-20°C)	Tamb (+20°C)	Tmax (+55°C)	
1. INITIAL ALIVENESS TEST (A1.0)						
MT603G						Result: Pass, Annex 1
• Carrier Frequency	406.040 ± 0.001	MHz		406.039872		
• Power Output	35 - 39	dBm		√		
• Digital message	Correct	√		√		
MT603FG						Result: Pass, Annex 1
• Carrier Frequency	406.040 ± 0.001	MHz		406.039873		
• Power Output	35 - 39	dBm		√		
• Digital message	Correct	√		√		
2. DRY HEAT CYCLE (A3.0)						
MT603G						Result: Pass, Annex 2
• Aliveness Test (during 2 hour period)						
- Carrier Frequency	406.040 ± 0.001	MHz			406.039897	
- Power Output	35 - 39	dBm			36.29	
- Digital message	Correct	√			√	
• Aliveness test (at end of 2 hour period)						
- Carrier Frequency	406.040 ± 0.001	MHz			406.039886	
- Power Output	35 - 39	dBm			36.15	
- Digital message	Correct	√			√	
MT603FG						
• Aliveness Test (during 2 hour period)						Result: Pass, Annex 2
- Carrier Frequency	406.040 ± 0.001	MHz			406.039968	
- Power Output	35 - 39	dBm			36.28	
- Digital message	Correct	√			√	
• Aliveness test (at end of 2 hour period)						
- Carrier Frequency	406.040 ± 0.001	MHz			406.039958	
- Power Output	35 - 39	dBm			36.14	
- Digital message	Correct	√			√	
3. DAMP HEAT CYCLE (A4.0)						
MT603FG						Result: Pass, Annex 3
• Aliveness Test (during 2 hour period)					√	The test was carried out at 40 °C
- Carrier Frequency	406.040 ± 0.001	MHz			406.039942	
- Power Output	35 - 39	dBm			36.36	
- Digital message	Correct	√			√	
• Aliveness Test (at end of 2 hour period)						
- Carrier Frequency	406.040 ± 0.001	MHz			406.039934	
- Power Output	35 - 39	dBm			36.37	
- Digital message	Correct	√			√	
4. VIBRATION TEST (A5.0)						
MT603G						Result: Pass, Annex 4
• Exterior Mechanical Inspection	No damage	√		√		
• Aliveness Test:						
- Carrier Frequency	406.040 ± 0.001	MHz		406.04000		
- Power Output	35 - 39	dBm		36.58		

PARAMETERS TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS			COMMENTS
			Tmin (-20°C)	Tamb (+20°C)	Tmax (+55°C)	
- Digital message	Correct	√		√		
• Activation	No activation during test	√		√		
MT603FG						
• Exterior Mechanical Inspection	No damage	√		√		Result: Pass, Annex 4
• Aliveness Test:						
- Carrier Frequency	406.040 ± 0.001	MHz		406.040200		
- Power Output	35 - 39	dBm		36.34		
- Digital message	Correct	√		√		
• Activation	No activation during test	√		√		
5. BUMP TEST (A6.0)						
MT603G						Result: Pass, Annex 5
• Exterior Mechanical Inspection	No damage	√		√		
• Aliveness Test:						
- Carrier Frequency	406.040 ± 0.001	MHz		406.039862		
- Power Output	35 - 39	dBm		36.58		
- Digital message	Correct	√		√		
• Activation	No activation during test	√		√		
MT603FG						Result: Pass, Annex 5
• Exterior Mechanical Inspection	No damage	√		√		
• Aliveness Test:						
- Carrier Frequency	406.040 ± 0.001	MHz		406.040031		
- Power Output	35 - 39	dBm		36.33		
- Digital message	Correct	√		√		
• Activation	No activation during test	√		√		
6. SALT FOG TEST (A7.0)						
MT603G						Result: Pass, Annex 6
• Exterior Mechanical Inspection	No damage	√		√		
• Aliveness Test:						
- Carrier Frequency	406.040 ± 0.001	MHz		406.039858		
- Power Output	35 - 39	dBm		35.58		
- Digital message	Correct	√		√		
MT603FG						Result: Pass, Annex 6
• Exterior Mechanical Inspection	No damage	√		√		
• Aliveness Test:						
- Carrier Frequency	406.040 ± 0.001	MHz		406.040127		
- Power Output	35 - 39	dBm		36.33		
- Digital message	Correct	√		√		
7-A. DROP TEST (A8.1) On Hard Surface						
MT603FG						Result: Pass, Annex 7
• Exterior Mechanical Inspection	No damage	√	√			The test was carried out at -30°C
• Aliveness Test:						
- Carrier Frequency	406.040 ± 0.001	MHz	406.040031			
- Power Output	35 - 39	dBm	36.33			
- Digital message	Correct	√	√			
• Activation	No activation during test	√	√			

PARAMETERS TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS			COMMENTS
			Tmin (-20°C)	Tamb (+20°C)	Tmax (+55°C)	
7-B. DROP TEST (A8.2) In Water						
MT603G						Result: Pass, Annex 8
• Exterior Mechanical Inspection	No damage	√		√		
• Aliveness Test:						
- Carrier Frequency	406.040 ± 0.001	MHz		406.039862		
- Power Output	35 - 39	dBm		36.58		
- Digital message	Correct	√		√		
MT603FG						Result: Pass, Annex 8
• Exterior Mechanical Inspection	No damage	√		√		
• Aliveness Test:						
- Carrier Frequency	406.040 ± 0.001	MHz		406.040031		
- Power Output	35 - 39	dBm		36.33		
- Digital message	Correct	√		√		
8. LEAKAGE AND IMMERSION TEST (A9.0)						
MT603FG						Result: Pass, Annex 9
• Aliveness Test:						
- Carrier Frequency	406.040 ± 0.001	MHz		406.040019		
- Power Output	35 - 39	dBm		36.33		
- Digital message	Correct	√		√		
Exterior Inspection	No water	√		√		
9. SPURIOUS EMISSIONS TEST (A10.0)						
MT603FG						Result: Pass, Annex 10
• 406 MHz	Figure 2-1	√	√	√	√	
• 121.5 MHz	Figure 2-6	√	√	√	√	
10. THERMAL SHOCK TEST (A11.1)						
MT603FG						Result: Pass, Annex 11
• Self-activation in fresh water	5	minutes	0.117		0.083	
• Self-activation in salt water	5	minutes	0.117		0.083	
• Aliveness Test:						
- Carrier Frequency	406.040 ± 0.001	MHz	406.039901		406.039931	
- Power Output	35 - 39	dBm	36.39		36.28	
- Digital message	Correct	√	√		√	
• Frequency Stability						
- short term stability	≤0.002	ppm in 100 ms	0.0000665		0.000215	
- medium term stability mean slope	≤0.001	ppm/ minute	0.000519		-0.000456	
residual frequency variation	≤0.003	ppm	0.00151		0.00203	
11. COSPAS-SARSAT TYPE APPROVAL TESTS (A12.0)	C/S Certificate					C/S Test report No.16/116
12. OPERATIONAL LIFE, STROBE LIGHT AND SELF TESTS (A13.0)						
MT603FG						Result: Pass, Annex 12
Operational Life (A13.1)						
• Frequency						
- Nominal Carrier	406.040 ± 0.001	MHz	406.039957			
- Short term stability	≤0.002	ppm in 100 ms	0.0000277 to 0. 000126			
• Medium-term stability						
- Mean slope	≤0.001	ppm/ minute	-0.000171 to 0.000176			
- Residual variation	≤0.003	ppm	0. 0000782 to 0.000742			

PARAMETERS TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS			COMMENTS
			Tmin (-20°C)	Tamb (+20°C)	Tmax (+55°C)	
• RF output power	35 - 39	dBm	36.30-36.47			
• Strobe flash rate	20 - 30	/min	20			
• Auxiliary radio-locating Peak envelope output power	14 - 20	dBm	12.61-12.72			Maximum declared conducted output power is 12.7 dBm. Recalculated Peak Effective Radiated Power is 14.2 dBm (recalculation is based on measurements according to section A17.0)
13. STROBE LIGHT TEST (A13.2)						
MT603FG						Result: Pass, Annex 13
• Flash rate	20 - 30	/min	20	20	20	
• Effective intensity	0.75	cd	1.97	2.03	2.06	
• Pulse duration	10^{-6} to 10^{-2}	s	10^{-2}	10^{-2}	10^{-2}	
14. SELF TEST (A13.3)						
MT603FG						Result: Pass, Annex 14
• RF pulse duration	0.525 sec	√	√	√	√	
• Frame synchronization pattern	011010000	√	√	√	√	
• Number of RF bursts	1-burst	√	√	√	√	
15. AUTOMATIC RELEASE MECHANISM AND AUTOMATIC ACTIVATION TESTS (A14.0)						
MT603FG						Result: Pass, Annex 15
· Normal mounted orientation	Release and float free before 4 meters; automatic activation	√	√	√	√	
· Rolling 90º starboard		√		√		
· Rolling 90º port		√		√		
· Rolling 90º bow down		√		√		
· Rolling 90º stern down		√		√		
· Upside down		√		√		
16. STABILITY AND BUOYANCY TEST (A15.0)						
MT603FG						Result: Pass, Annex 16
• Time to upright	2	s		1.22		
• Reserve Buoyancy	5	%		27		
• Float upright; Antenna base	> 40	mm		78		
17. INADVERTENT ACTIVATION TEST (A16.0)						
MT603G						Result: Pass, Annex 17
• Activation/Release	EUT should not release from bracket or automatically activate	√		√		
MT603FG						Result: Pass, Annex 17
Activation/Release	EUT should not release from bracket or automatically activate	√		√		
18. AUXILIARY RADIO-LOCATING DEVICE TRANSMITTER TEST (A17.0)						
MT603FG						Result: Pass, Annex 18
• Carrier Frequency	121.5 ± 0.006	MHz	121.650141	121.649508	121.648784	Transmitter was tuned on 121.65 MHz as allowed in section A17.0
• PERP	14 - 20	dBm		14.9		
• Modulation						
- Frequency	700 Hz within range of 300 – 1600 Hz	Hz	372.1 – 846.9	371.6 – 835.7	371.4 – 833.1	
- Direction	Upward	√	√	√	√	

PARAMETERS TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS			COMMENTS
			Tmin (-20°C)	Tamb (+20°C)	Tmax (+55°C)	
- Duty cycle	33 - 55	%	32.20 – 34.68	34.27 – 35.33	36.41 – 36.70	
- Factor	0.85 – 1.0		0.95	0.96	0.95	
- Sweep repetition rate	2 - 4	Hz	2.25	2.25	2.25	
- Frequency Coherence	at least 30% of the total power emitted should be contained within ± 30 Hz of the carrier frequency	%	40.27	42.46	43.55	
Frequency Shift	< ± 30 Hz	Hz	±5	±5	±5	
• Antenna						
- Pattern	Omnidirectional	√		√		
- Polarization	Vertical	√		√		
- VSWR	1.5:1	√		Not applicable		
19. HUMIDITY TEST (A18.0)						
MT603FG						Result: Pass, Annex 19
• Aliveness Test:						
- Carrier Frequency	406.040 ± 0.001	MHz			406.040031	
- Power Output	35 - 39	dBm			36.33	
- Digital message	Correct	√			√	
20. ORIENTATION TEST (A19.0)						
MT603G						Result: Pass, Annex 20
VERTICAL						
• Aliveness Test:						
- Carrier Frequency	406.040 ± 0.001	MHz		406.039877		
- Power Output	35 - 39	dBm		36.58		
- Digital message	Correct	√		√		
UPSIDE DOWN						
• Aliveness Test:						
- Carrier Frequency	406.040 ± 0.001	MHz		406.039879		
- Power Output	35 - 39	dBm		36.57		
- Digital message	Correct	√		√		
HORIZONTAL						
• Aliveness Test:						
- Carrier Frequency	406.040 ± 0.001	MHz		406.039882		
- Power Output	35 - 39	dBm		36.56		
- Digital message	Correct	√		√		
INUTIAL VERTICAL						
• Aliveness Test:						
- Carrier Frequency	406.040 ± 0.001	MHz		406.039880		
- Power Output	35 - 39	dBm		36.59		
- Digital message	Correct	√		√		

ANNEX 1.
INITIAL ALIVENESS TEST (A1.0)

Equipment Under Test (EUT): 1) MT603G
2) MT603FG

SW version: OS0021 ver 1.00 (8/12/2014)

Test Date: 14.12.2015, 15.12.2015
Test Conditions:

- Ambient temperature: 17.0 – 23.6 °C
- Relative humidity: 46 - 59 %
- Atmospheric pressure: 758 - 759 mm/Hg

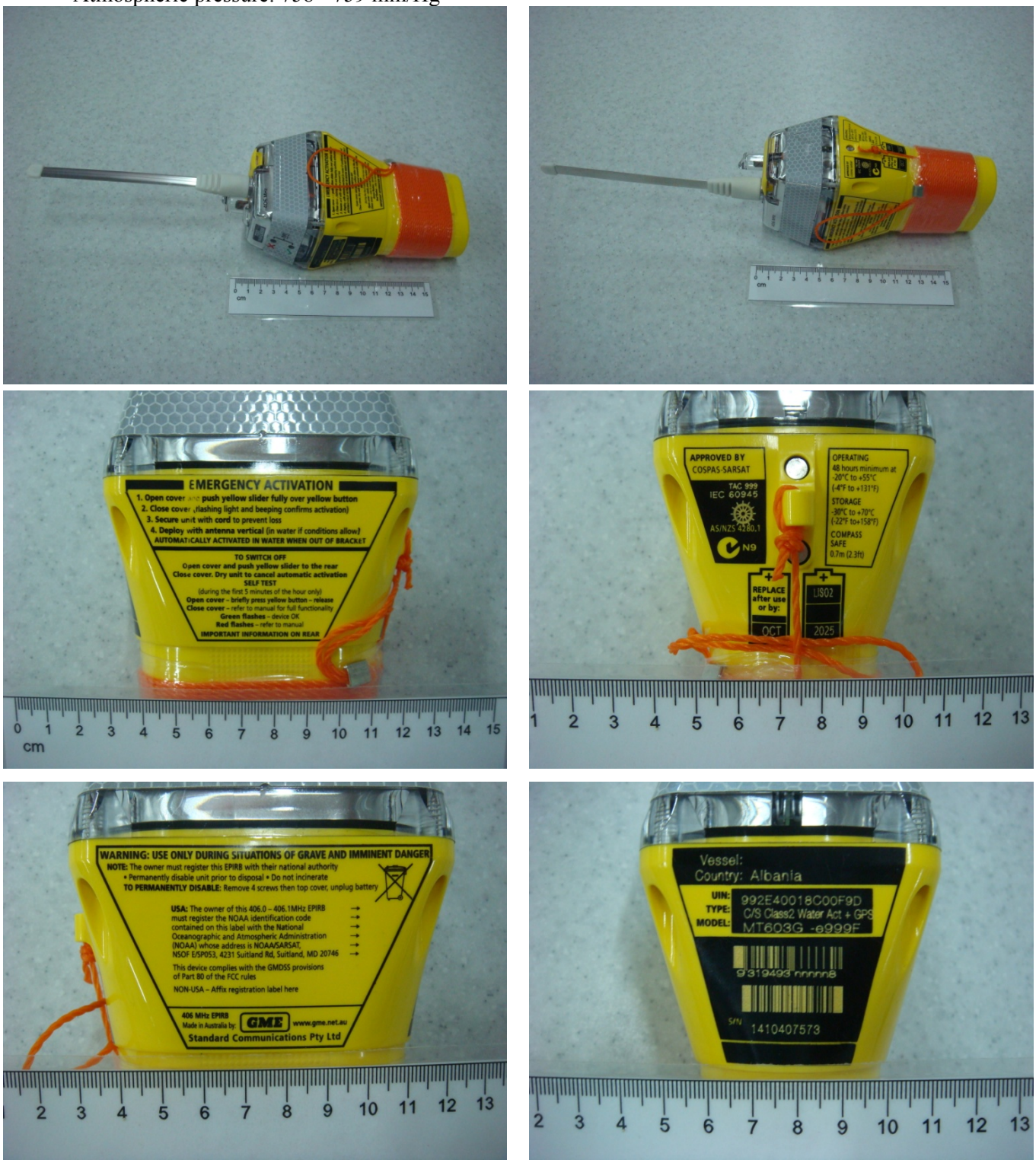

Figure 1.1 – View of MT603G

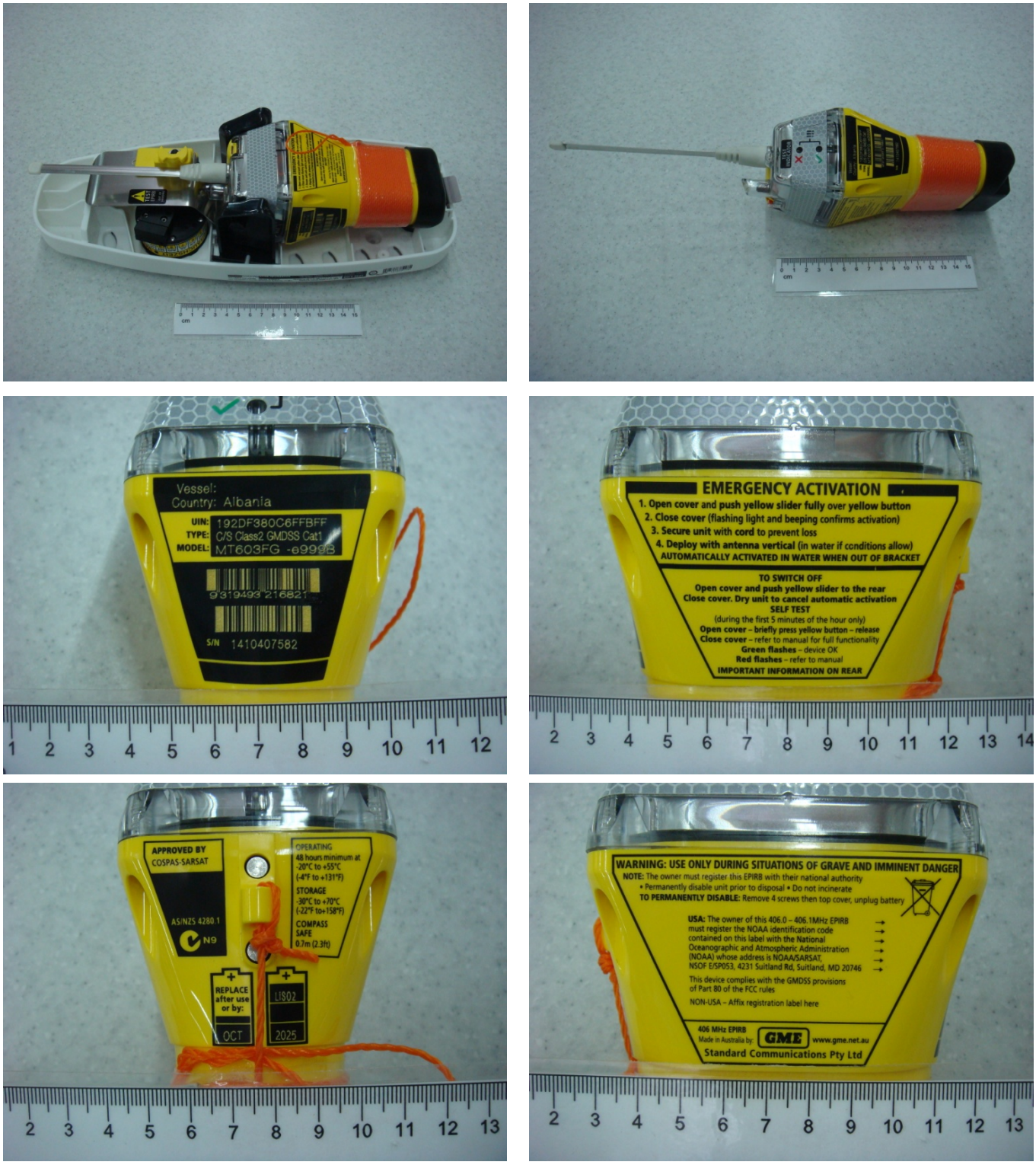

Figure 1.2 – View of MT603FG

Table 1.1 — MT603G Test Results

Test duration 0 h 30 m	Bursts received 37	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, kHz	406039.000	406041.000	406039.872	406039.872	406039.874
Power, dBm	35	39	36.58	36.58	36.59
121.5 MHz Transmitter Parameters					
Carrier Frequency, Hz	1215648730				
Power, dBm	12.91				
Message					
Digital message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C				

Table 1.2 —MT603FG Test Results

Test duration 0 h 30 m	Bursts received 37	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, kHz	406039.000	406041.000	406039.872	406039.873	406039.874
Power, dBm	35	39	36.33	36.33	36.34
121.5 MHz Transmitter Parameters					
Carrier Frequency, Hz	121649858				
Power, dBm	12.91				
Message					
Digital message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C				

FINAL RESULTS OF INITIAL ALIVENESS TEST (A1.0 RTCM 11000.2 Version 2.1):

PARAMETERS TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RE-SULTS	COMMENTS (PASS/FAIL)
- Carrier Frequency	406.040 ± 0.001	MHz	No.1 406.039872 No.2 406.039873	PASS PASS PASS
- Power Output	35 - 39	dBm	No.1 36.58-36.59 No.2 36.33-36.34	PASS PASS PASS
- Digital message	Correct	√	No.1 √ No.2 √	PASS PASS PASS

TEST EQUIPMENT

No	Name of test equipment	Type, model	ser. No	Calibration Due date
1.	Climatic chamber	GTH 408-70-CP-AR-LN2	MAA1212-004	12.2016
2.	Temperature meter	gradient 2002	078	01.2017
3.	Hygrometer digital	HP 22-A	60974546	09.2016
4.	Beacon tester	BT100AVS	2315	07.2016
5.	Beacon tester	BT-611	1005	11.2016
6.	Spectrum analyzer	FSH8	105763	10.2016
7.	Tuned dipole antenna	FCC-4	587A	09.2016
8.	Semi-anechoic chamber	«Don»	1	08.2016

ANNEX 2.
DRY HEAT CYCLE (A3.0)

Equipment Under Test (EUT): 1) MT603G
2) MT603FG

SW version: OS0021 ver 1.00 (8/12/2014)

Test Date: 15.12.2015, 16.12.2015
Test Conditions:

- Ambient temperature: 16.1-21.7 °C
- Relative humidity: 45-48 %
- Atmospheric pressure: 765 mm/Hg

TEST DESCRIPTION

The EUT should be placed in a chamber of normal room temperature. Then the temperature should be raised to and maintained at 70° ± 3° C for a period of 10 hours.
At the end of the 10 hour period, any climatic control devices provided in the equipment may be switched on and the chamber cooled to 55° ± 3° C. The cooling of the chamber should be completed within 30 minutes.
The equipment should be switched on 30 minutes after the end of the 10 hour period and remain on for a period of at least 2 hours in the 55° ± 3° C chamber.
An aliveness check should be performed during and at the end of the 2 hour period.

TEST RESULT

- STEP 1. The EUT1 and EUT2 were switched OFF and were placed in the temperature test chamber at ambient temperature. The chamber temperature was raised to 70°C.
- STEP 2. During the next 10-hour period, the temperature was maintained in the test chamber 70 ± 3°C.
- STEP 3. The chamber cooled to 55° ± 3° C. The cooling of the chamber was completed within 30 minutes.
- STEP 4. The EUT1 and EUT2 were switched on 30 minutes after the end of the 10 hour period and remain on for a period of at least 2 hours in the 55° ± 3° C chamber.
- STEP 4. An aliveness check was performed during and at the end of the 2 hour period

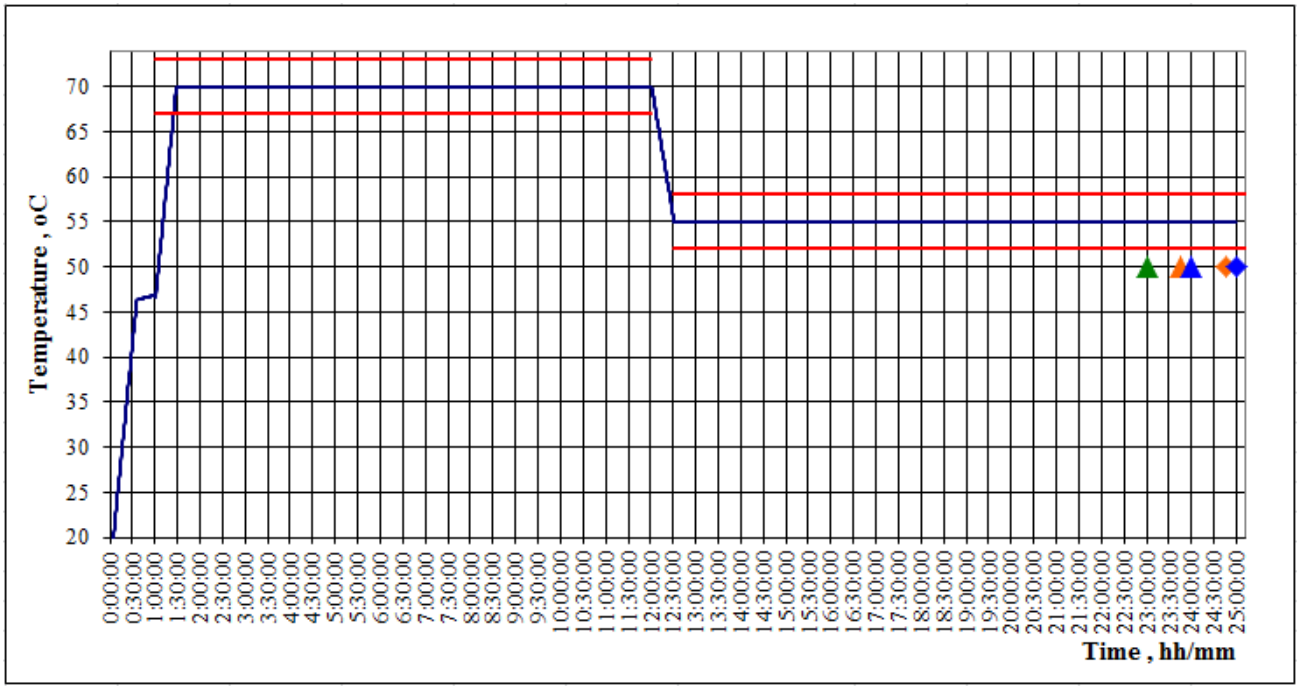

Figure 2.1 – Schedule of chamber temperature during Dry Heat Cycle

Table 2.1 — Detailed measurement results of MT603G during of the 2 hour period in the +55 °C chamber

Test duration 0 h 3 m	Bursts received 3	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, kHz	406039.000	406041.000	406039.897	406039.897	406039.897
Power, dBm	35	39	36.29	36.29	36.29
121.5 MHz Transmitter Parameters					
Carrier Frequency, Hz	121648730				
Power, dBm	11.65				
Message					
Digital message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C				

Table 2.2 — Detailed measurement results of MT603G at the end of the 2 hour period in the +55 °C chamber

Test duration 0 h 1 m	Bursts received 3	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, kHz	406039.000	406041.000	406039.886	406039.886	406039.886
Power, dBm	35	39	36.15	36.15	36.15
121.5 MHz Transmitter Parameters					
Carrier Frequency, Hz	121648735				
Power, dBm	11.65				
Message					
Digital message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C				

Table 2.3 — Detailed measurement results of MT603FG during of the 2 hour period in the +55 °C chamber

Test duration 0 h 1 m	Bursts received 3	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, kHz	406039.000	406041.000	406039.968	406039.968	406039.968
Power, dBm	35	39	36.28	36.28	36.28
121.5 MHz Transmitter Parameters					
Carrier Frequency, Hz	121648935				
Power, dBm	13.16				
Message					
Digital message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C				

Table 2.4 — Detailed measurement results of MT603FG at the end of the 2 hour period in the +55 °C chamber

Test duration 0 h 1 m	Bursts received 3	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, kHz	406039.000	406041.000	406039.958	406039.958	406039.958
Power, dBm	35	39	36.14	36.14	36.14
121.5 MHz Transmitter Parameters					
Carrier Frequency, Hz	121648933				
Power, dBm	13.16				
Message					
Digital message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C				

FINAL RESULTS OF DRY HEAT CYCLE (A3.0 RTCM 11000.2 Version 2.1):

PARAMETERS TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS (PASS/FAULT)
Aliveness test (during of 2 hour period):				
- Carrier Frequency	406.040 ± 0.001	MHz	No.1 406.039897 No.2 406.039968	PASS PASS
- Power Output	35 - 39	dBm	No.1 36.29 No.2 36.28	PASS PASS
- Digital message	Correct	√	No.1 √ No.2 √	PASS PASS
Aliveness test (at end of 2 hour period):				
- Carrier Frequency	406.040 ± 0.001	MHz	No.1 406.039886 No.2 406.039958	PASS PASS
- Power Output	35 - 39	dBm	No.1 36.15 No.2 36.14	PASS PASS
- Digital message	Correct	√	No.1 √ No.2 √	PASS PASS

TEST EQUIPMENT

No	Name of test equipment	Type, model	ser. No	Calibration Due date
9.	Climatic chamber	GTH 408-70-CP-AR-LN2	MAA1212-004	12.2016
10.	Temperature meter	gradient 2002	078	01.2017
11.	Hygrometer digital	HP 22-A	60974546	09.2016
12.	Beacon tester	BT100AVS	2315	07.2016
13.	Beacon tester	BT-611	1005	11.2016
14.	Spectrum analyzer	FSH8	105763	10.2016
15.	Tuned dipole antenna	FCC-4	587A	09.2016

ANNEX 3.
DAMP HEAT CYCLE (A4.0)

Equipment Under Test (EUT): MT603FG

SW version: OS0021 ver 1.00 (8/12/2014)

Test Date: 17.12.2015, 18.12.2015,
Test Conditions:

- Ambient temperature: 15.2-15.8°C
- Relative humidity: 45-48 %
- Atmospheric pressure: 765-768 mm/Hg

TEST DESCRIPTION

The EUT should be placed in a chamber of normal room temperature and humidity which, steadily, over a period of 3 ± 0.5 hours, should be heated to 40°± 3° C and should during this period be brought to a relative humidity of 93% ±2% so that excessive condensation is avoided. These conditions should be maintained for a period of 10 hours.
At the conclusion of the 10 hours, the satellite EPIRB and any climatic control devices provided in the equipment should be switched on and remain on for a period of at least 2 hours in the 40° ± 3° C and 93% ± 2% relative humidity chamber. An aliveness check should be performed during and at the end of the 2 hour period. At the end of the test the EUT shall be returned to normal environmental conditions.

TEST RESULT:

- STEP 1. The EUT was switched OFF and placed in the climatic test chamber at ambient temperature and relative humidity.
  The temperature was raised to +40°C, and the relative humidity was raised to 93 % over the period of 3 h.
- STEP 2. During the next 10-hour period, the temperature were maintained in the climatic test chamber 40 ± 2°C and the relative humidity 93 % ± 3 %.
- STEP 3. After period of 10 h the EUT was switched ON and was kept operational at the temperature 40 ± 2°C and the relative humidity 93 % ± 3 % for 2 h. During and at the end of this period the EUT was subjected to aliveness check.
- STEP 4. At the end of the test period and with the EUT still in the chamber, the chamber was brought to room temperature during 1 hour.

Figure 3.1 – Test site

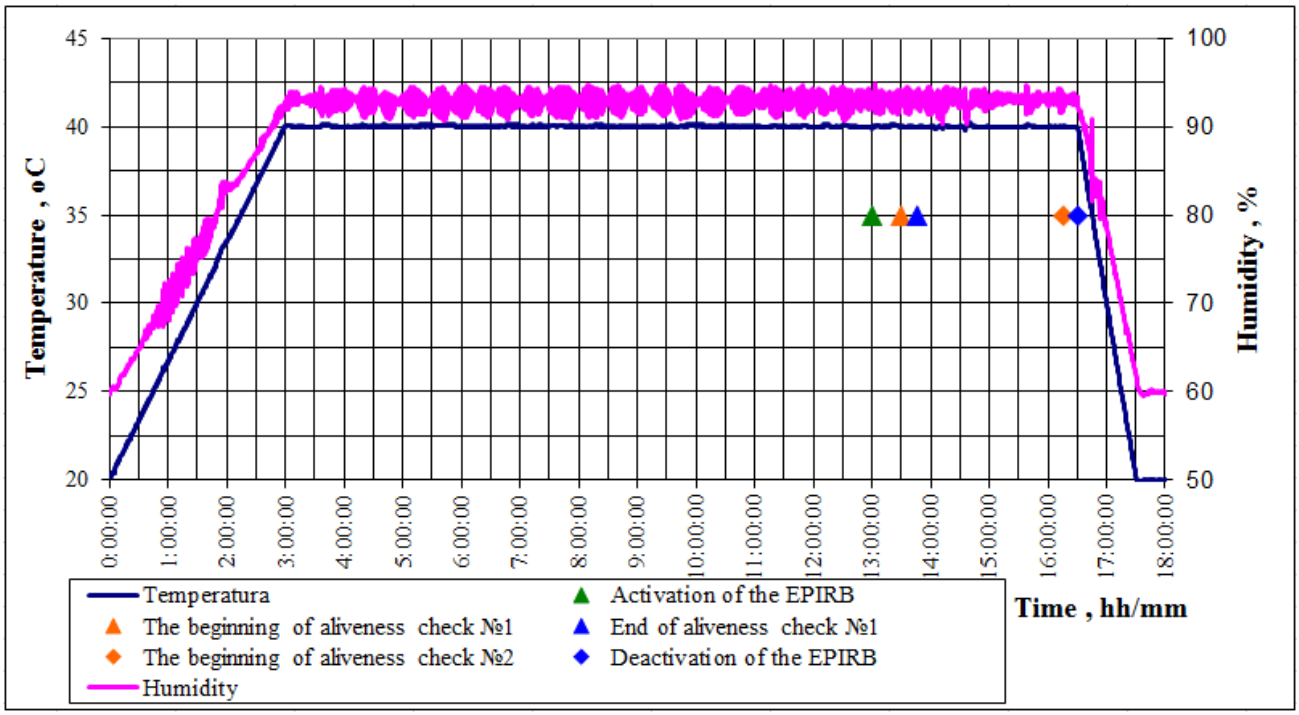

Figure 3.2 – Damp heat cycle conditions plot

Table 3.1 — Detailed measurement results of MT603FG during of the 2 hour period in the +40 °C and 93 % relative humidity chamber

Test duration 0 h 3 m	Bursts received 5	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, kHz	406039.000	406041.000	406039.942	406039.942	406039.942
Power, dBm	35	39	36.36	36.36	36.36
121.5 MHz Transmitter Parameters					
Carrier Frequency, Hz	1216489203				
Power, dBm	13.56				
Message					
Digital message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C				

Table 3.2 — Detailed measurement results of MT603FG at the end of the 2 hour period in the +40 °C and 93 % relative humidity chamber

Test duration 0 h 3 m	Bursts received 5	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, kHz	406039.000	406041.000	406039.934	406039.934	406039.934
Power, dBm	35	39	36.37	36.37	36.37
121.5 MHz Transmitter Parameters					
Carrier Frequency, Hz	1216489361				
Power, dBm	13.56				
Message					
Digital message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C				

FINAL RESULTS OF DAMP HEAT CYCLE (A4.0 RTCM 11000.2 Version 2.1):

PARAMETERS TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS (PASS/FAULT)
Aliveness test (during of the 2 hour period)				
- Carrier Frequency	406.040 ± 0.001	MHz	406.039942	PASS
- Power Output	35 - 39	dBm	36.36	PASS
- Data Message	Correct		√	PASS
Aliveness test (at end of 2 hour period):				
- Carrier Frequency	406.040 ± 0.001	MHz	406.039934	PASS
- Power Output	35 - 39	dBm	36.37	PASS
- Data Message	Correct		√	PASS

TEST EQUIPMENT USED

No	Name of test equipment	Type, model	ser. No	Calibration Due date
1.	Climatic chamber	GTH 408-70-CP-AR-LN2	MAA1212-004	12.2016
2.	Temperature meter	gradient 2002	078	01.2017
3.	Hygrometer digital	HP 22-A	60974546	09.2016
4.	Beacon tester	BT100AVS	2315	07.2016
5.	Beacon tester	BT-611	1005	11.2016
6.	Spectrum analyzer	FSH8	105763	10.2016
7.	Tuned dipole antenna	FCC-4	587A	09.2016

ANNEX 4.
VIBRATION TEST (A5.0)

Equipment Under Test (EUT): MT603G
MT603FG

SW version: OS0021 ver 1.00 (8/12/2014)

Test Date: 11.01.2016, 12.01.2016, 13.01.2016
Test Conditions:

- Ambient temperature: 15.3-19.3 °C
- Relative humidity: 54-68 %
- Atmospheric pressure: 747-751 mm/Hg

TEST DESCRIPTION

The EUT was secured to the vibration table through its normal attachments. The EUT was mounted in the same position (with respect to the direction of gravity) for all vibration tests and was subjected to sinusoidal motion in each of its three orthogonal axes according to the following profile:

1.

Frequency (Hz)	**Peak Amplitude (mm)**
4-10	2.5
10-15	0.8
15-25	0.4
25-33	0.2

2. The frequency changed linearly with time between 4 Hz and 33 Hz such that a complete cycle (4 Hz - 33 Hz - 4 Hz) took approximately 5 minutes.
3. The EUT was vibrated in each direction for a period of at least 31 minutes.
4. Upon completion of the vibration test, an exterior mechanical inspection was performed and the aliveness test was conducted.
5. Activation of the EUT during the vibration tests was checked.

TEST RESULT:

For vertical vibration in Z vertical axis EUTs were fastened to the vibration table in its normal attitude using special bracket (see Figure 4.1, 4.4).

For horizontal vibration in X horizontal axis, EUTs were then fastened to the vibration table in its normal attitude using special bracket (see Figure 4.7, 4.10).
For horizontal vibration in Y axis, EUTs were fastened to the vibration table in its normal attitude using special bracket (see Figure 4.13, 4.16).

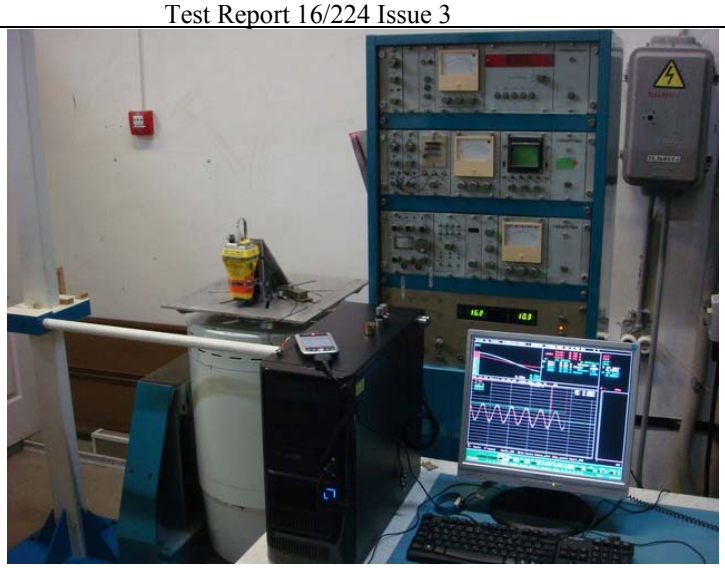

Figure 4.1 - General view of the test site vertical Z vibration (MT603G)

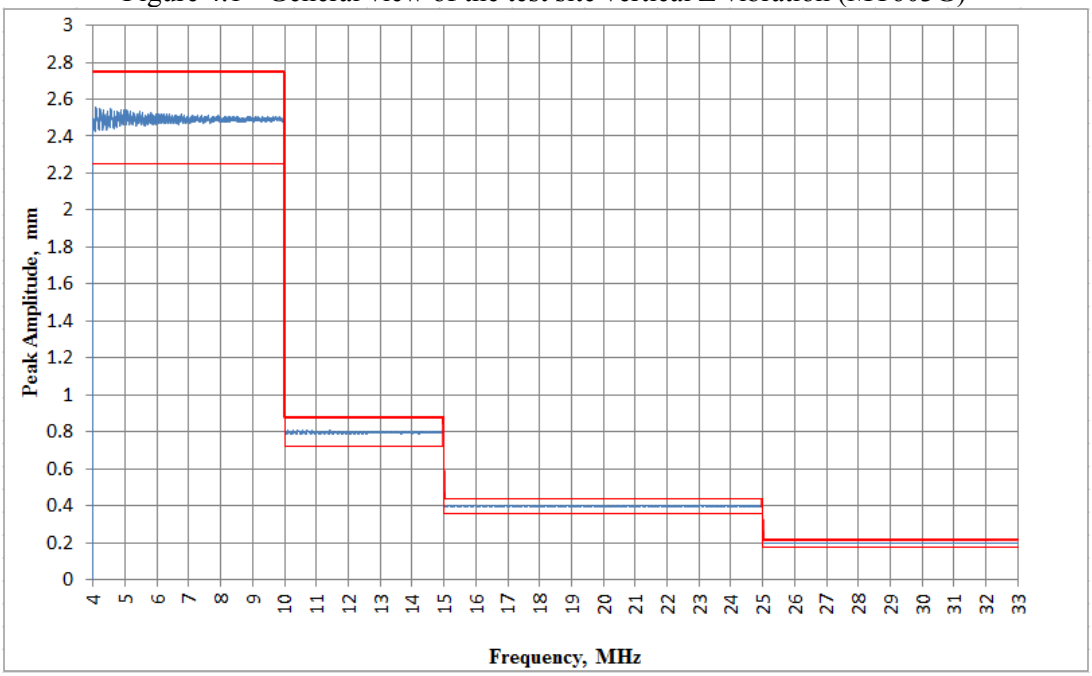

Figure 4.2 - Peak Amplitude vs. frequency during first sweep on vertical axis Z (MT603G)

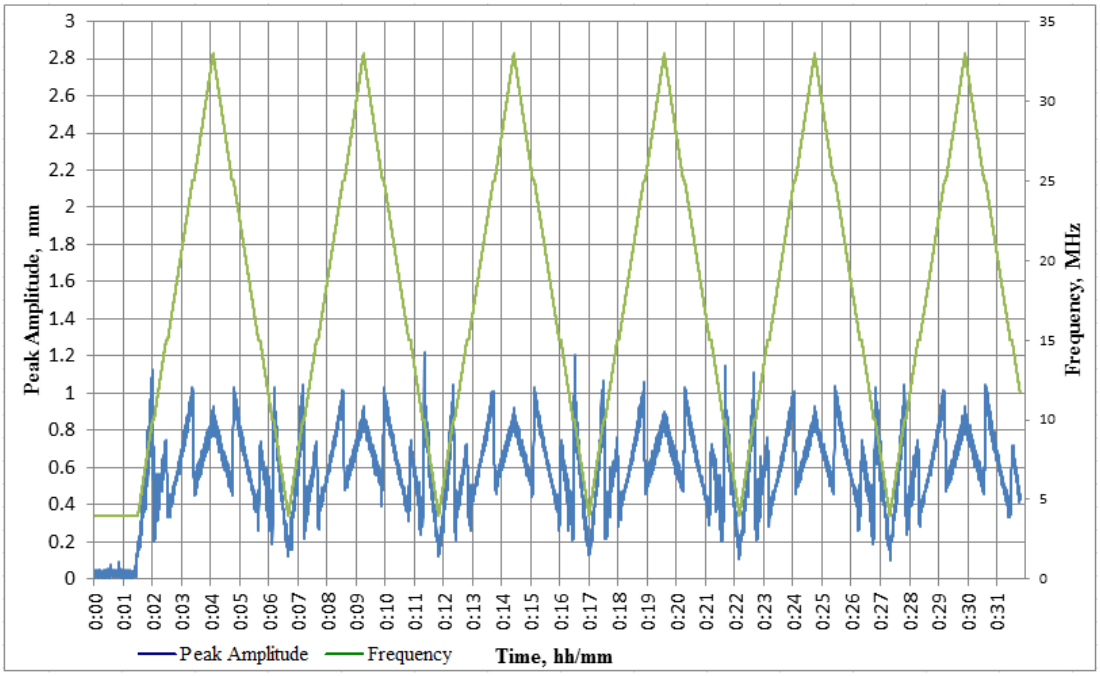

Figure 4.3 - Peak Amplitude vs. time during vibration on vertical axis Z (MT603G)

Figure 4.4 - General view of the test site vertical Z vibration (MT603FG)

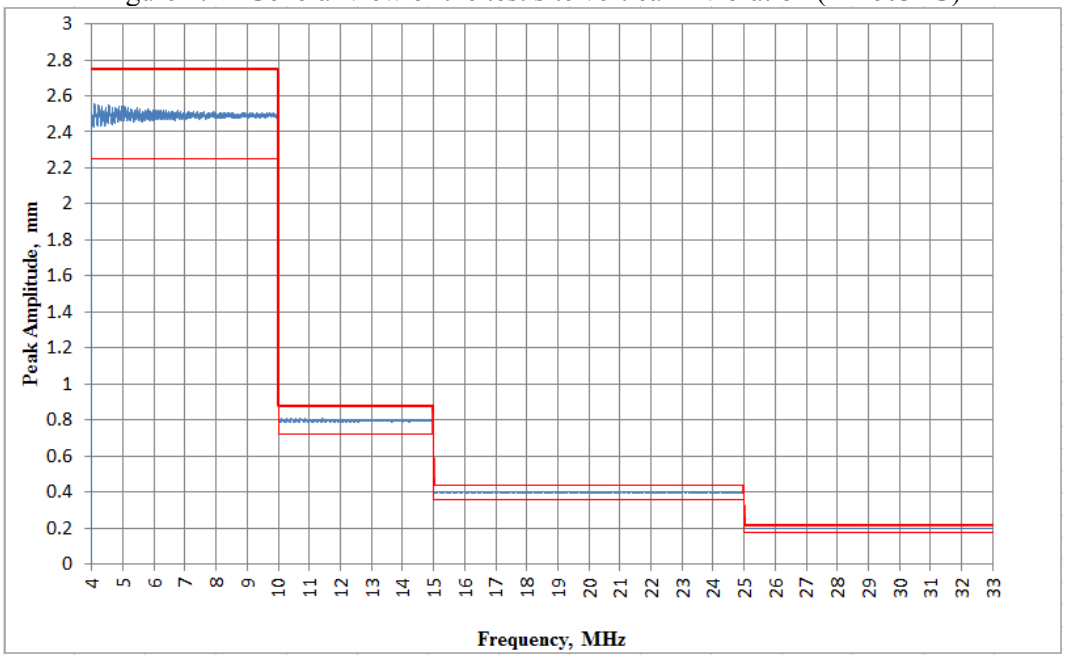

Figure 4.5 - Peak Amplitude vs. frequency during first sweep on vertical axis Z (MT603FG)

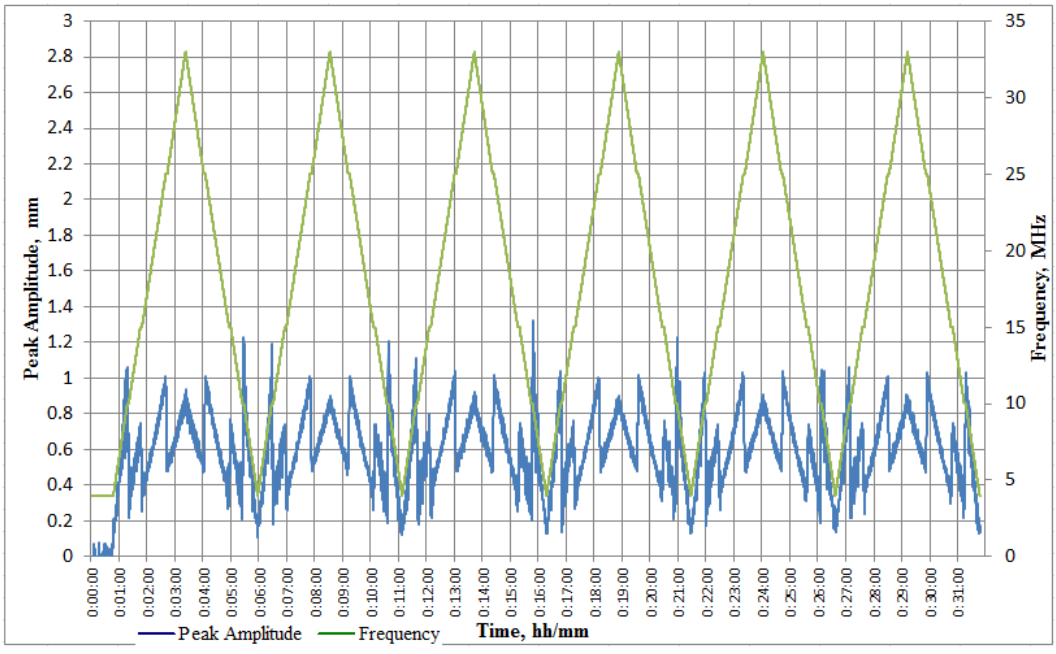

Figure 4.6 - Peak Amplitude vs. time during vibration on vertical axis Z (MT603G)

Figure 4.7 - General view of the horizontal X vibration test (MT603G)

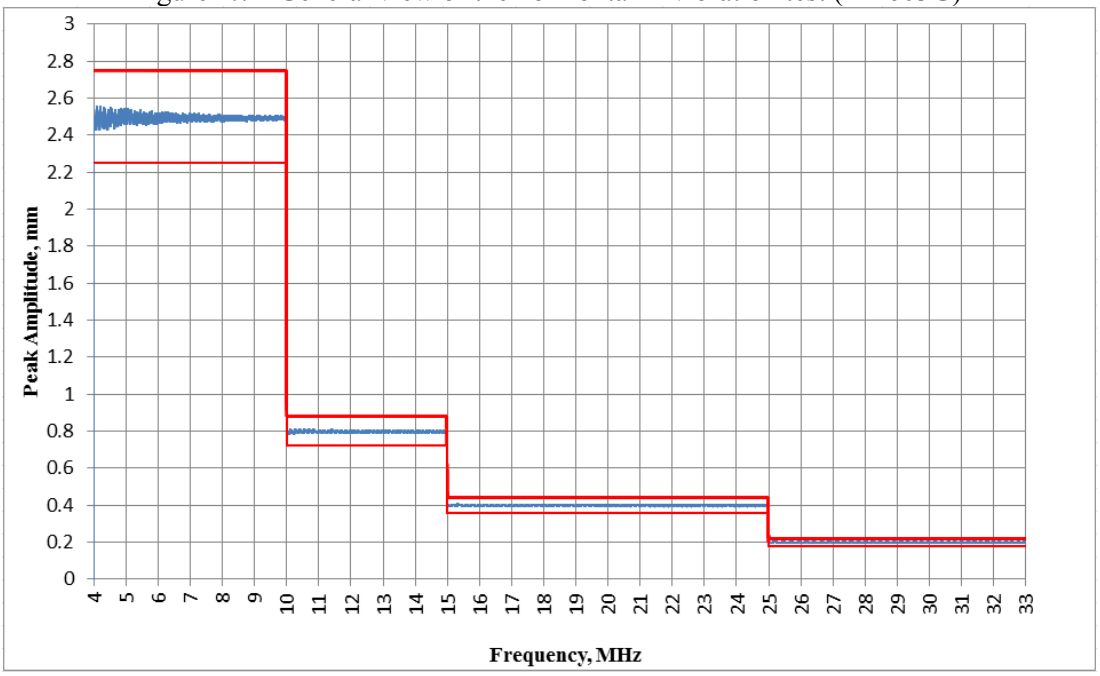

Figure 4.8 - Peak Amplitude vs. frequency during first sweep on horizontal axis X (MT603G)

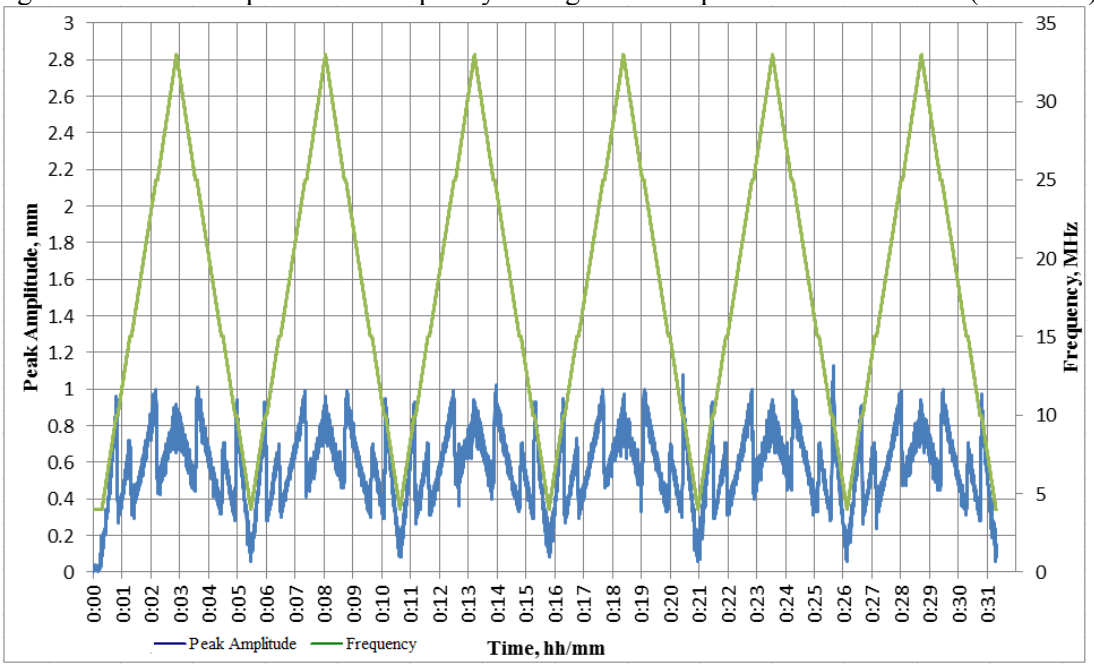

Figure 4.9 - Peak Amplitude vs. time during vibration on horizontal axis X (MT603G)

Figure 4.10 - General view of the horizontal X vibration test (MT603FG)

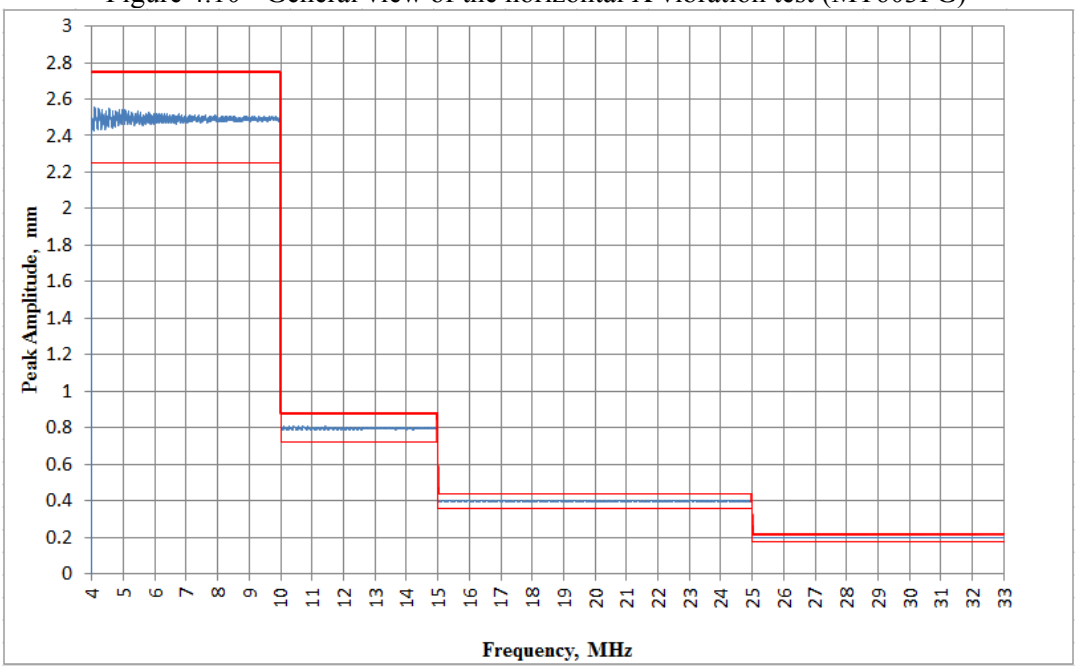

Figure 4.11 - Peak Amplitude vs. frequency during first sweep on horizontal axis X (MT603FG)

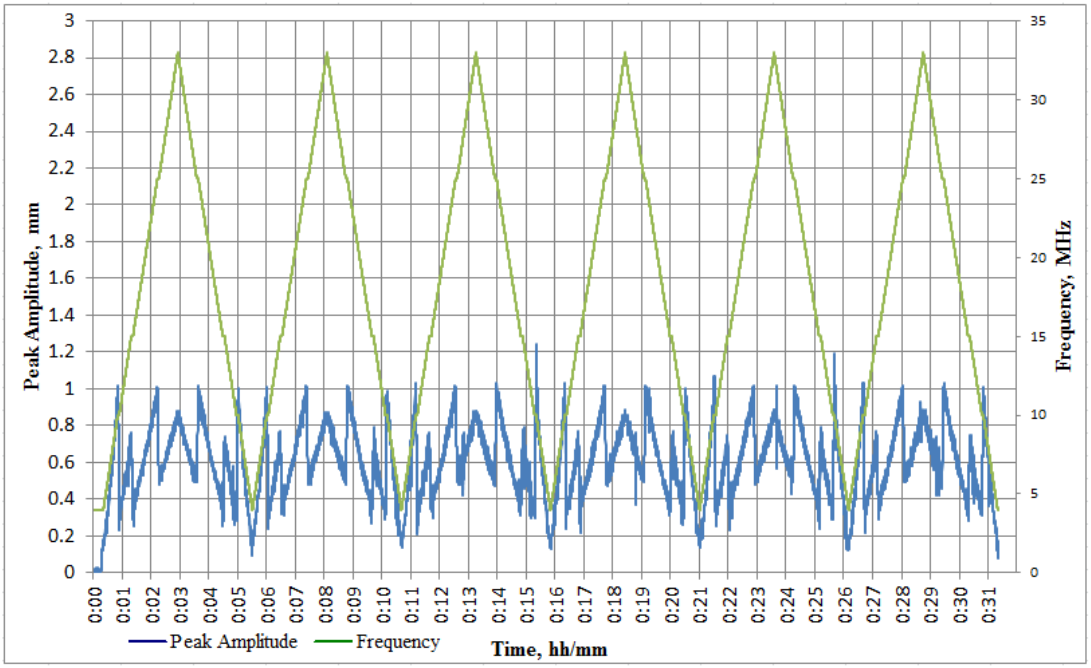

Figure 4.12 - Peak Amplitude vs. time during vibration on horizontal axis X (MT603FG)

Figure 4.13 - General view of the horizontal Y vibration test (MT603G)

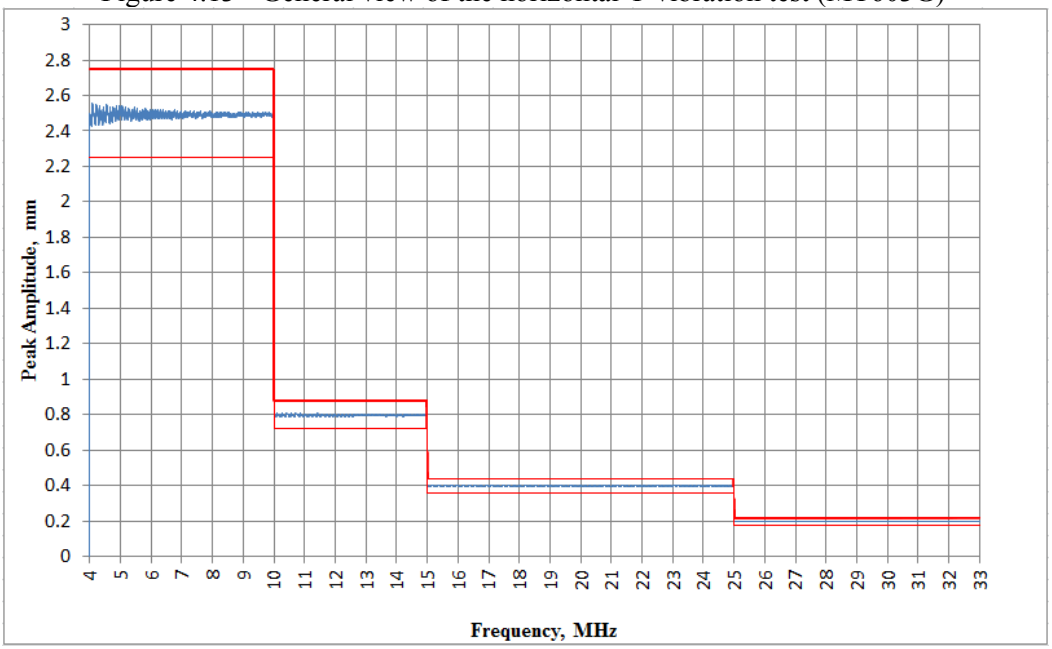

Figure 4.14 - Peak Amplitude vs. frequency during first sweep on horizontal axis Y (MT603G)

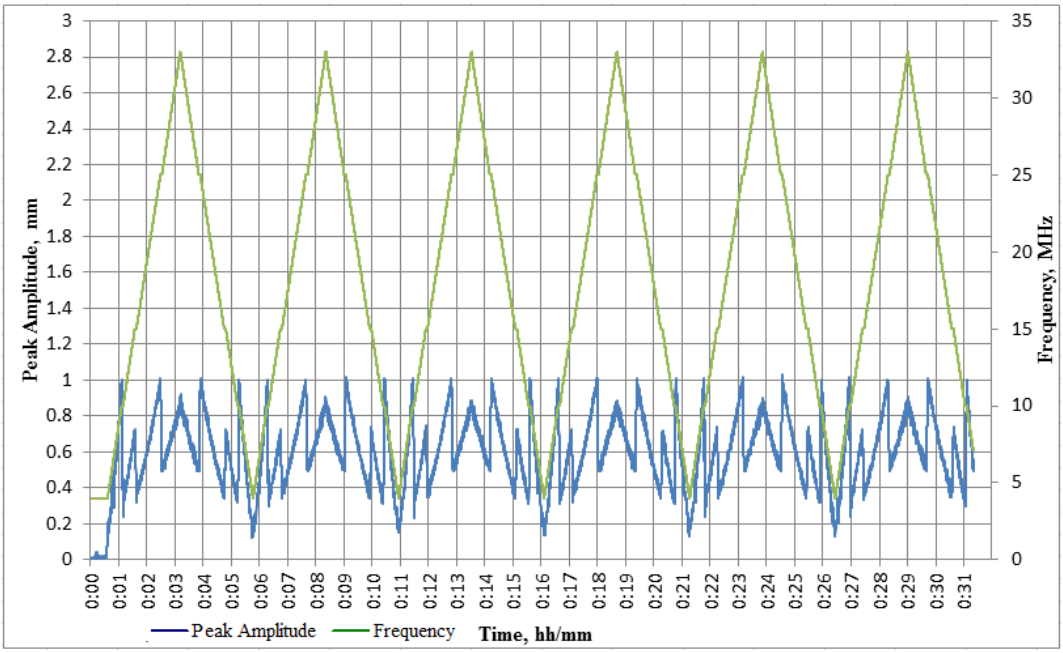

Figure 4.15 - Peak Amplitude vs. time during vibration on horizontal axis Y (MT603G)

Figure 4.16 - General view of the horizontal Y vibration test (MT603FG)

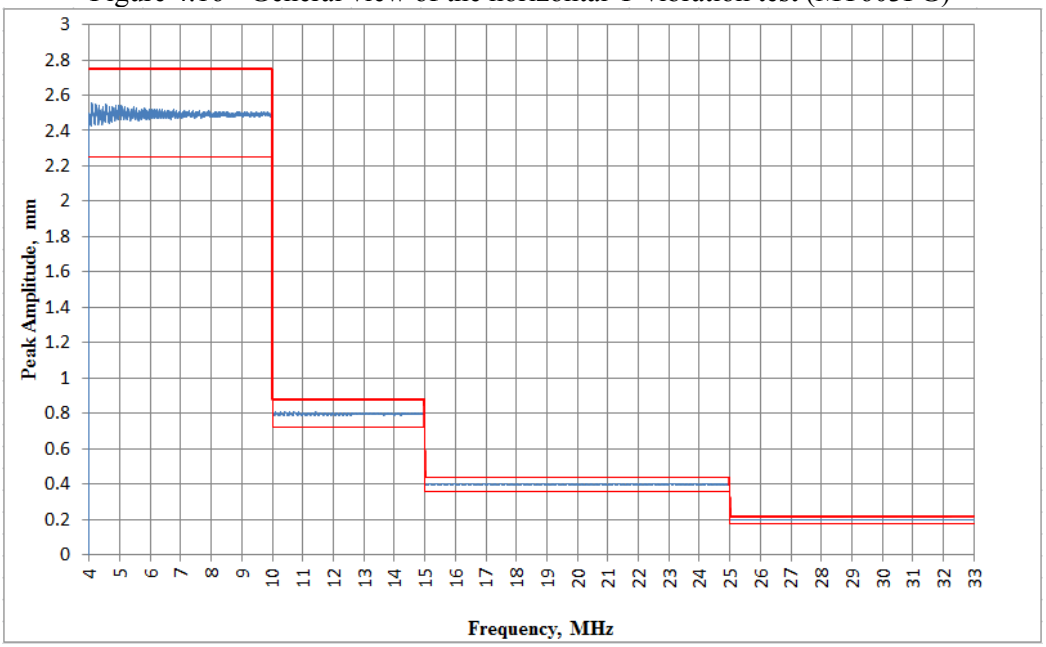

Figure 4.17 - Peak Amplitude vs. frequency during first sweep on horizontal axis Y (MT603FG)

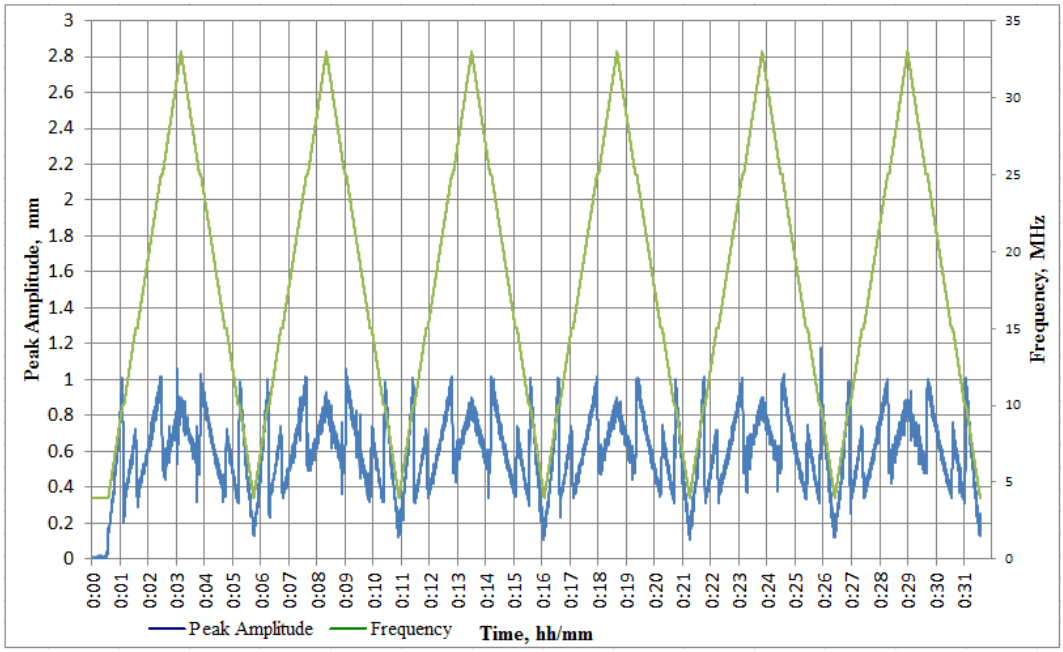

Figure 4.18 - Peak Amplitude vs. time during vibration on horizontal axis Y (MT603FG)

The EPIRB did not activate during all the vibration tests.

Table 4.1 — Aliveness Test of MT603G: Carrier Frequency & Power Output (upon completion of the vertical axis vibration test)

Test duration 0 h 3 m	Bursts received 3	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, kHz	406039.000	406041.000	406040.000	406040.000	406040.000
Power, dBm	35	39	36.58	36.58	36.59
121.5 MHz Transmitter Parameters					
Carrier Frequency, Hz	1215648730				
Power, dBm	12.91				
Message					
Digital message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C				

Table 4.2— Aliveness Test of MT603G: Carrier Frequency & Power Output (upon completion of the horizontal (X) axis vibration test)

Test duration 0 h 3 m	Bursts received 3	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, kHz	406039.000	406041.000	406040.000	406040.000	406040.000
Power, dBm	35	39	36.58	36.58	36.59
121.5 MHz Transmitter Parameters					
Carrier Frequency, Hz	1215648730				
Power, dBm	12.91				
Message					
Digital message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C				

Table 4.3— Aliveness Test of MT603G: Carrier Frequency & Power Output (upon completion of the horizontal (Y) axis vibration test)

Test duration 0 h 3 m	Bursts received 3	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, kHz	406039.000	406041.000	406040.000	406040.000	406040.000
Power, dBm	35	39	36.58	36.58	36.59
121.5 MHz Transmitter Parameters					
Carrier Frequency, Hz	1215648730				
Power, dBm	12.91				
Message					
Digital message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C				

Table 4.4 — Aliveness Test of MT603FG: Carrier Frequency & Power Output (upon completion of the vertical axis vibration test)

Test duration 0 h 3 m	Bursts received 3	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, kHz	406039.000	406041.000	406040.200	406040.200	406040.200
Power, dBm	35	39	36.33	36.34	36.34
121.5 MHz Transmitter Parameters					
Carrier Frequency, Hz	121649858				
Power, dBm	12.91				
Message					
Digital message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C				

Table 4.5— Aliveness Test of MT603FG: Carrier Frequency & Power Output (upon completion of the horizontal (X) axis vibration test)

Test duration 0 h 3 m	Bursts received 3	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, kHz	406039.000	406041.000	406040.200	406040.200	406040.200
Power, dBm	35	39	36.33	36.34	36.34
121.5 MHz Transmitter Parameters					
Carrier Frequency, Hz	121649858				
Power, dBm	12.91				
Message					
Digital message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C				

Table 4.6— Aliveness Test of MT603FG: Carrier Frequency & Power Output (upon completion of the horizontal (Y) axis vibration test)

Test duration 0 h 3 m	Bursts received 3	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, kHz	406039.000	406041.000	406040.200	406040.200	406040.200
Power, dBm	35	39	36.33	36.34	36.34
121.5 MHz Transmitter Parameters					
Carrier Frequency, Hz	121649858				
Power, dBm	12.91				
Message					
Digital message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C				

FINAL RESULTS OF MT603G VIBRATION TEST (A5.0 RTCM 11000.2 Version 2.1):

PARAMETERS TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS (PASS/FAULT)
• Exterior Mechanical Inspection	No damage	√	√	PASS
• Aliveness Test:				
- Carrier Frequency	406.040 ± 0.001	MHz	406.04000	PASS
- Power Output	35 - 39	dBm	36.58 36.58 36.58	PASS
- Data Message	Correct		√	PASS
• Activation	No activation during test	√	No activation during test	PASS

FINAL RESULTS OF MT603FG VIBRATION TEST (A5.0 RTCM 11000.2 Version 2.1):

PARAMETERS TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS (PASS/FAULT)
• Exterior Mechanical Inspection	No damage	√	√	PASS
• Aliveness Test:				
- Carrier Frequency	406.040 ± 0.001	MHz	406.040200	PASS
- Power Output	35 - 39	dBm	36.34 36.34 36.34	PASS
- Data Message	Correct		√	PASS
• Activation	No activation during test	√	No activation during test	PASS

TEST EQUIPMENT USED

No	Name of test equipment	Type, model	ser. No	Calibration Due date
1.	Vibration table	Tiravib 5142	26/88	07.2017
2.	Digital vibration meter	V-1103A	1013/2	09.2016
3.	Digital system of impact control	Santek-Vibro	7-25	12.2016
4.	Oscilloscope	TDS 1002	C041673	02.2017
5.	Temperature meter	gradient 2002	078	01.2017
6.	Hygrometer digital	HP 22-A	60974546	09.2016
7.	Beacon tester	BT100AVS	2315	07.2016
8.	Beacon tester	BT-611	1005	11.2016
9.	Spectrum analyzer	FSH8	105763	10.2016
10.	Tuned dipole antenna	FCC-4	587A	09.2016

ANNEX 5.
BUMP TEST (A6.0)

Equipment Under Test (EUT): 1) MT603G
2) MT603FG

SW version: OS0021 ver 1.00 (8/12/2014)

Test Date: 15.01.2016
Test Conditions:

- Ambient temperature: 15.8 °C
- Relative humidity: 47 %
- Atmospheric pressure: 759 mm/Hg

TEST DESCRIPTION
The EUT was secured to the bump testing equipment through its normal attachments, using no additional straps or other holding means.
The EUT was subjected to the bump test according to the following profile:

- Peak Acceleration: 98 m/s^2
- Pulse Duration: 16 ms
- Waveshape: Half-cycle Sinewave
- Test Axis: Vertical
- Number of Bumps: 4000

- Upon completion of the bump test, an exterior mechanical inspection was performed and the aliveness test was conducted.
- Activation of the EUT during the bump tests was checked.

TEST RESULT
Activation of the EUT during the bump tests was monitored. The EUT was not switched on during the test and the EUT did not inadvertently activate during the test.

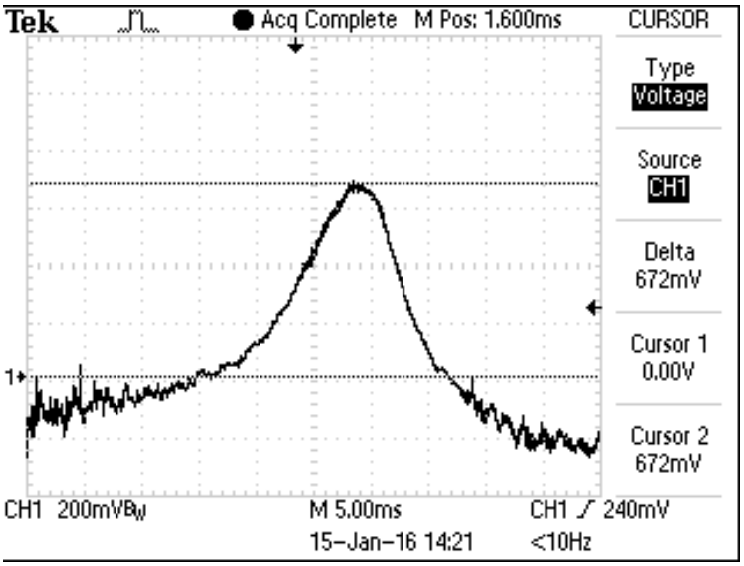

Figure 5.1 – Diagram of the bump testing equipment control channel (15.9 ms, 98.1 m/s^2)

Figure 5.2 - Test Set-up. Vertical axis of the MT603G

Figure 5.3 - Test Set-up. Vertical axis of the MT603FG

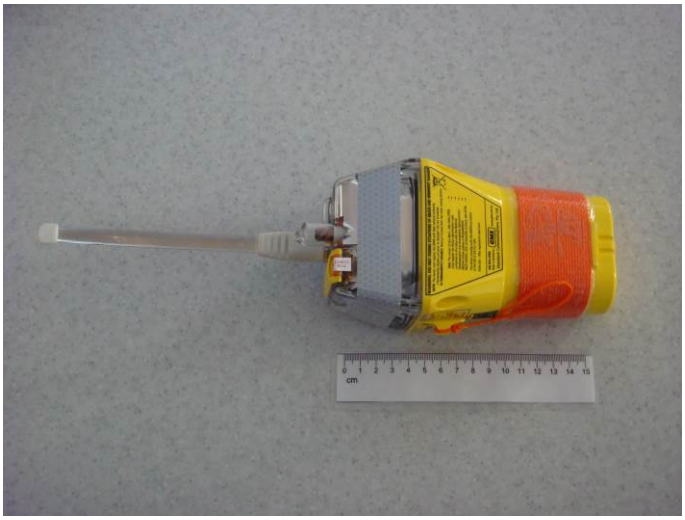

Figure 5.4 – View of the MT603G upon completion of the bump test

Figure 5.5 – View of the MT603FG upon completion of the bump test

Figure 5.6 – View of the MT603G upon completion of the bump test

Figure 5.7 – View of the MT603FG upon completion of the bump test

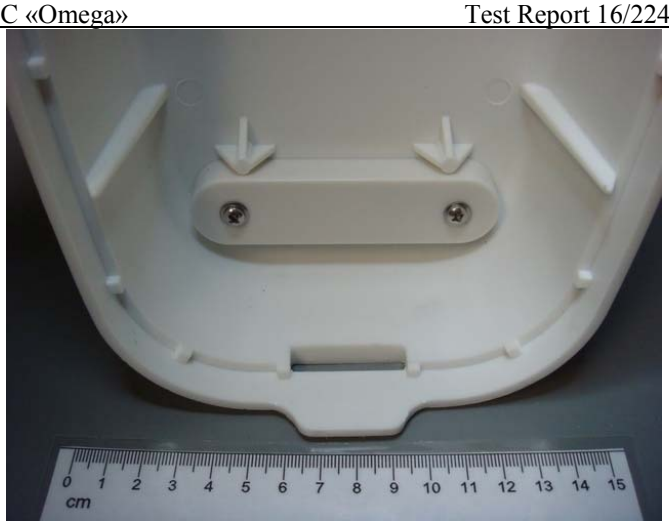

Figure 5.8 – View of the MRH (MT603FG) upon completion of the bump test

Table 5.1 — MT603G Aliveness Test: Carrier Frequency & Power Output (upon completion of the Bump Test)

Test duration 0 h 2 m		Bursts received 3	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters		**Limits**		**Measured**		
		min	**max**	**min**	**current**	**max**
Frequency, kHz		406039.000	406041.000	406039.862	406039.862	406039.863
Power, dBm		35	39	36.58	36.58	36.59
121.5 MHz Transmitter Parameters						
Carrier Frequency, Hz	1215648730					
Power, dBm	12.91					
Message						
Digital message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C					

Table 5.2 — MT603FG Aliveness Test: Carrier Frequency & Power Output (upon completion of the Bump Test)

Test duration 0 h 2 m		Bursts received 3	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters		**Limits**		**Measured**		
		min	**max**	**min**	**current**	**max**
Frequency, kHz		406039.000	406041.000	406040.030	406040.031	406039.032
Power, dBm		35	39	36.33	36.33	36.34
121.5 MHz Transmitter Parameters						
Carrier Frequency, Hz	121649524					
Power, dBm	12.91					
Message						
Digital message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C					

MT603G FINAL RESULTS OF THE BUMP TEST (A6.0 RTCM 11000.2 Version 2.1):

PARAMETERS TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS (PASS/FAULT)
• Exterior Mechanical Inspection	No damage	√	√	PASS
• Aliveness Test:				
- Carrier Frequency	406.040 ± 0.001	MHz	406.039862	PASS
- Power Output	35 - 39	dBm	36.58	PASS
- Digital message	Correct	√	√	PASS
• Activation	No activation during test	√	√	PASS

MT603FG FINAL RESULTS OF THE BUMP TEST (A6.0 RTCM 11000.2 Version 2.1):

PARAMETERS TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS (PASS/FAULT)
• Exterior Mechanical Inspection	No damage	√	√	PASS
• Aliveness Test:				
- Carrier Frequency	406.040 ± 0.001	MHz	406.040031	PASS
- Power Output	35 - 39	dBm	36.33	PASS
- Digital message	Correct	√	√	PASS
• Activation	No activation during test	√	√	PASS

TEST EQUIPMENT

No	Name of test equipment	Type, model	ser. No	Calibration Due date
1.	Shock table	Tirashock 4110	41/88	07.2017
2.	Digital vibration meter	V-1103A	1013/2	09.2016
3.	Digital system of impact control	Santek-Vibro	7-25	12.2016
4.	Oscilloscope	TDS 1002	C041673	02.2017
5.	Temperature meter	gradient 2002	078	01.2017
6.	Hygrometer digital	HP 22-A	60974546	09.2016
7.	Beacon tester	BT100AVS	2315	07.2016
8.	Beacon tester	BT-611	1005	11.2016
9.	Spectrum analyzer	FSH8	105763	10.2016
10.	Tuned dipole antenna	FCC-4	587A	09.2016

ANNEX 6.
SALT FOG TEST (A7.0)

Equipment Under Test (EUT): 1) MT603G
2) MT603FG

SW version: OS0021 ver 1.00 (8/12/2014)

Test Date: 15.01.2016-19.01.2016
Test Conditions:

- Ambient temperature: 15.8—17.9 °C
- Relative humidity: 47— 51 %
- Atmospheric pressure: 750— 759 mm/Hg

TEST DESCRIPTION

The salt fog test should be conducted on a complete Category 1 satellite EPIRB including the release mechanism and on a Category 2 with its mounting device. The EUT should be turned OFF during the test. Before exposing the EUT to salt fog, it should be conditioned for duration of at least 2 hours at a temperature of 35° C ± 2° C. After this conditioning and with the ambient temperature maintained at 35° C, salt fog should be added and maintained at the saturation point for 48 hours.
The salt fog should be prepared from a 5% ± 1% salt (sodium chloride) solution.
After exposure to salt fog, the EUT should be permitted to dry at room temperature (20° C ± 5° C) for 24 hours before being exposed to another period of 12 hours of salt fog exposure at 35° C.
Upon completion of this exposure and after a 12 hour drying period at room temperature, the exterior of the unit should be inspected for corrosion, peeling paint, and other signs of deterioration and the aliveness test conducted.

TEST RESULT

– EPIRB is OFF during the test.
– Preparation of salt solution: Resistance distilled, demineralized, deionized use water not introduces contaminants is 555 kOhms/cm. Salt solution concentration is 5.2%. Salt solution containing (on dry basis) 0.02% sodium iodide and 0.07 % total impurities. Salt solution pH is 6.9. Preheat temperature compressed air (before atomizing) is 46.3 °C. Air pressure is 83.5 kPa. Reference MIL-STD-810D (19 July 1983) method 509.2 item II-2.2 on the preparation of 5% salt solution.
– Preparation of salt fog: from a 5% salt (sodium chloride) solution. Salt fog fallout such that each receptacle collects is 2.4 ml of solution per hour for each 80 cm^3 of horizontal collecting area (10 cm diameter) in an average test at 16 hours. Salt fog pH is 7.0. Reference MIL-STD-810D (19 July 1983) method 509.2 item II-1 on the preparation of the apparatus for generating salt fog.

Step 1 Condition: temperature +35 °C in the chamber with EUT duration 2 hours; no salt fog;
Step 2 Condition: temperature +35 °C in the salt fog chamber with EUT duration 48 hours; exposed to salt fog;
Step 3 Condition: temperature is +20 °C in the chamber with EUT duration 24 hours; no salt fog;
Step 4 Condition: temperature is +35 °C in the salt fog chamber with EUT duration 12 hours; exposed to salt fog;
Step 5 Condition: temperature is +20 °C in the chamber with EUT; no salt fog; duration 12 hours;
Step 6 Corrosion, peeling paint, and other signs of deterioration are inspected;
Step 7 Salt deposits and water stains is wash off with clean warm water not exceeding a temperature +38 °C;
Step 8 Aliveness test of EUT upon completion of the salt fog test.

Figure 6.1 – Views of the EUT in salt fog chamber

Figure 6.2 – View exterior inspection of the MT603G upon completion of the salt fog test

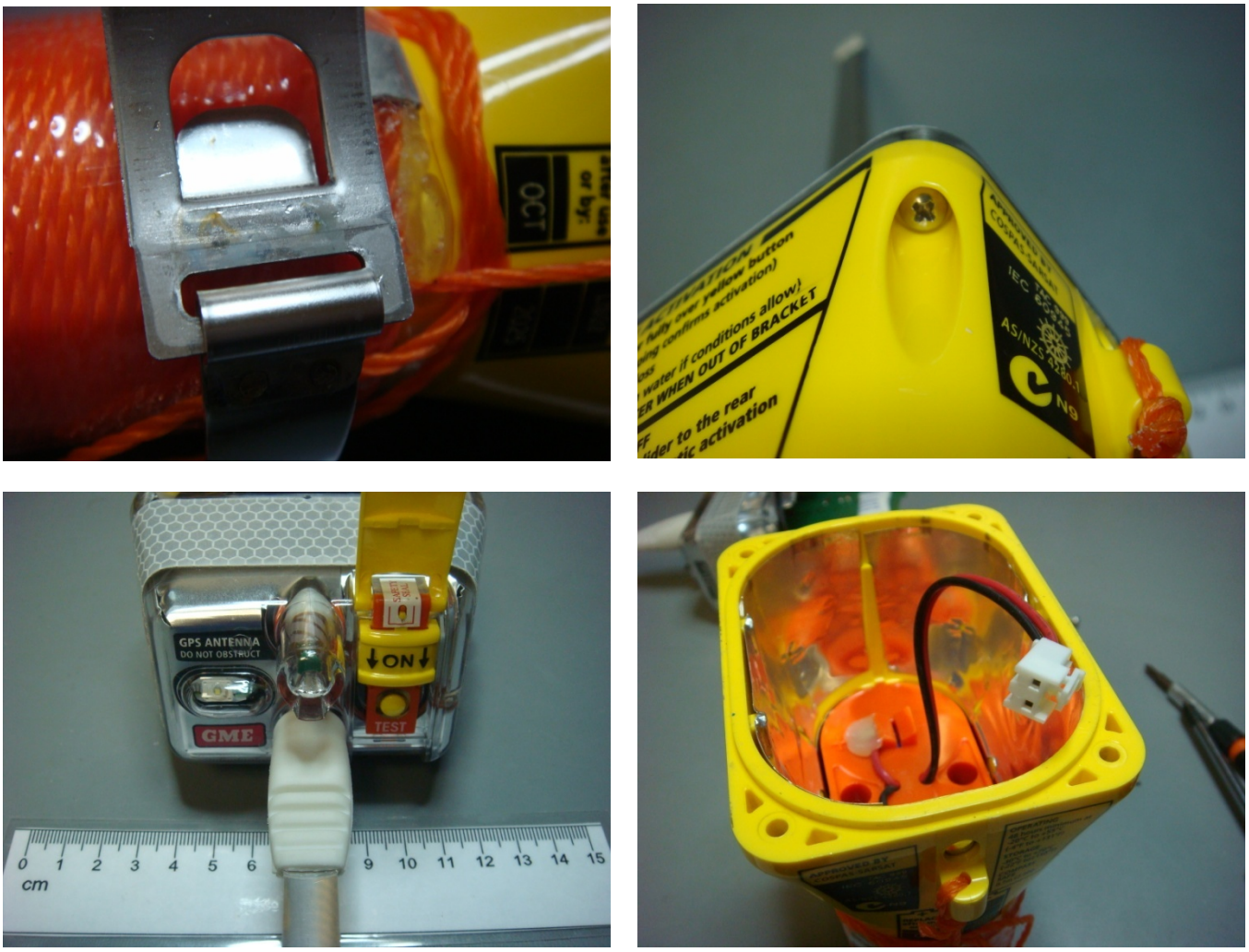

Figure 6.3 – View exterior inspection of the MT603G upon completion of the salt fog test

Table 6.1 — Detailed measurement results of EUT model MT603G after of the salt fog test

Test duration 0 h 1 m	Bursts received 3	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, kHz	406039.000	406041.000	406039.858	406039.858	406039.858
Power, dBm	35	39	36.58	36.58	36.59
121.5 MHz Transmitter Parameters					
Carrier Frequency, Hz	1216487302				
Power, dBm	12.91				
Message					
Digital message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C				

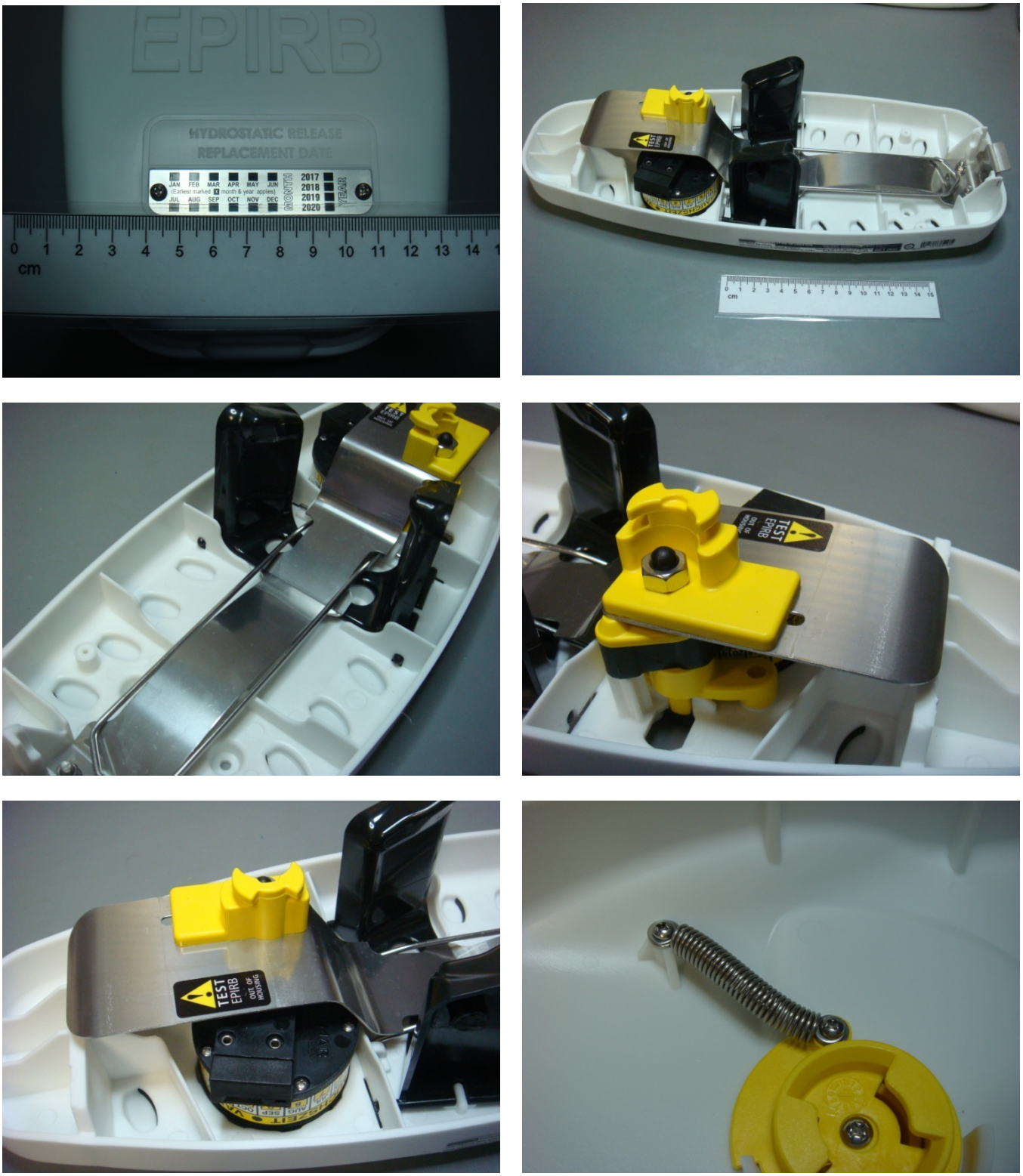

Figure 6.4 – View exterior inspection of the MT603FG upon completion of the salt fog test

Figure 6.5 – View exterior inspection of the MT603FG upon completion of the salt fog test

Table 6.2 — Detailed measurement results of EUT model MT603FG after of the salt fog test

Test duration 0 h 1 m	Bursts received 3	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, kHz	406039.000	406041.000	406040.131	406040.127	406040.127
Power, dBm	35	39	36.33	36.33	36.34
121.5 MHz Transmitter Parameters					
Carrier Frequency, Hz	1216493651				
Power, dBm	12.91				
Message					
Digital message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C				

MT603G FINAL RESULTS OF THE SALT FOG TEST (A6.0 RTCM 11000.2 Version 2.1):

PARAMETERS TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS (PASS/FAULT)
• Exterior Inspection	No corrosion, peeling paint, and other signs of deterioration	√	√	PASS
• Aliveness Test:				
- Carrier Frequency	406.040 ± 0.001	MHz	406.039858	PASS
- Power Output	35 - 39	dBm	35.58	PASS
- Digital message	Correct	√	√	PASS

MT603FG FINAL RESULTS OF THE SALT FOG TEST (A6.0 RTCM 11000.2 Version 2.1):

PARAMETERS TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS (PASS/FAULT)
• Exterior Mechanical Inspection	No damage	√	√	PASS
• Aliveness Test:				
- Carrier Frequency	406.040 ± 0.001	MHz	406.040127	PASS
- Power Output	35 - 39	dBm	36.33	PASS
- Digital message	Correct	√	√	PASS
• Activation	No activation during test	√	√	PASS

TEST EQUIPMENT

No	Name of test equipment	Type, model	ser. No	Calibration Due date
11.	Salt Fog Chamber	DS090-X	20807004	05.2017
12.	Temperature meter	gradient 2002	078	01.2017
13.	Hygrometer digital	HP 22-A	60974546	09.2016
14.	Beacon tester	BT100AVS	2315	07.2016
15.	Beacon tester	BT-611	1005	11.2016
16.	Spectrum analyzer	FSH8	105763	10.2016
17.	Tuned dipole antenna	FCC-4	587A	09.2016

ANNEX 7.
DROP TEST (A8.1, on hard surface)

Equipment Under Test (EUT): MT603FG

SW version: OS0021 ver 1.00 (8/12/2014)

Test Date: 19.01.2016
Test Conditions:

- Ambient temperature: 16.5°C
- Relative humidity: 49 %
- Atmospheric pressure: 750 mm/Hg

TEST DESCRIPTION
The EUT should be soaked at minimum stowage temperature for 2 hours. The drop test should then be performed within five minutes after removal from a temperature chamber.
The EUT should be dropped from a height of 1 meter (± 10 mm) above the test surface. The orientation of the EUT when dropped should be the normal floating position.
The test surface should consist of a piece of solid wood with a thickness of at least 150 mm and a mass of 30 kg or more.
At the conclusion of the drop, the EUT should be subjected to an aliveness check.

TEST RESULT
The EUT was soaked at minimum stowage temperature -30°C for 2 hours. EUT antenna was secured in its normal stowage position for this test.
The drop test was then performed within two minutes (less than the five minutes requirement) after removal from a temperature chamber. One drop was carried out with orientation in the normal floating position.

The test surface consists of a piece of solid hard wood with a thickness of at least 150 mm and a mass of 30 kg
The height of the lowest part of the EUT relative to the test surface at the moment of release was 1000 mm ± 10 mm.

The EUT did not activate during the test.

At the end of the test the EUT was subjected to aliveness test and was examined for external signs of damage.

Figure 7.1 - Set-up for drop test

Figure 7.2 - Thickness of wood test surface

Figure 7.3 - Dimensions of the wood test surface

Figure 7.4 - View EUT upon completion of the drop test

Figure 7.5 - View EUT upon completion of the drop test

Figure 7.6 - View EUT upon completion of the drop test

Figure 7.7 - View EUT upon completion of the drop test

Figure 7.8 - View EUT upon completion of the drop test

Figure 7.9 - View EUT upon completion of the drop test

No indication of damage was detected at the end of test.

Table 7.1 — Results of the EUT Aliveness Test (after the Drop Tests)

Test duration 0 h 1 m	Bursts received 3	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, kHz	406039.000	406041.000	406040.030	406040.031	406039.032
Power, dBm	35	39	36.33	36.33	36.34
121.5 MHz Transmitter Parameters					
Carrier Frequency, Hz	121649524				
Power, dBm	12.91				
Message					
Digital message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C				

FINAL RESULTS OF DROP TEST on Hard Surface (A8.1 RTCM 11000.2 Version 2.1):

PARAMETERS TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS (PASS/FAULT)
• Exterior Mechanical Inspection	No damage	√	√	PASS
• Aliveness Test:				
- Carrier Frequency	406.040 ± 0.001	MHz	406.040031	PASS
- Power Output	35 - 39	dBm	36.33	PASS
- Digital message	Correct	√	√	PASS
• Activation	No activation during test	√	√	PASS

TEST EQUIPMENT

No	Name of test equipment	Type, model	ser. No	Calibration Due date
1.	Climatic chamber	GTH 408-70-CP-AR-LN2	MAA1212-004	12.2016
2.	Temperature meter	gradient 2002	078	01.2017
3.	Hygrometer digital	HP 22-A	60974546	09.2016
4.	Beacon tester	BT100AVS	2315	07.2016
5.	Beacon tester	BT-611	1005	11.2016
6.	Spectrum analyzer	FSH8	105763	10.2016
7.	Tuned dipole antenna	FCC-4	587A	09.2016
8.	Wooden drop installation	-	101231	01.2018

ANNEX 8.
DROP TEST (A8.2, in water)

Equipment Under Test (EUT): MT603G
MT603FG

SW version: OS0021 ver 1.00 (8/12/2014)

Test Date: 20.01.2016
Test Conditions:

- Ambient temperature: 15.1 °C
- Relative humidity: 46 %
- Atmospheric pressure: 750 mm/Hg

TEST DESCRIPTION

This test should be conducted on the EUT removed from the stowage bracket. Category 2 satellite EPIRB should be manually activated prior to the drop.
The EUT should be dropped three times from a height of at least 20 m into water.
Each drop should be initiated from a different orientation as follows:
antenna vertical up; antenna vertical down; antenna horizontal.
Upon completion of the drop test, an exterior mechanical inspection should be performed and the aliveness test should be made.

TEST RESULT

– The EUT was removed from the removed from the stowage bracket;
– The EUT was dropped three times. Each drop was initiated from a different orientation as follows: antenna vertical up; antenna vertical down; antenna horizontal.
– The EUT was manually activated prior to the drop.

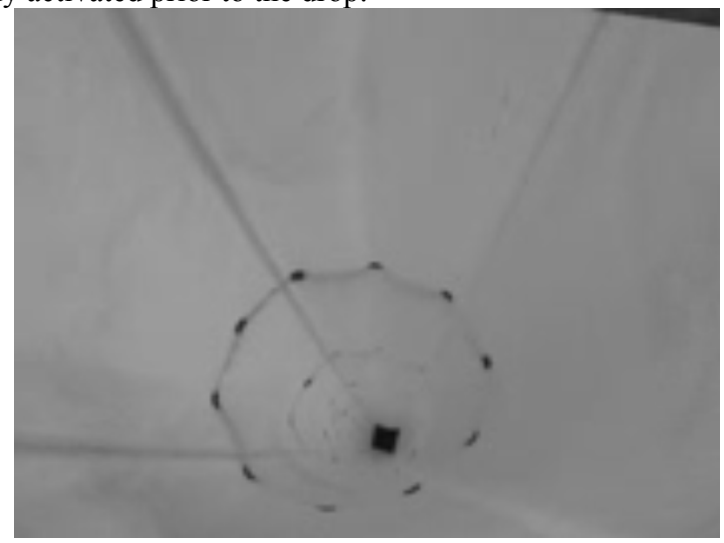

Figure 8.1 – Total view of test site of the drop test in water of MT603G from a height of 20 m

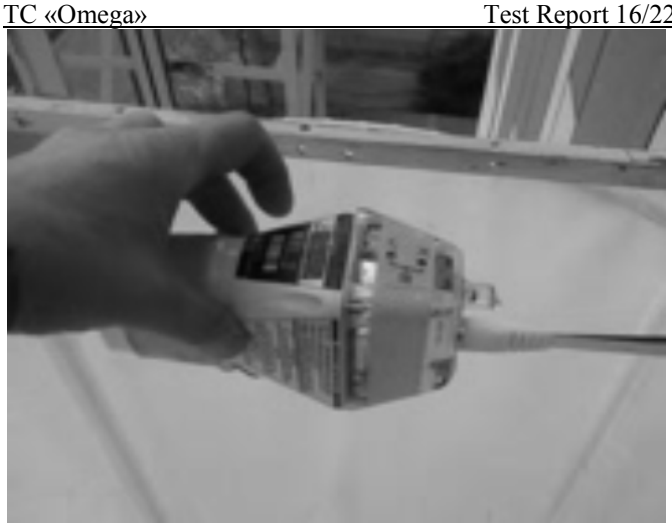

Figure 8.2 – View MT603G dropping in water with antenna horizontal

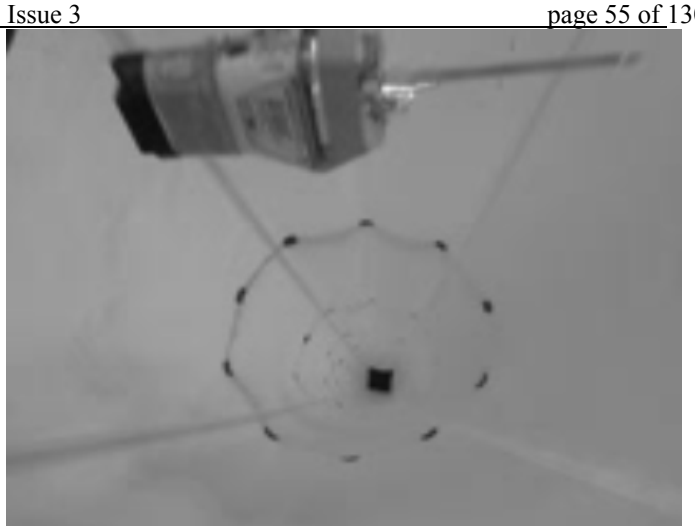

Figure 8.3 – View MT603FG dropping in water with antenna vertical up

Figure 8.4 – View MT603G dropping in water with antenna vertical down

Figure 8.5 – View MT603FG dropping in water with antenna vertical down

Figure 8.6 – View MT603G dropping in water with antenna vertical up

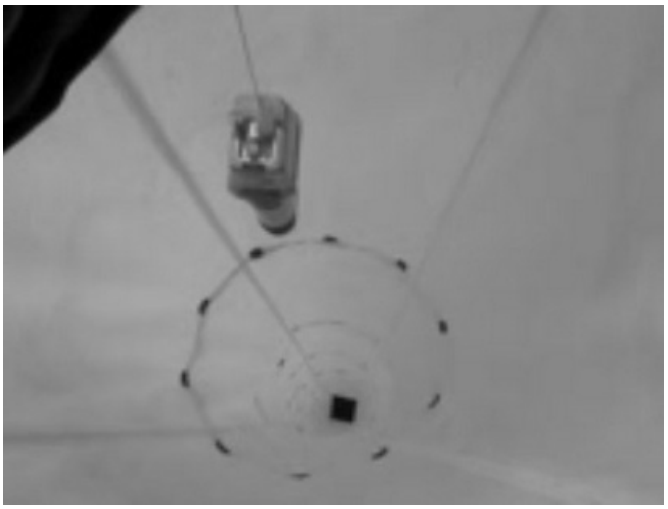

Figure 8.7 – View MT603FG dropping in water with antenna vertical up

No water ingress was detected inside of EUT on drop test completion.

Table 8.1 — Results of the MT603G Aliveness Test (after the Drop Tests)

Test duration 0 h 1 m	Bursts received 3	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, kHz	406039.000	406041.000	406039.862	406039.862	406039.863
Power, dBm	35	39	36.58	36.58	36.59
121.5 MHz Transmitter Parameters					
Carrier Frequency, Hz	1215648730				
Power, dBm	12.91				
Message					
Digital message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C				

Table 8.2 — Results of the MT603FG Aliveness Test (after the Drop Tests)

Test duration 0 h 1 m	Bursts received 3	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, kHz	406039.000	406041.000	406040.030	406040.031	406039.032
Power, dBm	35	39	36.33	36.33	36.34
121.5 MHz Transmitter Parameters					
Carrier Frequency, Hz	121649524				
Power, dBm	12.91				
Message					
Digital message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C				

FINAL RESULTS OF THE MT603G OF DROP TEST in Water (A8.2 RTCM 11000.2 Version 2.1):

PARAMETERS TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS (PASS/FAULT)
• Exterior Mechanical Inspection	No damage	√	√	PASS
• Interior Inspection	No water ingress	√	√	PASS
• Aliveness Test:				
- Carrier Frequency	406.040 ± 0.001	MHz	406.039862	PASS
- Power Output	35 - 39	dBm	36.58	PASS
- Digital message	Correct	√	√	PASS

FINAL RESULTS OF THE MT603FG OF DROP TEST in Water (A8.2 RTCM 11000.2 Version 2.1):

PARAMETERS TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS (PASS/FAULT)
• Exterior Mechanical Inspection	No damage	√	√	PASS
• Interior Inspection	No water ingress	√	√	PASS
• Aliveness Test:				
- Carrier Frequency	406.040 ± 0.001	MHz	406.040031	PASS
- Power Output	35 - 39	dBm	36.33	PASS
- Digital message	Correct	√	√	PASS

TEST EQUIPMENT

No	Name of test equipment	Type, model	ser. No	Calibration Due date
1	Beacon tester	BT-611	1005	11.2016
2	Free fall installation	SAPB-20	101377	05.2019

ANNEX 9.
LEAKAGE AND IMMERSION TEST (A9.0)

Equipment Under Test (EUT): MT603FG

SW version: OS0021 ver 1.00 (8/12/2014)

Test Date: 23.01.2016
Test Conditions:

- Ambient temperature: 23.4-25.6°C
- Relative humidity: 50-67 %
- Atmospheric pressure: 752-762 mm/Hg

TEST DESCRIPTION
The EUT should be turned OFF during the leakage and immersion tests and the tests performed in the following sequence.
1. The equipment should be placed in an atmosphere of +65° ± 3° C for one hour. It should then immediately be immersed in water at +20° ± 3° C to a depth of 100 ± 5 mm, measured from the highest point of the equipment to the surface of the water, for a period of 48 hours.
2. The EUT should be immersed under a 10 meter head of water for 5 minutes.
3. At the end of the test period the equipment should be subjected to a performance check, and then be inspected for damage and visible ingress of water viewed with the unaided eye.

TEST RESULT:

- STEP 1. The EUT was switched OFF and placed in the climatic test chamber at temperature + 68°C* for 1 hour.
- STEP 2. The EUT was then immersed in water at +23°C* to a depth of 100 mm, measured from the highest point of the EUT to the surface of the water, for a period of 48 hours.
- STEP 3. After period of 48 hours the EUT was removed from the water.
- STEP 4. The EUT was then examined for damage and for obvious unwanted ingress of water without opening as agreed with manufacturer.
- STEP 5. The EUT was immersed into the pressure vessel which had been filled with water. Then pressure was increased to 0,981 bar (relative to atmospheric pressure) that corresponds total depth of immersion of 10 meters and maintained for 5 minutes.
- STEP 6. The EUT was removed from the water and wiped dry.
- STEP 7. At the end of the test period:
  - the EUT was subjected to a performance check,
  - the EUT was opened and inspected for signs of any ingress of water.

*This temperature was used to cover requirements of IEC 61097-2 which requires +70°C ± 3°C for the EUT soaking and +25°C ± 3°C for the EUT thermal shock.