TESTING CENTER «OMEGA»

Approved by
Head of TC
TC "OMEGA"
Bogach S.V.

Report on

COSPAS-SARSAT 406 MHz Emergency Beacon Testing of the Standard Communications Pty Ltd Emergency Position Indicating Radio Beacon (EPIRB) model MT603FG in accordance with C/S T.007

Report Nr. :	**16/116**
Issue :	**5**
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Accreditations:

COSPAS-SARSAT Secretariat Reference No. CS497/F530 dated 21/09/1994

National Accreditation Agency of Ukraine
Certificate of accreditation for compliance DSTU 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)
model MT603FG

Prepared for: Beacon Manufacturer:
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End of tests: December 27, 2017

History of the Report Issue/revisions

Report Nr – Issue Nr. or Revision Nr.	Date of Issue	Reasons for re-issue
16/116 Issue 1	April 08, 2016	The initial issue.
16/116 - Issue 2	June 10, 2016	Additinal documents added.
16/116 - Issue 3	May 30, 2017	Application form (Annex G) was corrected Beacon Manuals (item 5(e)) were replaced. Marketing brochures (item 5(f)) were replaced. Beacon quality assurance plan (Annex L) was replaced. Technical data for TCXO (item 5 (i-iii)) was added. GNSS receiver operating cycle (item 5(n)) was corrected. Description of differences between beacon model variants (item 5(q)) was amended.
16/116 - Issue 4	December 27, 2017	Additional tests as requested by the COSPAS-SARSAT Secretariat: • Verification of the transmitter's characteristics 121.5 MHz at ambient, minimum and maximum temperatures and lifetime test; • Verification of the coding of the National User Protocol with the change of GNSS location data.
16/116 - Issue 5	February 01, 2018	Minor correction of Annex G.1

CONTENTS

1. Scope

Test purpose is to confirm compliance of EPIRB model MT603FG with the COSPAS-SARSAT 406 MHz Beacon Type Approval Standard C/S T.007 (ref. 2.2) and the Specification for COSPAS-SARSAT 406 MHz Distress Beacons C/S T.001 (ref.2.1) and Interim procedure for the determination of compliance of 406 MHz beacons equipped with a TCXO with COSPAS-SARSAT Type Approval requirements C/S IP TCXO (ref.2.3).

2. Reference Documents

2.1 Specification for COSPAS-SARSAT 406 MHz Distress Beacons C/S T.001 Issue 3 – Revision 15 October 2014.
2.2 COSPAS-SARSAT 406 MHz Beacon Type Approval Standard C/S T.007 Issue 4 – Revision 9 October 2014.
2.3 Interim Procedure for the Determination of Compliance of 406 MHz Beacons Equipped with a TCXO with COSPAS-SARSAT Type Approval Requirements C/S IP (TCXO) – Issue 1 – Revision 5 October 2013.

3. Details of Test Samples

- **Model name**: MT603FG
- **Serial numbers of test beacons:** 1410407582
- **Hardware P/N:** MT603FG
- **Firmware P/N:** OS0021 ver 1.00 (8/12/2014)
- **Software P/N:** OS0021 ver 1.00 (8/12/2014)
- **Description of the test beacon and block diagram of equipment under test.**

The Equipment under Test (EUT) was EPIRB model MT603FG as shown in the photographs below. A full technical description can be found in the Technical data submitted by Beacon manufacturer (Annex A).

The EUT (s/n 1410407582) was configured so that the antenna ports were connected to the 50 Ohms test system using coaxial cables. The test configuration for all tests is identical with the exception of Antenna Characteristics and Satellite Qualitative Test.

- **List of test equipment, provided by beacon manufacturer for TA testing.**

1. Dealer Programming Software DS0023.6.11, p/n 97MT400DPD.

This software was used to encode the EUT by appropriate protocol.

2. GME MT400 Dealer Programmer Kit, part no MT400DPK.

- **Photos of the EUT subjected to TA-testing**

Figure 3.1 – General view of MT603FG (s/n 1410407582).

Figure 3.2 – General view of MT603FG (s/n 1410407582).

Figure 3.3 – General view of MT603FG with antenna deployed (s/n 1410407582).

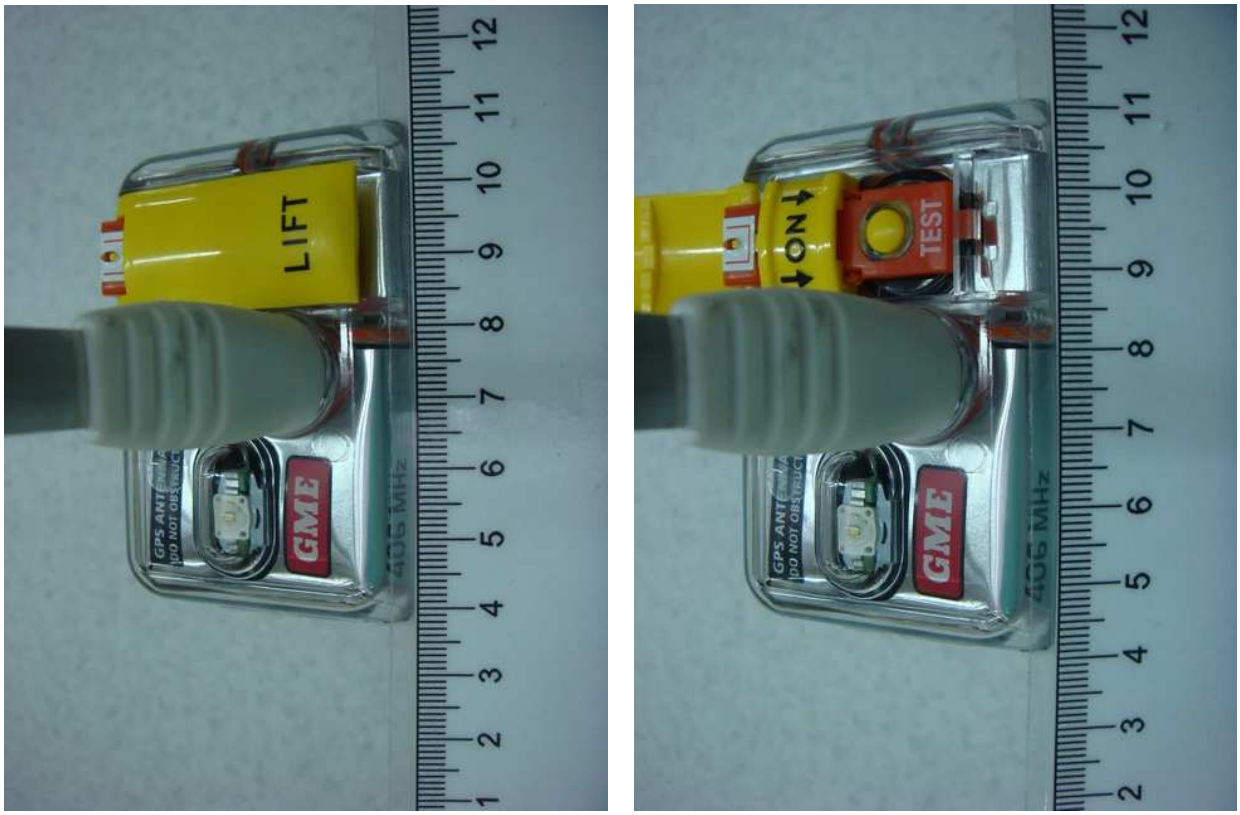


Figure 3.4 - The top view of MT603FG

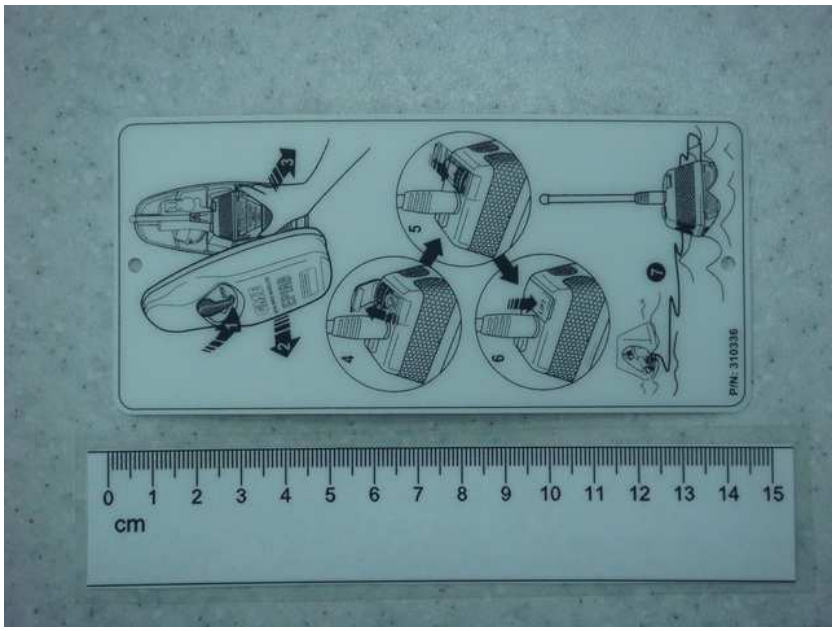


Figure 3.5 – The view of MT603FG labels on the auto-release housing (s/n 1410407582).

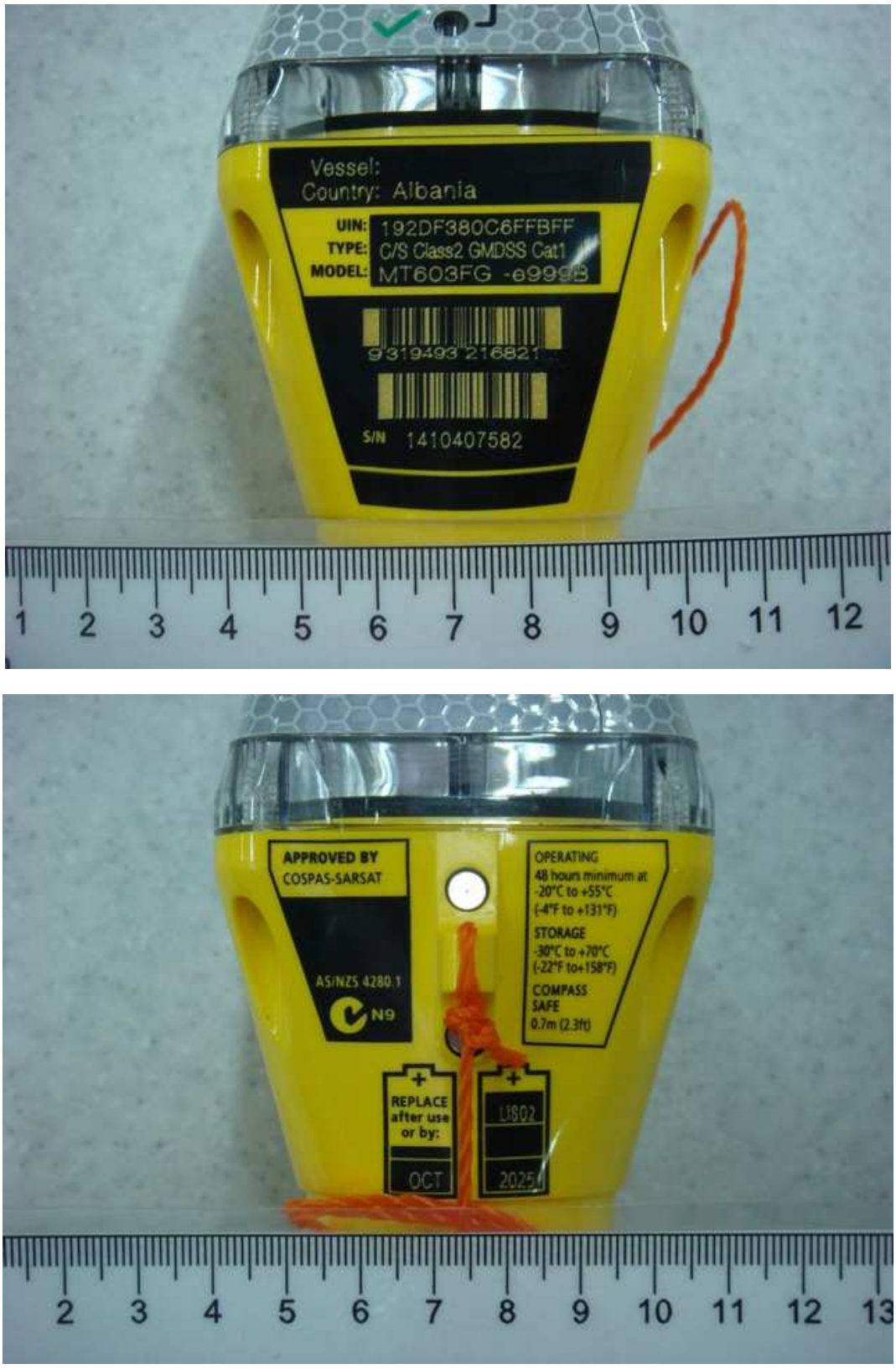


Figure 3.6 – The view of MT603FG labels (s/n 1410407582).

Figure 3.7 – The view of the Battery Pack of MT603FG

Figure 3.8 – General view of MT400 dealer Programmer kit

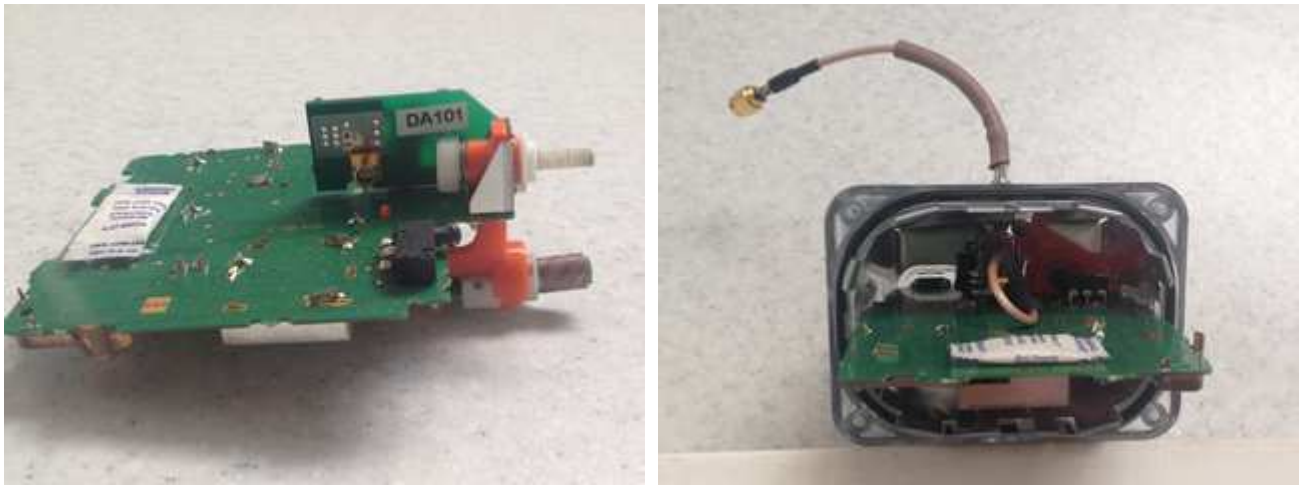
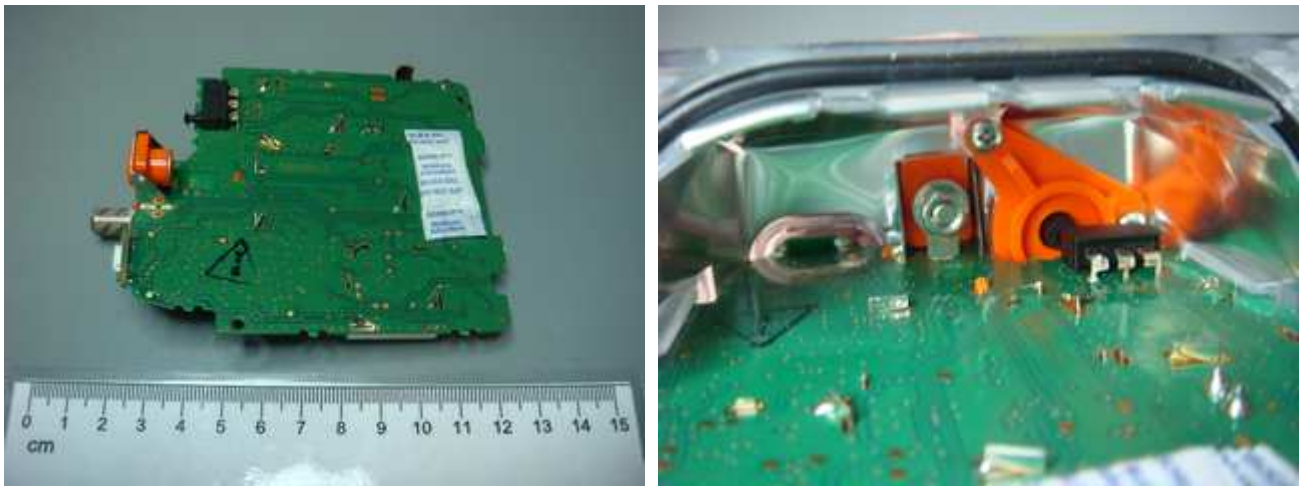


Figure 3.9 – General view pcb of MT603FG with matching unit (DA101 labeled).



- **Figure 3.10 –** General view pcb of MT603FG withot matching unit (DA101 labeled).

- **Battery Pack details**

  A full technical description of battery can be found in the manufacturer's documentation.
  Composition: Lithium-sulfur dioxide
  Cell type: LO26SX
  Number of cells: 2
  Electrical configuration: In series
  Battery pack model: 97MT400BAT

ANNEX G

APPLICATION FOR A COSPAS-SARSAT 406 MHz BEACON TYPE APPROVAL CERTIFICATE

G.1 INFORMATION PROVIDED BY THE BEACON MANUFACTURER

Beacon Manufacturer and Beacon Model

Beacon Manufacturer	Standard Communications Pty Ltd
Beacon Model Name	MT603G
Additional Beacon Model Names	MT603FG

Beacon Type and Operational Configurations

Beacon Type	**Beacon used while:**	**Tick where appropriate**
EPIRB Float Free	Floating in water or on deck or in a safety raft	X
EPIRB Non-Float Free (automatic and manual activation)	Floating in water or on deck or in a safety raft	X
EPIRB Non-Float Free (manual activation only)	Floating in water or on deck or in a safety raft	
EPIRB Float Free with VDR	Floating in water or on deck or in a safety raft	
PLB	On ground and above ground	
	On ground and above ground and floating in water	
ELT Survival	On ground and above ground	
	On ground and above ground and floating in water	
ELT Auto Fixed	Fixed ELT with aircraft external antenna	
ELT Auto Portable	In aircraft with an external antenna	
	On ground, above ground, or in a safety raft with an integrated antenna	
ELT Auto Deployable	Deployable ELT with attached antenna	
Other (specify)		

Beacon Characteristics

Characteristic	Specification
Operating frequency	406.04 MHz
Operating temperature range	Tmin = -20C Tmax= +55C
Temperature, at which minimum duration of continuous operation is expected	-20C
Operating lifetime	48 hours
Beacon power supply type (internal non-rechargeable, internal re-chargeable, external, combined, other)	Internal Battery, non-rechargable
External power supply parameters (AC/DC and nominal voltage)	N/A
Is external power supply needed to energise the beacon or its ancillary devices in any of operational modes (N/A or Yes or No)	N/A
Battery cell chemistry	LiSO2
Battery cell model name, cell size, number of cells in a battery pack, and details of the battery pack electrical configuration	LO26SX, D size , 2 Cells in series
Battery cell manufacturer	SAFT
Battery pack manufacturer and part number	Standard Comms., 97MT400BAT
Beacon manufacturers declared maximum allowed cell shelf-life (from date of cell manufacture to date of battery pack installation in the beacon)	1 years
Declared beacon battery replacement period (from date of installation in the beacon to expiry date marked on the beacon)	7 years
Oscillator type (e.g. OCXO, MCXO, TCXO)	TCXO
Oscillator manufacturer	RAKON Ltd.
Oscillator model name/ part number	E5344LF
Oscillator satisfies long-term frequency stability requirements (Yes or No)	YES
Antenna type: Integral or Other (e.g. External, Detachable – specify type)	Integral
Antenna manufacturer	Standard Communications Pty Ltd
Antenna part name and part number	97MT400ANT
Antenna cable assembly min/max RF- losses at 406 MHz, if applicable	N/A
Navigation device type (Internal, External or None)	Internal
Features in beacon that prevent degradation to 406 MHz signal or beacon lifetime	

Characteristic	**Specification**
resulting from a failure of navigation device or failure to acquire position data (Yes, No, or N/A)	Yes
Features in beacon that ensure erroneous position data is not encoded into the beacon message (Yes, No or N/A)	Yes
Navigation device capable of supporting global coverage (Yes, No or N/A)	Yes
Encoded position update capability (Yes, No, N/A) and	Yes
Encoded position update interval value (range)	30~240 min
For Internal Navigation Devices	
– Geodetic reference system (WGS 84 or GTRF)	WGS 84
– GNSS receiver cold start forced at every beacon activation (Yes or No)	Yes
– Navigation device manufacturer	Antenova
– Navigation device model name and part Number	M10478-A2
– Internal navigation device antenna type(integrated, internal, external, passive/active) , manufacturer and model	Internal, passive, Maruwa MWSL1300G
– GNSS system supported (e.g. GPS, GLONASS, Galileo)	GPS
For External Navigation Devices	
– Data protocol for GNSS receiver to beacon interface	N/A
– Physical interface for beacon to navigation device	N/A
– Electrical interface for beacon to navigation device	N/A
– Part number of the external navigation interface device (if applicable)	N/A
– Navigation device model and manufacturer (if beacon designed to use specific devices)	N/A

Self-Test Mode Characteristics:	Self-Test Mode	Optional GNSS Self-test Mode
– Activated by a separate switch/ separate switch position (Yes or No)	Yes	Yes
– Self-test/GNSS self-test mode switch automatically returns to normal position when released (Yes or No)	Yes	Yes
– Self-test/ GNSS self-test activation can cause an operational mode transmission (Yes or No)	No	No
– Results in transmission of a single self-test burst only, regardless of how long the self-test activation mechanism is applied (Yes or No)	Yes	Yes
– Results of self-test/ GNSS self-test are indicated by (provide details, e.g. Pass / Fail indicator light, strobe light, etc.)	Visual & Audio	Visual & Audio
– The content of the encoded position data fields of the self-test message has default values	Yes	N/A
– Performs an internal check and indicates that RF-power is being emitted at 406 MHz and 121.5 MHz, if beacon includes a 121.5 Hz homer (Yes or No)	Yes	No
– Self-test results in transmission of a signal other than at 406 MHz (Yes & details or No)	Yes, 121 unmodulated	No
– Self-test can be activated directly at beacon (Yes or No)	Yes	Yes
– List of Items checked by self-test	406 & 121.5 Power, GPS Module, F/W checksum	GPS Module Rf path and data output.
– Self-test/ GNSS self-test 406 MHz burst duration (440 or 520 ms)	520ms	520ms
– Self-test message length format flag in bit 25, (“0” or “1”)	1	1
– Maximum duration of a self-test mode, sec	8.25sec	130.2sec
– Maximum recommended number of self-tests during battery pack replacement period	120 recommended	N/A
– Distinct indication of self-test start (Yes or No)	Yes	Yes
– Indication of self-test results(Yes or No)	Yes	Yes
– Distinct indication of insufficient battery capacity (Yes or No)	No	No
– Automatic termination of self-test mode immediately after completion of the self-test cycle (Yes or No)	Yes	Yes
– Maximum number of GNSS Self Tests (beacons with internal navigation devices only)	N/A	12

Self-Test Mode Characteristics:	Self-Test Mode	Optional GNSS Self-test Mode
– GNSS Self-test results in transmission of a single burst, irrespectively of the test result (Yes or No)	N/A	Yes
– Maximum number of self-tests during battery pack replacement period	120 recommended	N/A
– Self-test/ GNSS self-test can be activated from beacon remote activation points (Yes & details or No)	No	No
– List all methods of Self-test mode and GNSS Self-test modes activation. Provide details on a separate sheet to describe	Manual only. Button press activation	Manual only. Button press activation

Message Coding Protocols:	(x)	Tick the boxes below against the intended protocol options
User Protocol (tick where appropriate)		Maritime with MMSI
		Maritime with Radio Call Sign
		EPIRB Float Free with Serial Number
		EPIRB Non Float Free with Serial Number
		Radio Call Sign
		Aviation
		ELT with Serial Number
		ELT with Aircraft Operator and Serial Number
		ELT with Aircraft 24-bit Address
		PLB with Serial Number
		National (Short Message Format)
	X	National (Long Message Format)
Standard Location Protocol (tick where appropriate)	X	EPIRB with MMSI
	X	EPIRB with Serial Number
		ELT with 24-bit Address
		ELT with Aircraft Operator Designator
		ELT with Serial Number
		PLB with Serial Number
National Location Protocol (tick where appropriate)	X	National Location: EPIRB
		National Location: ELT
		National Location: PLB

RLS Location Protocol (tick where appropriate) [1]		EPIRB
		ELT
		PLB
User Location Protocol (tick where appropriate)	X	Maritime with MMSI
	X	Maritime with Radio Call Sign
	X	EPIRB Float Free with Serial Number
	X	EPIRB Non Float Free with Serial Number
	X	Radio Call Sign
		Aviation
		ELT with Serial Number
		ELT with Aircraft Operator and Serial Number
		ELT with Aircraft 24-bit Address
		PLB with Serial Number
Beacon includes a homer transmitter(s) (Yes or No) - homer transmitter(s) frequency - homer transmitter(s) power		 121.5 MHz 14 ± 0.5 dBm
– homer transmitter(s) duty cycle – duty cycle of homer swept tone		>96 % 34 %
Beacon includes a high intensity flashing light (e.g. Strobe)		Yes or No Yes
- light intensity		0.75 cd
- flash rate		20 flashes per minute
Beacon transmission repetition period satisfies C/S T.001 requirement that two beacon's repetition periods are not synchronised closer than a few seconds over 5 minute period, and the time intervals between transmissions are randomly distributed on the interval 47.5 to 52.5 seconds (Yes or No)		Yes
Other ancillary devices (e.g. voice transceiver, remote control, external audio and light indicators, external activation device). List details on a separate sheet if insufficient space to describe.		None
Beacon includes automatic activation mechanism (Yes or No). Specify type of automatic beacon activation mechanism		Yes. (Conductive Water Switch)
Beacon includes features and functions not listed above, related or non-related to 406 MHz (Yes or No) List features and use a separate sheet if insufficient space		No

[1] RLS protocols will be effective as of 1 November 2015. The use of RLS-enabled beacons will be regulated by national administrations.

Beacon model hardware part number (P/N) and version	MT603G
Beacon model software/firmware P/N, version, date of issue/releases	OS0021 ver 1.00 (8/12/2014)
Beacon model printed circuit board P/N and version	Part No. 580438 v3
Known non-compliances with C/S T,001 requirements(Yes or No) If Yes, provide details (or use a separate sheet if insufficient space)	No
Beacon Manufacturer Point of Contact (POC) for this Type Approval application:	Name and Job Title: Kevan Wilson-Elswood Phone: +61 2 8867 6000 E-mail: kelswood@gme.net.au

Dated: 30/11/15 Signed: .....

Kevan Wilson-Elswood, Technical Compliance Manager

(Name, Position and Signature of Beacon Manufacturer Representative)

(Continued on Next Page)

4. Type Approval Testing

G.2 INFORMATION PROVIDED BY THE COSPAS-SARSAT ACCEPTED TEST FACILITY

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

Date of Submission for Testing: August 03, 2015

Applicable C/S Standards:

Document	Issue	Revision	Date
C/S T.001	3	15	October 2014
C/S T.007	4	9	October 2014
C/S IP TCXO	1	5	October 2013
C/S IP (LIRB)*	N/A	N/A	N/A

I hereby confirm that the 406 MHz beacon described above has been successfully tested in accordance with the Cospas-Sarsat 406 MHz Beacon Type Approval Standard (C/S T.007) and complies with the Specification for Cospas-Sarsat 406 MHz Distress Beacons (C/S T.001) as demonstrated in the attached report except noncompliances observed during type approval testing as indicated below.

Details of non-compliances during type approval testing:

- Gradient mean slope MTS by point analysis are Fail; a Pass with MU 0.1 ppb applied.

Dated February 01, 2018 Signed  V. Kovalenko
Department manager

4.1 Modifications of the Test Samples During Type Approval Testing

Modification State (Mod State)	Date of Implementation	Reasons for modification	Description of modification, HW/FW P/Ns, SW version/release after modification
0	August 03, 2015	-	-

- Modes of EUT operation during TA testing, message encoding, EUT system configuration,
  Standby mode
  - No apparent activity

  Self-test
  - Remove the EPIRB from the bracket.
  - Keep the antenna well clear of metallic objects during testing.
  - Lift the yellow cover marked 'LIFT'.
  - Hold the EPIRB in position so the two test indicator LEDs are clearly visible.
  - Briefly press and release the yellow TEST button (do not hold the test button longer than 2 seconds). The EPIRB will beep once and simultaneously the strobe will flash once indicating that the self test has commenced.
  - A single GREEN LED flash without an audio beep indicated the self test is in progress, checking the internal system, 121.5 MHz and 406 MHz radio transmitter and GPS functionality. As the four step test progresses, each test result will be indicated by either a GREEN or RED flash accompanied by a high or low audio beep.
    GREEN + High beep, indicating a successful test;
    RED + Low beep, indicating a failed test.
    NOTE: If the second LED flash is green, this is an indication that a 121MHz carrier has been emitted and successfully detected by the test routine. If the third LED flash is green, this is an indication that a 406MHz carrier has been emitted and successfully detected by the test routine.
  - At the conclusion of these four individual tests, a summary of results will be indicated by either:
    A long GREEN flash indicating the EPIRB has successfully passed all tests,
    or a long RED flash indicating a failure of one or more of the tests.
  - Once testing is completed, close the switch cover and press firmly into place until it clicks.
  - Return the EPIRB into the bracket.

  GNSS Self-test
  - Remove the EPIRB from the bracket.
  - Ensure you are outside with good visibility of the open sky above.
  - Keep the antenna well clear of metallic objects during testing.
  - Lift the yellow cover marked 'LIFT'.
  - Press and hold the yellow 'Test' button until the green LED flashes, then release the button within 2 seconds.
  - The beacon will now attempt to acquire a GPS position. During this time the green LED will flash at one second intervals accompanied by double beeps.

    The time taken to acquire a position will vary depending on the number and location of satellites present in your location. Under normal conditions, acquisition should take around 30 to 40 seconds, however it is possible for it to take several minutes. Note that distress signals are not radiated as part of this test.

    a. If a GPS position is successfully acquired, the beacon will emit a 3 tone musical 'chime' and the

green LED will flash 8 times. It will then send a brief ‘TEST’ transmission containing the GPS coordinates. The ‘TEST’ transmission is safe and will not trigger a search.

b. If a GPS position cannot be acquired within 2 minutes, the beacon will emit 8 beeps and the red LED will flash 8 times. This may indicate a fault with the EPIRB’s GPS receiver system and you should contact GME service department for advice.

- Once GPS testing is completed, close the switch cover and press firmly into place until it clicks.
- Return the beacon to its bracket.

Operating

- Remove the beacon from the bracket.
- Lift the switch cover (marked ‘LIFT’).
- Slide the ‘ON’ slider switch fully forward in the direction of the arrows. The unit will initially beep once and the strobe will flash, then after seven seconds the flashing strobe and beeps will continue every 3 seconds to indicate the beacon is operating.
- Close the cover to secure the slider switch in the ‘ON’ position.
- If the beacon is an MT603G it will begin acquiring GPS satellites. When a position is obtained, a musical chime will be heard and the green LED will flash rapidly for a few seconds. The green LED will then flash in sync with the strobe light to confirm a valid GPS position is being used.
- The beacon’s first transmission will occur approximately 50 seconds after activation (with or without a valid GPS position).

5. Test Results

5.1 Test Results Summary Table

Parameters to be Measured	Range of Specification	Units	Test Results			Comments
			T_{min} (-20°C)	T_{amb} (20 °C)	T_{max} (55 °C)	
29-Jan-16, 18-Dec-17, 19-Dec-17, MT603FG, S/N 1410407582, Mode State 0						Pass Section 5.2
1. Transmitter Power Output						
– transmitter power output (min and max)	35-39	dBm	36.38 to 36.47	36.33 to 36.34	36.28 to 36.34	
– power output rise time	<5	ms	0.04 to 0.10	0.25 to 0.30	0.15 to 0.20	
– power output 1 ms before burst	<-10 dBm	√[1]	√	√	√	
29-Jan-16, MT603FG, S/N 1410407582, Mode State 0						Pass Section 5.2
2. Digital Message	**Bits number**					
– bit sync	1-15	15 bits "1"	√	√	√	√	
– frame sync	16-24	"000101111"	√	√	√	√	
– format flag	25	1 bit	bit value	1	1	1	
– protocol flag	26	1 bit	bit value	0	0	0	
– Identification / position data	27-85	59 bit	√	√	√	√	
– BCH code	86-106	21 bits	√	√	√	√	
– emerg. code / nation. use / suppl. data	107-112	6 bits	bit value	110111	110111	110111	
– additional data / BCH (if applicable)	113-144	32 bits	√	√	√	√	
– position error (if applicable)		<5	km	N/A	N/A	N/A	
29-Jan-16, MT603FG, S/N 1410407582, Mode State 0						Pass Section 5.2
3. Digital Message Generator						
– repetition rate T_R:						
• average T_R	48.5-51.5	sec	50.35	49.96	49.96	
• min T_R	47.5≤T_R≤48.0	sec	47.59	47.77	47.79	
• max T_R	52.0≤T_R≤52.5	sec	52.42	52.44	52.44	
• standard deviation	0.5-2.0	sec	1.63	1.24	1.23	
– bit rate:						
• min f_b	≥396	bit/sec	399.59	399.90	399.84	
• max f_b	≤404	bit/sec	399.74	400.14	400.18	
– total transmission time:						
• short message	435.6-444.4	ms	-		-	
• long message	514.8-525.2	ms	520.35 to 520.45	519.81 to 519.84	519.81 to 519.84	
– unmodulated carrier:						
1. min T_1	≥158.4	ms	160.15	159.83	159.85	
2. max T_1	≤161.6	ms	160.17	159.86	159.87	
– first burst delay	≥47.5	sec	59.90 to 60.20	59.90 to 60.10	59.80 to 60.10	

Parameters to be Measured	Range of Specification	Units	Test Results			Comments
			T_{min} (-20°C)	T_{amb} (20 °C)	T_{max} (55 °C)	
29-Jan-16, MT603FG, S/N 1410407582, Mode State 0						Pass Section 5.2
4. Modulation						
– biphase-L		√	√	√	√	
– rise time (min and max)	50-250	µsec	147.38 to 149.63	191.50 to 199.24	184.60 to 191.53	
– fall time (min and max)	50-250	µsec	157.45 to 160.41	186.03 to 193.70	178.25 to 185.88	
– phase deviation: positive (min and max)	+(1.0 to 1.2)	radians	1.10 to 1.13	1.08 to 1.11	1.09 to 1.11	
– phase deviation: negative (min and max)	-(1.0 to 1.2)	radians	-1.07 to -1.10	-1.11 to -1.14	-1.15 to -1.18	
– symmetry measurement	≤0.05	√	√	√	√	
29-Jan-16, MT603FG, S/N 1410407582, Mode State 0						Pass Section 5.2
5. 406 MHz Transmitted Frequency						
– nominal value	406.039 - 406.041	MHz	406.039971	406.039966 to 406.039967	406.039926	
– short-term stability	$\leq 2\times10^{-9}$	/100 ms	4.11E-10 to 4.40E-10	3.88E-11 to 5.56E-11	2.09E-10 to 2.61E-10	
– medium-term stability slope	(-1 to +1) $\times10^{-9}$	/min	-4.61E-10 to 3.17E-10	2.02E-12 to 2.71E-10	-8.94E-11 to 8.51E-11	
– medium-term stability residual frequency variation	$\leq 3\times10^{-9}$		1.27E-09 to 1.57E-09	1.62E-10 to 5.27E-10	1.85E-10 to 3.52E-10	
29-Jan-16, MT603FG, S/N 1410407582, Mode State 0						
6. Spurious Emissions into 50 Ohms (406.0 – 406.1 MHz)	C/S T.001 mask	√	Section 5.2.3	Section 5.2.1	Section 5.2.2	Pass
29-Jan-16, MT603FG, S/N 1410407582, Mode State 0						Pass Section 5.2
7. 406 MHz VSWR Check						
– nominal transmitted frequency	406.039 - 406.041	MHz	406.039959 to 406.039965	406.039976	406.039950 to 406.039960	
– modulation rise time (min and max)	50-250	µsec	183.76 to 193.85	151.44 to 154.23	206.62 to 214.35	
– modulation fall time (min and max)	50-250	µsec	183.01 to 189.18	160.47 to 163.39	197.76 to 205.86	
– phase deviation: positive (min and max)	+(1.0 to 1.2)	radians	1.05 to 1.10	1.10 to 1.12	1.12 to 1.14	
– phase deviation: negative (min and max)	-(1.0 to 1.2)	radians	-1.09 to -1.13	-1.10 to -1.12	-1.10 to -1.12	
– modulation symmetry measurement	≤0.05	√	√	√	√	
– digital message	Correct	√	√	√	√	

Parameters to be Measured	Range of Specification	Units	Test Results			Comments
			T_{min} (-20 °C)	T_{amb} (20 °C)	T_{max} (55 °C)	
29-Jan-16, MT603FG, S/N 1410407582, Mode State 0						
8 (a). Self-test Mode						Pass Section 5.2
– frame sync	"011010000"	√	√	√	√	
– format flag	1/0	bit value	1	1	1	
– radiated burst	≤440/520 (±1%)	ms	520.40	520.45	520.25	
– default position data (if applicable)	must be correct	√	√	√	√	
– description provided		√	√	√	√	Annex A, page 240
– design data provided on protection against repetitive self-test mode transmissions		√	√	√	√	Annex A, page 312
– single burst verification	must be one burst	√	√	√	√	
– provides for 15 Hex ID	must be correct	√	√	√	√	
– 121.5 MHz RF power (if applicable)	verify that RF power is emitted	√	√	√	√	
– 406 MHz RF power	verify that RF power is emitted	√	√	√	√	
– distinct indication of self-test start	must be provided	√	√	√	√	
– distinct indication of RF-power being emitted	must be provided	√	√	√	√	
– indication of the self-test result	must be provided	√	√	√	√	
– distinct indication of insufficient battery capacity(1)	must be provided	√	N/A	N/A	N/A	
– maximum duration of self-test mode	shall not exceed maximum duration of self-test	sec	8.25	8.24	8.25	
– automatic termination of the self-test mode upon completion of the self-test and indication of the self-test results	verify automatic termination, irrespectively of the switch position	√	√	√	√	

[1]only mandatory to new beacon models submitted for type approval testing after 1 November 2015.

29-Jan-16, MT603FG, S/N 1410407582, Mode State 0						
8 (b). GNSS Self-Test Mode (if applicable)						Pass Section 5.2
– frame sync	"011010000"	√	-	-	-	
– format flag	1	bit value	-	-	-	
– radiated burst duration	≤ 520 (+1%)	ms	-	-	-	
– position data (if applicable)	must be within 500m (or 5.25km for User Location Protocol) of the actual position	√	√	√	√	
– design data showing how GNSS Self-Test is limited in number of transmissions and duration	must be provided	√	√	√	√	Annex A, page 335
– single burst verification (if applicable)	must be one burst	√	√	√	√	
– 121.5 MHz RF power (if applicable)	verify that RF power is emitted	√	√	√	√	
– 406 MHz RF power (if applicable)	verify that RF power is emitted	√	√	√	√	
– Maximum duration of GNSS Self-Test	Manufacturer to specify value	sec	-	90	-	
– Actual duration GNSS of Self-Test with encoded location	Less than maximum duration	sec	-	39 - 68	-	
– Maximum number of GNSS Self-Tests (only beacons with internal navigation devices)	Manufacturer to specify number	number	-	96	-	
– Distinct indication to register successful completion or failure of the GNSS selftest	must be provided	√	–	√	–	Annex A, page 242
– Distinct indication that a maximum number of GNSS self-tests has been attained after GNSS self-test mode activation and without transmission of a test message or further GNSS receiver current drain	must be provided	√	–	√	–	Annex A, page 242

Parameters to be Measured	Range of Specification	Units	Test Results	Comments
28-Jan-16, MT603FG, S/N 1410407582, Mode State 0				
9. Thermal Shock				Pass Section 5.3
– soak temperature		°C	T_{soak}= 55 °C	
– measurement temperature		°C	T_{meas}= 25 °C	
– the following parameters are to be met within 15 minutes of beacon turn on and maintained for 2 hours:				
– transmit frequency nominal value	406.039 - 406.041	MHz	406.039969 to 406.039980	
– transmit frequency short-term stability	$\leq 2\times10^{-9}$	/100 ms	3.18E-10 to 4.58E-10	
– transmit frequency medium-term stability slope	$(-2 \text{ to } +2)\times10^{-9}$	/min	-1.51E-10 to 1.31E-09	
– transmit frequency medium-term stability residual frequency variation	$\leq 3\times10^{-9}$		1.93E-10 to 1.85E-09	
– transmitter power output (min and max)	35-39	dBm	36.57 to 36.58	
– digital message	Correct	√	√	
15-Feb-16 - 18-Feb-16, MT603FG, S/N 1410407582, Mode State 0				
10. Operating Lifetime at Minimum Temperature				Pass Section 5.4
– duration	>24	hrs	77:39:27 hours at Tmin=-20°C	
– transmit frequency nominal value	406.039 - 406.041	MHz	406.039949 - 406.039957	
– transmit frequency short-term stability	$\leq 2\times10^{-9}$	/100ms	2.77E-11 to 1.26E-10	
– transmit frequency medium-term stability slope	$(-1 \text{ to } +1)\times10^{-9}$	/min	-1.71E-10 to 1.76E-10	
– transmit frequency medium-term stability residual frequency variation	$\leq 3\times10^{-9}$		7.82E-11 to 7.42E-10	
– transmit power output (min and max)	35-39	dBm	36.30 to 36.47	
– Pt_{EOL} = minimum transmitter power output observed during lifetime at minimum temperature	35-39	dBm	36.30 minimum observed during first 48 hours 36.30 minimum observed after 48 hours of test	
– digital message	Correct	√	√	
20-Dec-17 - 22-Dec-17, MT603FG, S/N 1410407582, Mode State 0				
– homer transmitter continuous operation during the lifetime test[1]		Hours	78:30:00	
– homer frequency				
• at the beginning of the test		MHz	121.650158	
• at the end of the test		MHz	121.650158	
– homer peak power level				
• at the beginning of the test		dBm	14.4	
• at the end of the test		dBm	14.6	
– homer transmitter duty cycle				
• at the beginning of the test		%	96.25	
• at the end of the test		%	96.25	

1- The homer transmitter's parameters were tested during the additional test on 20.12.17-22.12.17 in accordance with the requirements of CSS.

Parameters to be Measured	Range of Specification	Units	Test Results	Comments
27-Jan-16 - 29-Jan-16, MT603FG, S/N 1410407582, Mode State 0				
11. Temperature Gradient (5°C/hr)				Pass Section 5.5
Up Ramp				
– transmit frequency nominal value	406.039 - 406.041	MHz	406.039923 to 406.039986	The battery replacement was required therefore two separate tests were performed.
– transmit frequency short-term stability	≤2×10^{-9}	/100ms	1.05E-10 to 6.21E-10	
– transmit frequency medium-term stability:				
• slope (A to B, C+15 to D)	(-1 to +1) ×10^{-9}	/min	-2.33E-10 to 5.53E-10	
• slope (B to C+15)	(-2 to +2) ×10^{-9}	/min	-1.02E-09 to 1.01E-09	
– residual frequency variation	≤3×10^{-9}		1.11E-10 to 1.85E-09	
– transmitter power output (min and max)	35-39	dBm	36.45 to 36.64	
– digital message	Correct	√	√	
Down ramp				
– transmit frequency nominal value	406.039 - 406.041	MHz	406.039924 to 406.039990	
– transmit frequency short-term stability	≤2×10^{-9}	/100ms	8.21E-11 to 3.04E-10	
– transmit frequency medium-term stability:				
• slope (C to D and E+15 to F)	(-1 to +1) ×10^{-9}	/min	-6.76E-10 to 1.01E-10	
• slope (D to E+15)	(-2 to +2) ×10^{-9}	/min	-6.28E-10 to 1.05E-09	
– residual frequency variation	≤3×10^{-9}		1.71E-10 to 1.24E-09	
– transmitter power output (min and max)	35-39	dBm	36.47 to 37.16	
– digital message	correct	√	√	
17-Mar-16, MT603FG, S/N 1410407582, Mode State 0				
12. Oscillator Aging				Pass
– 5-year carrier nominal frequency variation	C/S T.001	Hz	1218 (±3 ppm by 10 years)	Annex A page 281
– MTS analysis (if applicable)	Must demonstrate compliance	√	Fail [1]	Fail (Pass with MU applicable) Section 5.6
MT603, S/N 1410407582, Mode State 0				
13. Protection Against Continuous Transmission description provided	<45	sec	√	Annex A page 307

[1] Calculated Gradient Positive Mean Slope 2.099 ppb complies with requirement of limit 2.0 ppb and Gradient Negative Mean Slope -2.094 ppb complies with requirement of limit -2.0 ppb with applied accuracy 0.1 ppb according to Annex A of C/S T.008.

Parameters to be Measured	Range of Specification	Units	Test Results	Comments
01-Feb-16 - 04-Feb-16, 09-Mar-16, MT603FG, S/N 1410407582, Mode State 0				Pass Section 5.10
14. Satellite Qualitative Test (results provided)	15 Hex ID provided by LUT and position within 5 km 80% of time	√	√ The received digital message corresponds to the encoded radio beacon ID. Received messages with coordinates are determined (successfully located by satellites).	
Configuration 5 "Water" ground plane	15 Hex ID provided by LUT and position within 5 km 80% of time	√	25.02.16 - 12 satellite passes with ratio of successful solutions – 100 % and location error 0.148 .. 0.820 km	Section 5.10.1
Configuration 7 Beacon on ground plane	15 Hex ID provided by LUT and position within 5 km 80% of time	√	24.02.16 - 11 satellite passes with ratio of successful solutions – 100 % and location error 0.227 .. 0.881 km	Section 5.10.2
Configuration 8 Beacon above ground plane	15 Hex ID provided by LUT and position within 5 km 80% of time	√	24.02.16 - 25.02.16 12 satellite passes with ratio of successful solutions – 100 % and location error 0.172 .. 1.016 km	Section 5.10.3
19-Feb-16, MT603FG, S/N 1410407582, Mode State 0				Pass Section 5.7
15.2 Antenna Characteristics				Section 5.7.1
– polarization	linear or RHCP		linear	Test configuration 1. (Fig: B.4) "Water"ground plane.
– VSWR	≤1.5		N/A	
– $EIRP_{LOSS}$		dB	0.16	
– $EIRP_{maxEOL}$	≤43	dBm	41.57	
– $EIRP_{minEOL}$	≥32	dBm	32.92	
15.3 Antenna Characteristics				Section 5.7.2
– polarization	linear or RHCP		linear	Test configuration 4. (Fig: B.5) Beacon above ground plane.
– VSWR	≤1.5		N/A	
– $EIRP_{LOSS}$		dB	0.16	
– $EIRP_{maxEOL}$	≤43	dBm	37.3	
– $EIRP_{minEOL}$	≥30	dBm	33	

Parameters to be Measured	Range of Specification	Units	Test Results	Comments
18-Mar-16, 26-Dec-17, MT603FG, S/N 1410407582, Mode State 0				Pass Section 5.8
16. Beacon Coding Software				
– sample message provided for each coding option of the applicable coding types	correct	√	√	Per Table F- D.1/D.2/ D.3
– sample self-test message provided for each coding option of the applicable coding types	correct	√	√	Per Table F- D.1/D.2/ D.3
25-Jan-16, MT603FG, S/N 1410407582, Mode State 0				
17. Navigation System				Pass Section 5.9
– position data default values	correct	√	√	Test per A.3.8.1
– position acquisition time	<10 (int.nav) < 1 (ext.nav)	min	Configuration 7 1 min - NLP 1 min 49 sec - SLP 1 min - ULP Configuration 8 1 min - NLP 1 min - SLP 1 min - ULP	Test per A.3.8.2 Results per Tables F-C.5 or F-C.5
– position accuracy	C/S T.001	m	Configuration 7 41.9 - NLP 41.9 – SLP 41.9 – ULP Configuration 8 41.9 - NLP 41.9 – SLP 41.9 – ULP	Test per A.3.8.2 Results per Tables F-C.5 or F-C.5
– encoded position data update interval	>5	min	29min 55sec - NLP 29min 55sec – SLP 29min 54sec – SLP	Test per A.3.8.3
– internal navigation device update intervals	as per C/S T.001, section 4.5.5.4	√		Include results from 0 to 2, 2 to 6 and more than 6 hours, in a separate table
– information provided on manufacturers location data update scheme		√		
– position clearance after deactivation	correct	√	√	Test per A.3.8.4
– position data input update interval	<1.0 min (ELT) <20 min (EPIRB/PLB)	√	N/A	Test per A.3.8.5
– stored position cleared within interval	1.0-1.5 min (ELT) 20-30 min (EPIRB/PLB)		N/A	
– position data encoding	correct	√	√	Test per A.3.8.7 The tests were performed by the beacon manufacturer (see Annex A, page 194)

Parameters to be Measured	Range of Specification	Units	Test Results	Comments
– retained last valid position after navigation input lost	240(±5)	min	239 min 42 sec - SLP 239 min 41 sec – NLP 239 min 42 sec - ULP	Test per A.3.8.6
– default position data transmitted after 240(±5) minutes without valid position data	correct	√	√	
– information provided on protection against erroneous position encoding into the beacon message		√	√	Annex A page 318

5.2 Electrical and Functional Tests at Constant Temperature

Date of test	29.01.2016 (T_{amb}), 18.12.2017[1] (T_{amb}), 28.01.2016 (T_{max}), 18.12.2017[1] (T_{max}), 27.01.2016 (T_{min}), 19.12.2017[1] (T_{min}),
Specification	C/S T.007 – section A.2.1
Beacon Model	MT603FG
Serial number	1410407582
EUT Mod State	0
EUT system configuration, including ancillary devices and modes of their operation	The EUT was operated using its own power source (internal battery). The EUT was configured so that the antenna port was connected to the 50 Ohms test system using coaxial cable.
EUT operating mode during the test	406 MHz+121.64MHz+Strobe Light
Environmental conditions	Ambient laboratory temperature: 19-20 °C Relative air humidity: 45-52 %
Beacon environment temperature during test	T_{amb} = 20°C T_{max} = 55°C T_{min} = - 20°C
Deviations from standard test procedures	There were no deviations from standard test procedures
Non-compliances noticed	There were not non-compliances

1 - The homer transmitter's parameters were verified during the additional test.

Test procedure:

The tests were performed after the beacon under test, while turned off, was placed in climatic chamber and stabilized for 2 hours at normal temperature 20°C, at the specified minimum operating temperature minus 20°C and at the maximum operating temperature 55°C correspondingly. Except of testing in the self-test mode (per paragraph A.3.6 T.007), the beacon was allowed to operate for 15 minutes before measurements started.

Active load value used for VSWR test is 17 Ohm.

Matching network was used.

GNSS signal was not available during the whole test.

According to the description of GNSS receiver operating cycle (see Annex A, page 335) GNSS receiver operates with cycle 8 minutes ON and 15 minutes OFF during first hour after beacon activation while GNSS signal not available.

The measurements were performed during 35 minutes to provide measurements over period which covers all phases of the beacon working cycle (GNSS receiver on and also in sleep mode).

The beacon working cycle during measurements shown on the Figure 5.2.1

The homer transmitter's parameters were re-tested during the additional testing on 18.12.17-19.12.17 in accordance with the requirements of the CSS.

The homer transmitter's parameters were measured at the test point agreed with the manufacturer (see page 418)

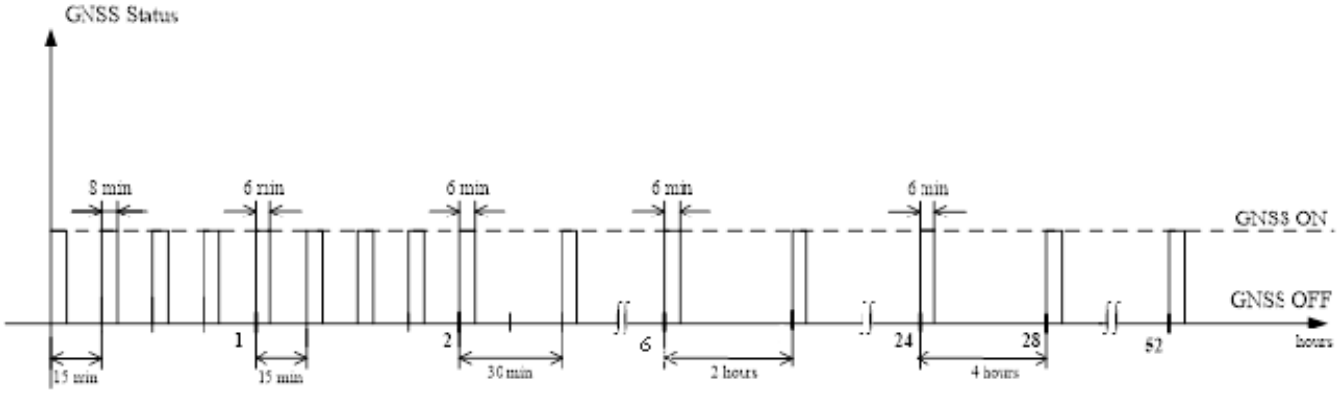


Figure 5.2.1 – The beacon working cycle during measurements

The list of parameters

Parameter tested	Operating temperature		
	20 °C	55 °C	-20 °C
	page No		
Transmitter power output			
Transmitter power output	35	46	56
Maximum and minimum value of output power during operating	34	45	55
Output power rise time	35	46	56
Power output 1 ms before burst	34	45	55
Messages			
Message contents	36	47	57
Digital message generator			
First burst delay	37	48	58
Average repetition rate and standard deviation	37	48	58
Minimal and maximal value of digital message generator parameters	34	45	55
Modulation			
Modulation index	38	49	59
Modulation rise and fall times	38	49	59
View of modulation 3 first bit message	38	49	59
Maximum and minimum value during operating	34	45	55
Transmitted frequency			
Nominal value	34	45	55
Medium /short term frequency stability	34	45	55
Maximum and minimum value during operating	34	45	55
Spurious emissions			
Spurious emissions	39	50	60
VSWR test			
Transmitter nominal frequency	40	51	61
Digital message content	41	52	62
The modulation parameters	40	51	61
Self-test mode			
Duration of the burst	42	53	63
Digital message content (frame synchronization, format flag)	43	54	64
The Output power, frequency of the self- test burst	42	53	63

5.2.1 Electrical and Functional Tests at Ambient Temperature

Table of measured parameters.

Message	
Contents (full)	:FFFE2F8C9E0000007FDFFA79ED3783E0F66C

Test duration 0:35:11	Bursts received 42		BCH error 0	Self-Test 0	
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, MHz	406.039	406.041	406.039966	406.039967	406.039967
+Phase deviation, rad	1.00	1.20	1.08	1.09	1.11
-Phase deviation, rad	-1.00	-1.20	-1.14	-1.13	-1.11
Phase time rise, us	50.00	250.00	191.50	195.38	199.24
Phase time fall, us	50.00	250.00	186.03	186.81	193.70
Power, dBm	35	39	36.33	36.34	36.34
Power rise, ms	0.00	5.00	0.25	0.30	0.30
Power output 1 ms before burst, dBm		-10		-38.19	
Bit Rate, bps	396.00	404.00	399.90	400.02	400.14
Asymmetry, %	0.00	5.00	0.28	0.53	0.93
CW Preamble, ms	158.40	161.60	159.83	159.85	159.86
Total burst duration, ms	514.80	525.20	519.81	519.82	519.84
Slope	-1.00E-09	1.00E-09	2.02E-12	2.02E-12	2.71E-10
Residual variations	0.00E-09	3.00E-09	1.62E-10	5.27E-10	5.27E-10
Short term variations	0.00E-09	2.00E-09	3.88E-11	4.44E-11	5.56E-11

121.5 MHz Transmitter Parameters[1]			
Carrier Frequency, Hz	121649675	**Low Sweep Frequency, Hz**	371.7
Power, dBm	14.13	**High Sweep Frequency, Hz**	1163
Sweep Period, sec	0.445	**Sweep Range, Hz**	791.3
Modulation Index, %	100		

1 - The homer transmitter's parameters at ambient temperature were tested during the additional test on 18.12.17 in accordance with the requirements of the CSS.

a) Transmitter Power Output (according to C/S T.007 – section A.3.2.2).

- **Transmitter Power Output Level (A.3.2.2.1)**

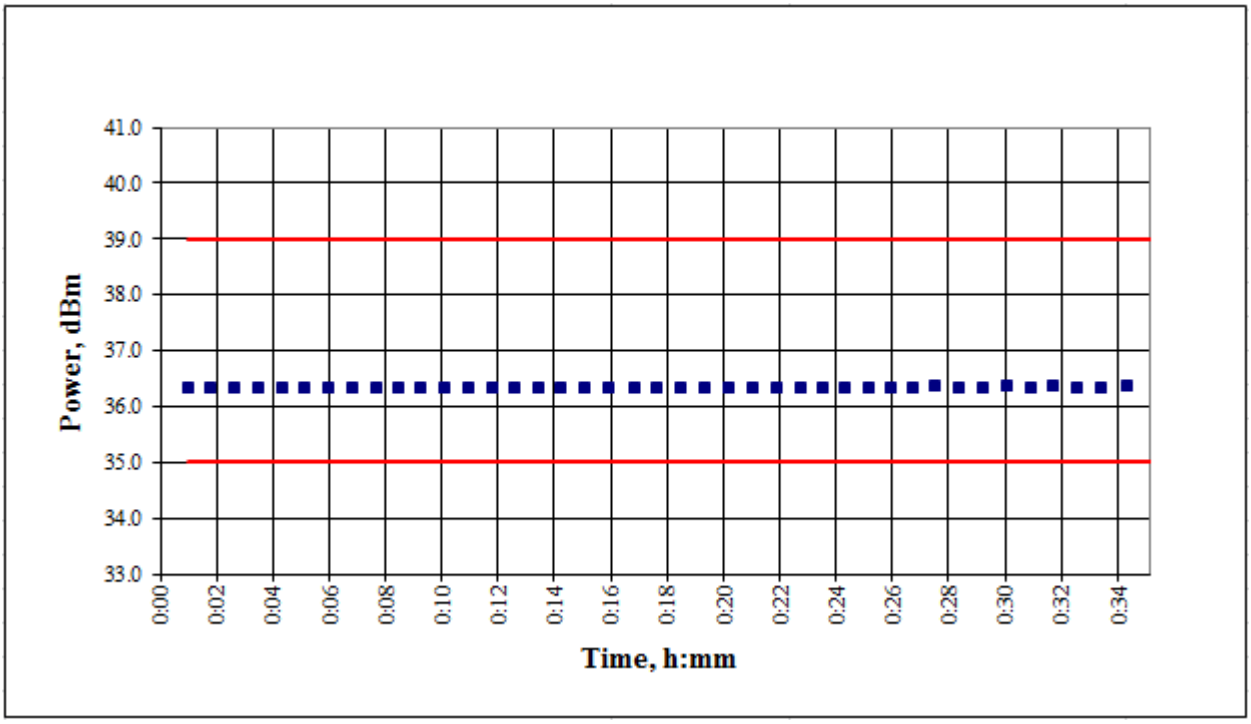
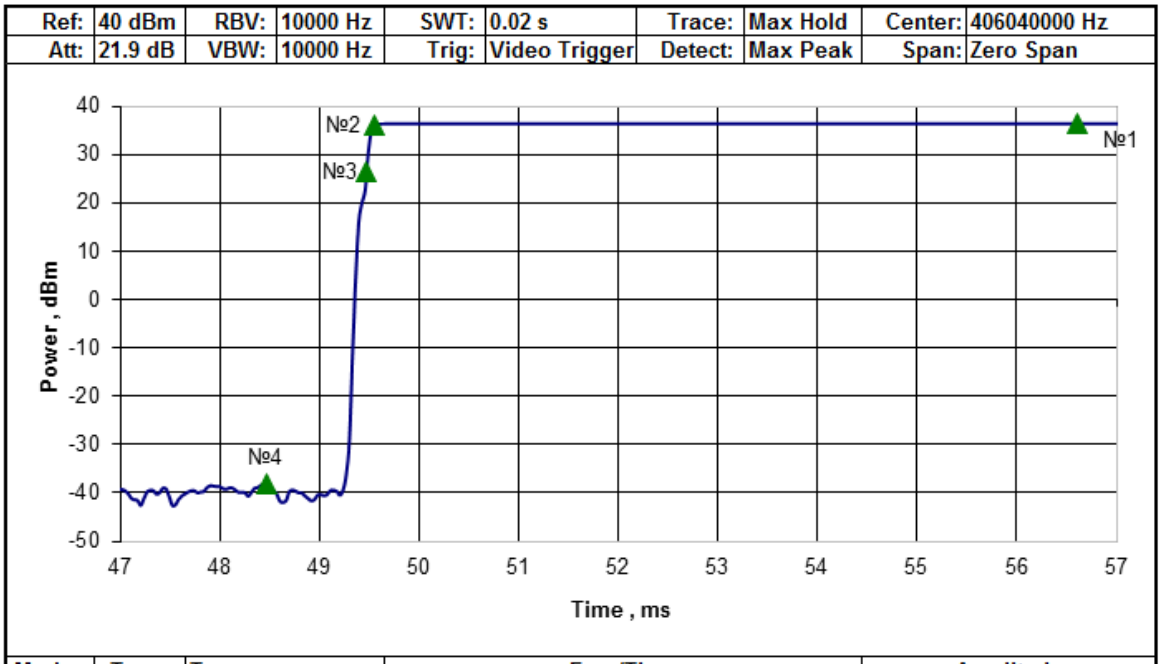


Figure 5.2.1.1 – Transmitter power during test

- **Transmitter Power Output Rise Time (A.3.2.2.2)**



Marker	Trace	Type	Freq/Time		Amplitude	
№1	<A>	Type	56.603	ms	36.35	dBm
№2	<A>	Type	49.551	ms	35.89	dBm
№3	<A>	Type	49.468	ms	26.35	dBm
№4	<A>	Type	48.468	ms	-38.19	dBm

Figure 5.2.1.2 – Transmitter power output rise

b) Message Coding (according to C/S T.007 - A.3.1.4)

Bursts received	42
BCH error	0
Self test message	0
Full HEX message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C

Decoding Beacon Message

Full-HEX: FFFE2F8C9E0000007FDFFA79ED3783E0F66C

ITEM	**BITS**	**VALUE**
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard Test Location Protocol	37- 40	1110
Binary data (24 bits, i.e. max=0xFF FFFF): 0x00 0000	41- 64	0000 0000 0000 0000 0000 0000
Latitude: Default		
Latitude Base: Default	65- 74	01 1111 1111
Longitude: Default		
Lonitude Base: Default	75- 85	011 1111 1111
BCH1: 0x09 E7B4	86-106	0 1001 1110 0111 1011 0100
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-122	10 0000 1111
Longitude Delta: Default	123-132	10 0000 1111
BCH2: 0x66C	133-144	0110 0110 1100

c) Digital message generator (according to C/S T.007 – section A.3.1)

- **Repetition Period (A.3.1.1)**

406 MHz Transmitter Parameters	Limits		Measured
	min	max	
Average repetition period, s	48.50	51.50	49.96
Minimum repetition period ,s	47.5	48.0	47.77
Maximum repetition period ,s	52.0	52.5	52.44
Standard deviation	0.5	2.0	1.24
Differences of Rep. period, s	4		4.67

- **Measurement of time interval from the moment of beacon activation till the first (operating) burst**

	Time interval, sec
	from the moment of beacon activation till the first operation burst
1st measurement	60.10
2d measurement	59.90
3d measurement	59.90
Minimum value	**59.90**
Maximum value	**60.10**

d) Data Encoding and Modulation (according to C/S T.007 – section A.3.2.3)

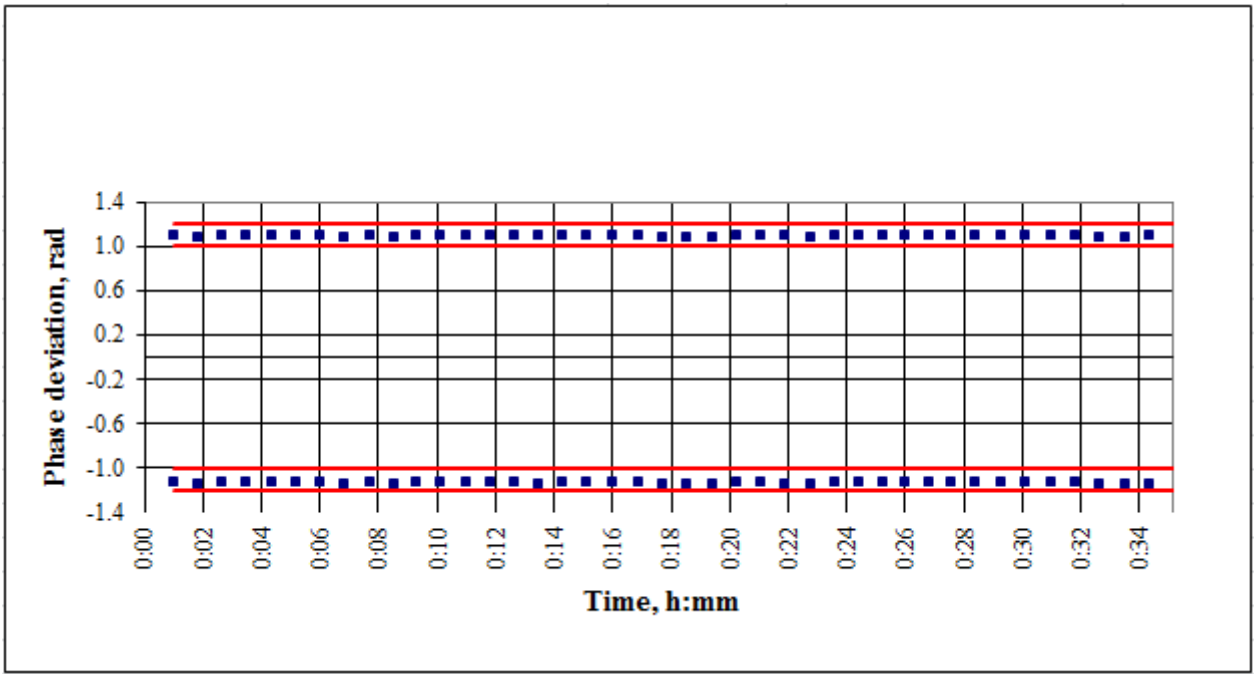
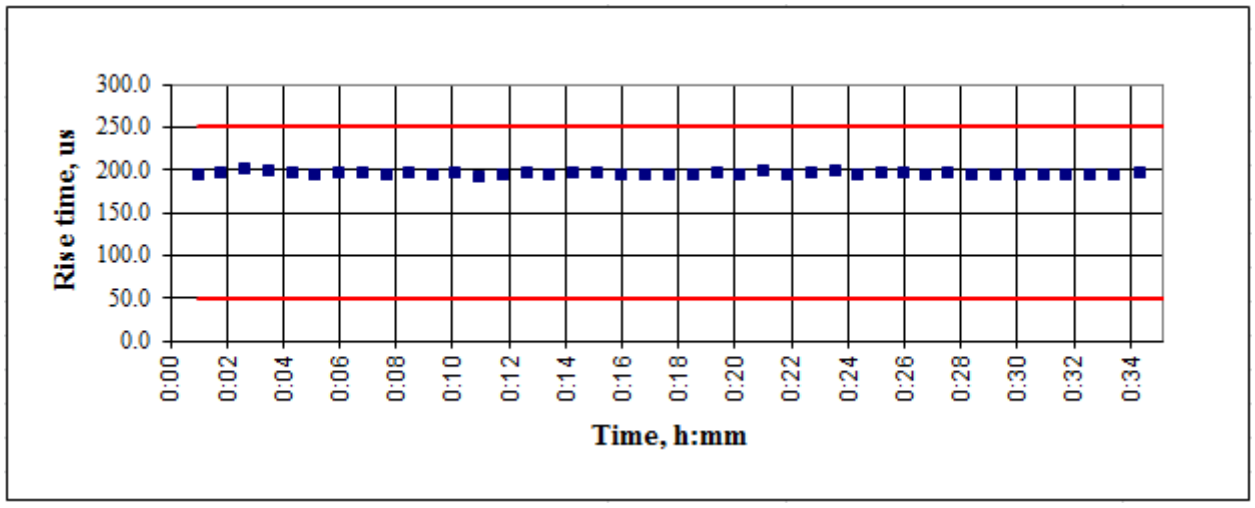


Figure 5.2.1.3 – Modulation index



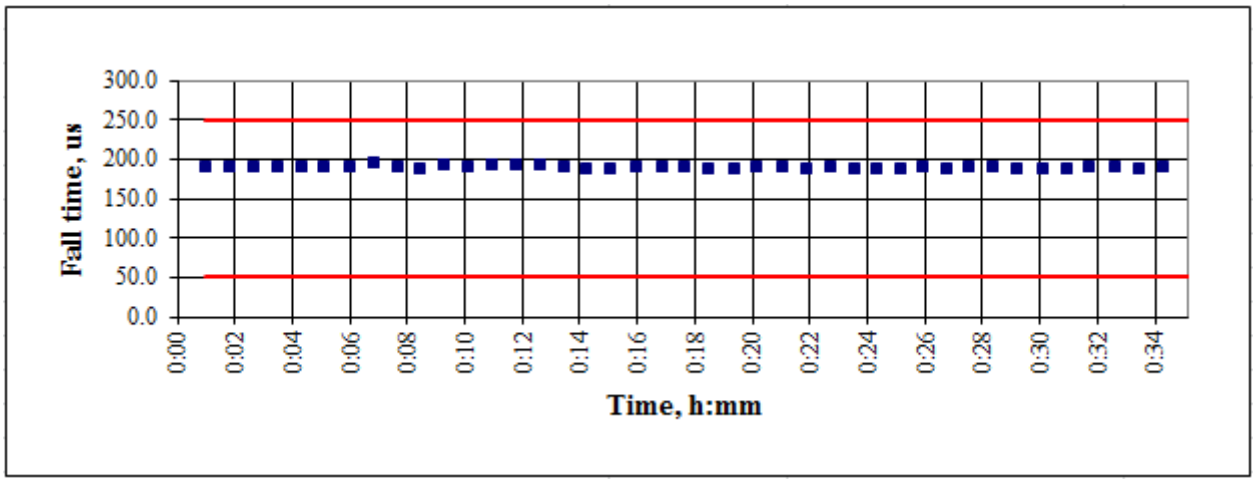


Figure 5.2.1.4 – Modulation rise and fall times

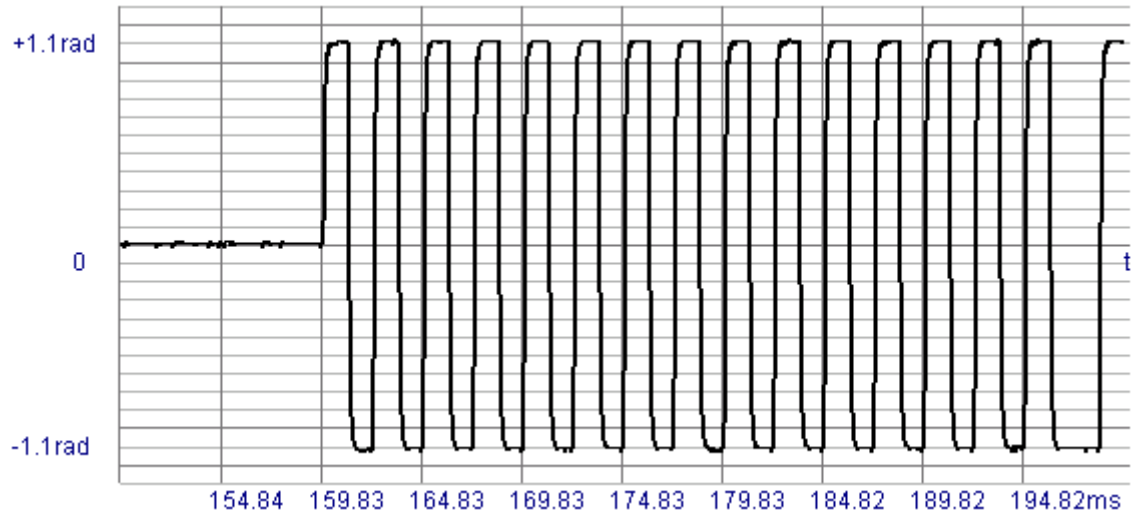


Figure 5.2.1.5 – Modulation symmetry of the bi-phase demodulated signal

e) Spurious output (according to C/S T.007 – section A.3.2.2.4)

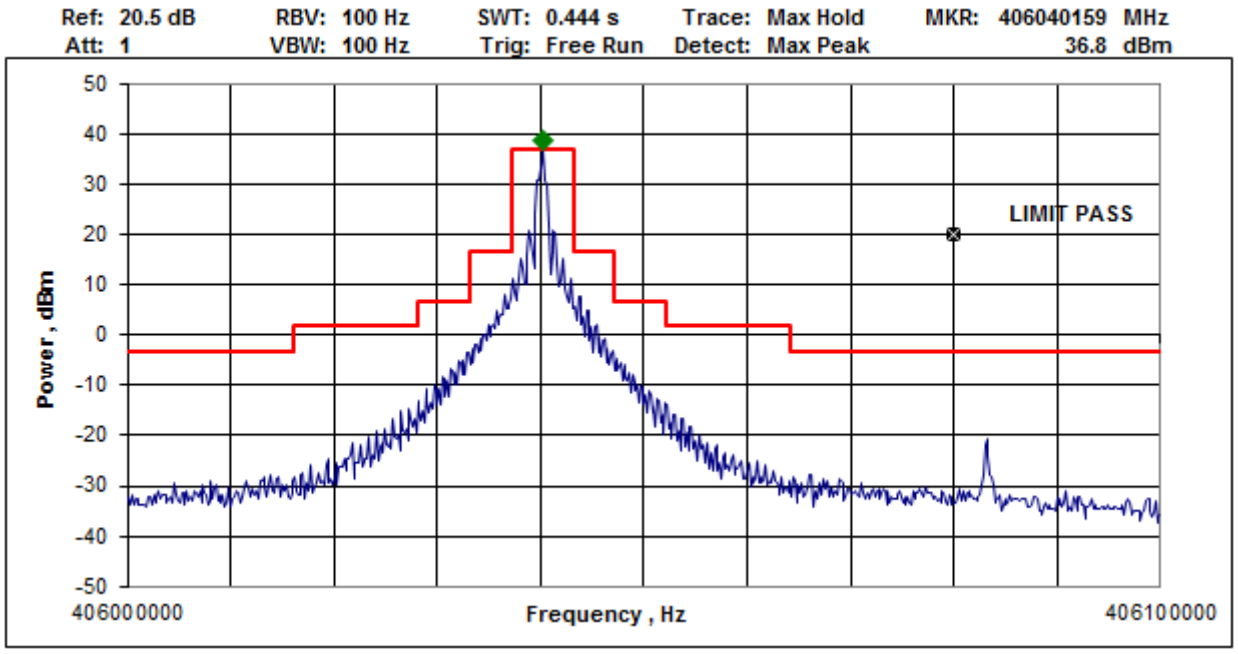


Figure 5.2.1.6 – Spurious output.

f) Voltage Standing-Wave Ratio (according to C/S T.007 – section A.3.3)

Test results.

With a matching network removed, the transmitter was operating into an open circuit during 5 minutes and then into a short circuit during 5minutes. Afterwards, the transmitter was operating into a load having a VSWR of 3:1 (pure resistive 25 Ohm),during which time parameters were measured. The beacon working cycle during measurements and duration of measurements were as per Figure 5.2.1.

Table of measured parameters.

Message	
Contents (full)	:FFFE2F 8C9E0000007FDFFA79ED3 783E0F66C

Test duration 0:26:09	Bursts received 31		BCH error 0	Self-Test 0	
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, MHz	406.039	406.041	406.039976	406.039976	406.039976
+Phase deviation, rad	1.00	1.20	1.10	1.11	1.12
-Phase deviation, rad	-1.00	-1.20	-1.12	-1.12	-1.10
Phase time rise, us	50.00	250.00	151.44	151.91	154.23
Phase time fall, us	50.00	250.00	160.47	160.62	163.39
Asymmetry, %	0.00	5.00	0.20	0.23	0.37

- **The modulation parameters (A.3.2.3)**

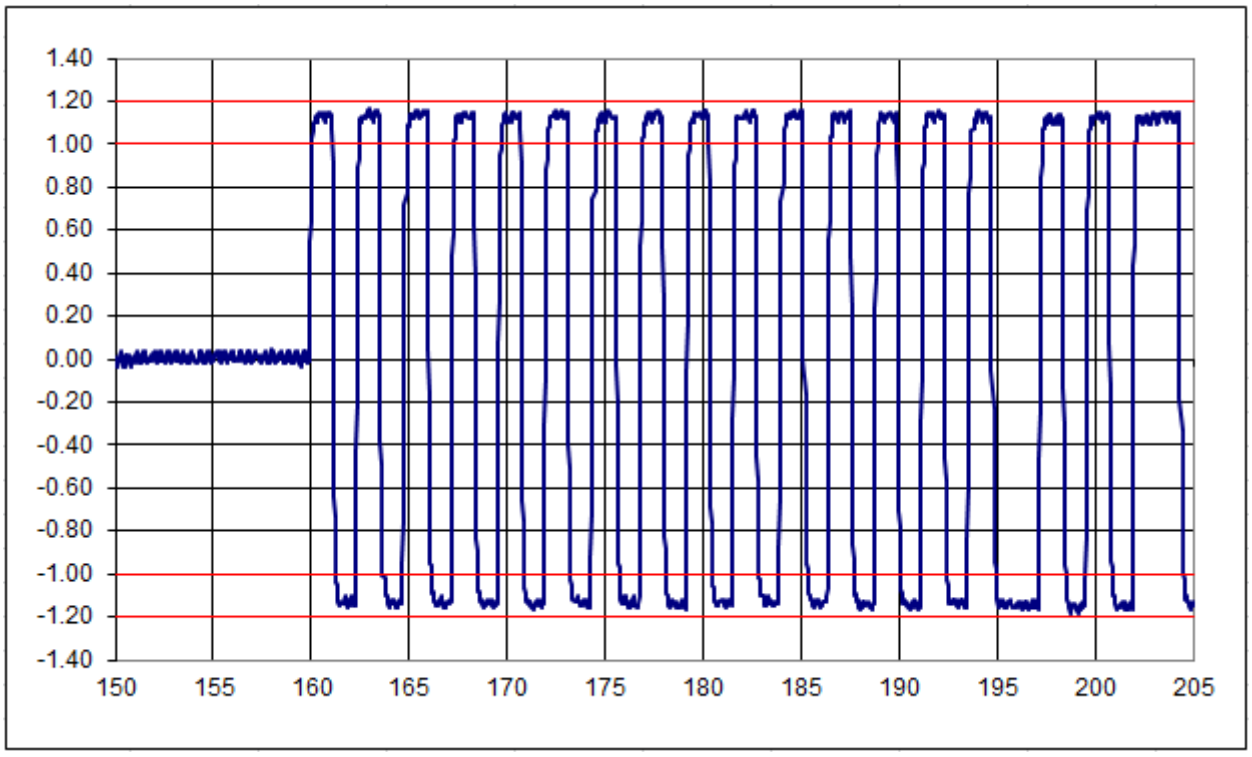


Figure 5.2.1.7 – Modulation symmetry of the bi-phase demodulated signal

- **Message Coding (A.3.1.4)**

Bursts received	31
BCH error	0
Self test message	0
Full HEX message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C

Decoding Beacon Message
Full-HEX: FFFE2F8C9E0000007FDFFA79ED3783E0F66C

ITEM	**BITS**	**VALUE**
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard Test Location Protocol	37- 40	1110
Binary data (24 bits, i.e. max=0xFF FFFF): 0x00 0000	41- 64	0000 0000 0000 0000 0000 0000
Latitude: Default		
Latitude Base: Default	65- 74	01 1111 1111
Longitude: Default		
Lonitude Base: Default	75- 85	011 1111 1111
BCH1: 0x09 E7B4	86-106	0 1001 1110 0111 1011 0100
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-122	10 0000 1111
Longitude Delta: Default	123-132	10 0000 1111
BCH2: 0x66C	133-144	0110 0110 1100

g) Self-test mode (according to C/S T.007 – section A.3.6)

Test result.

During the self test transmitter emitted only one burst

Table of measured parameters.

Message	
Contents (full)	: FFFED0 8C9E0000007FDFFA79ED3 783E0F66C

Test duration 0 h 0 m	Bursts received 1	BCH error 0	Self-Test 1
406 MHz Transmitter Parameters	**Limits**		**Measured**
	min	**max**	**current**
Frequency, MHz	406.039	406.041	406.039967
Power, dBm	35	39	36.32
Total burst duration, ms	514.80	525.20	520.45
121.5 MHz Transmitter Parameters			
Carrier Frequency, Hz		121649850	
Power, dBm		12.96	

Parameter	Requirement	Result
Distinct indication of self-test start	must be provided	The BUT beeps once and simultaneously the flashes by white strobelight once indicating that the self-test has started.
Distinct indication of RF-power being emitted	must be provided	The BUT flashes by green LED indicating that the RF-power has emitted.
Indication of the self-test result	must be provided	A long green LED indicates the EPIRB has completed and passed all the tests.
Maximum duration of self-test mode	shall not exceed maximum duration of self-test 12 sec	8.24 sec
Distinct indication of insufficient battery capacity	must be provided	After start the self-test the BUT beeps and flashes by red LED with simultaneously flashes by green LED indicating that the excessive numbers of self tests have been preformed.
Automatic termination of the self-test mode upon completion of the self-test and indication of the self-test results	verify automatic termination, irrespectively of the switch position	The self-test mode automatically terminates upon completion of the self-test and indication of the self-test results.

- **Message Coding (A.3.1.4)**

Bursts received	1
BCH error	0
Self test message	1
Full HEX message	FFFED08C9E0000007FDFFA79ED3783E0F66C

Decoding Beacon Message
Full-HEX: FFFED08C9E0000007FDFFA79ED3783E0F66C

ITEM	**BITS**	**VALUE**
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 1101 0000
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard Test Location Protocol	37- 40	1110
Binary data (24 bits, i.e. max=0xFF FFFF): 0x00 0000	41- 64	0000 0000 0000 0000 0000 0000
Latitude: Default		
Latitude Base: Default	65- 74	01 1111 1111
Longitude: Default		
Lonitude Base: Default	75- 85	011 1111 1111
BCH1: 0x09 E7B4	86-106	0 1001 1110 0111 1011 0100
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-122	10 0000 1111
Longitude Delta: Default	123-132	10 0000 1111
BCH2: 0x66C	133-144	0110 0110 1100

h) GNSS Self-test mode (according to C/S T.007 – section A.3.6.)

Test result.

GNSS Self-test was performed in two conditions: with GNSS signal and without GNSS signal.

With GPS signal	
Duration of the self test	65 sec
Test Result	Transmission of self-test message with locked position data Indication of a 3 tone musical 'chime' and the green LED will flash 8 times.

Without GPS signal	
Duration of the self test	130.2 sec
Test Result	Indication of 8 beeps and the red LED will flash 8 times.

GNSS self test counter was checked. GNSS signal was available during the test. See results below.

With GPS signals			
Number of test	Start test time	Duration, sec	Indication after GNSS selftest completion
1.	2.02.16 9:00	65	Indication of 3 tone musical 'chime' and the green LED will flash 8 times.
2.	2.02.16 9:03	62	Indication of 3 tone musical 'chime' and the green LED will flash 8 times.
3.	2.02.16 9:06	59	Indication of 3 tone musical 'chime' and the green LED will flash 8 times.
4.	2.02.16 9:09	58	Indication of 3 tone musical 'chime' and the green LED will flash 8 times.
5.	2.02.16 9:12	62	Indication of 3 tone musical 'chime' and the green LED will flash 8 times.
6.	2.02.16 9:15	65	Indication of 3 tone musical 'chime' and the green LED will flash 8 times.
7.	2.02.16 9:18	60	Indication of 3 tone musical 'chime' and the green LED will flash 8 times.
8.	2.02.16 9:21	57	Indication of 3 tone musical 'chime' and the green LED will flash 8 times.
9.	2.02.16 9:24	63	Indication of 3 tone musical 'chime' and the green LED will flash 8 times.
10.	2.02.16 9:27	65	Indication of 3 tone musical 'chime' and the green LED will flash 8 times.
11.	2.02.16 9:30	61	Indication of 3 tone musical 'chime' and the green LED will flash 8 times.
12.	2.02.16 9:33	64	Indication of 3 tone musical 'chime' and the green LED will flash 8 times.
13.	2.02.16 9:39	GNSS Self-test didn't start	One long Red LED flash with low beep.

5.2.2 Electrical and Functional Tests at Maximum Temperature

Table of measured parameters.

Message	
Contents (full)	:FFFE2F 8C9E0000007FDFFA79ED3 783E0F66C

Test duration 0:50:14	Bursts received 60	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, MHz	406.039	406.041	406.039926	406.039926	406.039926
+Phase deviation, rad	1.00	1.20	1.09	1.11	1.11
-Phase deviation, rad	-1.00	-1.20	-1.18	-1.16	-1.15
Phase time rise, us	50.00	250.00	184.60	189.22	191.53
Phase time fall, us	50.00	250.00	178.25	179.76	185.88
Power, dBm	35	39	36.28	36.28	36.34
Power rise, ms	0.00	5.00	0.15	0.15	0.20
Power output 1 ms before burst, dBm		-10		-32.22	
Bit Rate, bps	396.00	404.00	399.84	400.07	400.18
Asymmetry, %	0.00	5.00	0.25	0.31	0.56
CW Preamble, ms	158.40	161.60	159.85	159.86	159.87
Total burst duration, ms	514.80	525.20	519.81	519.82	519.84
Slope	-1.00E-09	1.00E-09	-8.94E-11	1.76E-11	8.51E-11
Residual variations	0.00	3.00E-09	1.85E-10	3.06E-10	3.52E-10
Short term variations	0.00	2.00E-09	2.09E-10	2.61E-10	2.61E-10

121.5 MHz Transmitter Parameters[1]			
Carrier Frequency, Hz	121648763	**Low Sweep Frequency, Hz**	371.7
Power, dBm	13.68	**High Sweep Frequency, Hz**	1163
Sweep Period, sec	0.445	**Sweep Range, Hz**	791.3
Modulation Index, %	100		

1 - The homer transmitter's parameters at the maximum temperature were tested during the additional test on 18.12.17 in accordance with the requirements of the CSS.

a) Transmitter Power Output (according to C/S T.007 – section A.3.2.2).

- **Transmitter Power Output Level (A.3.2.2.1)**

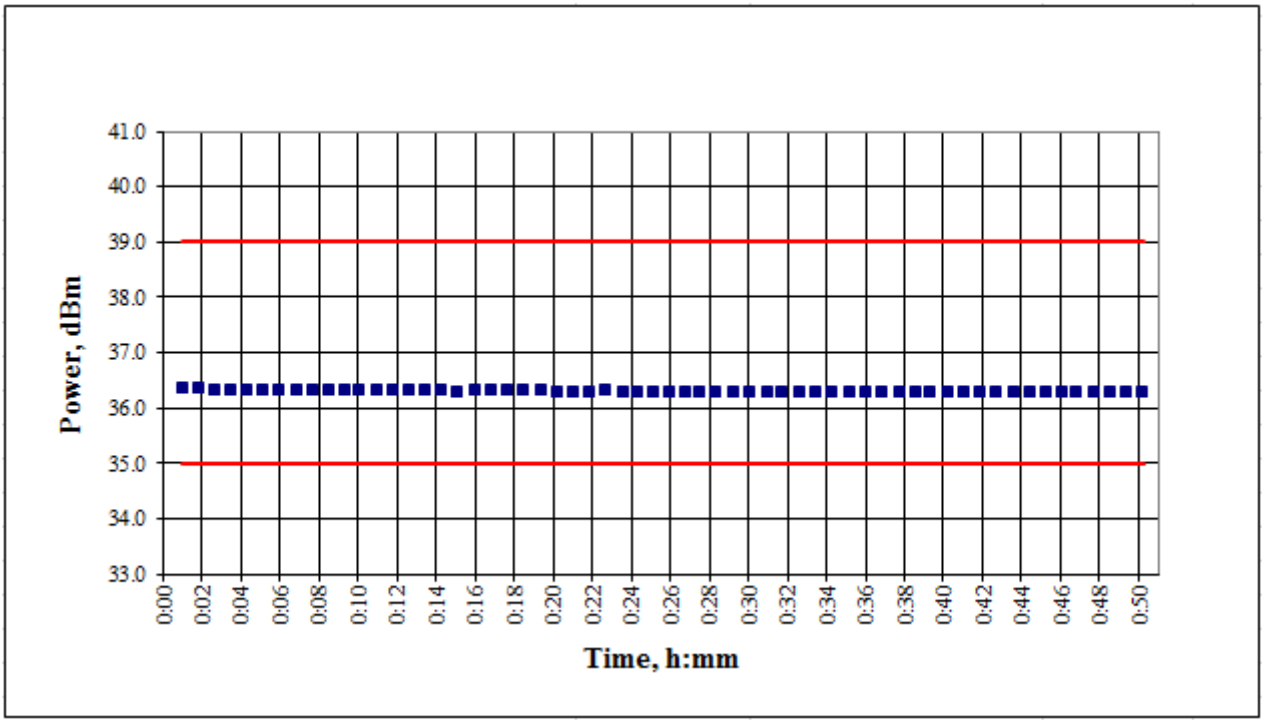
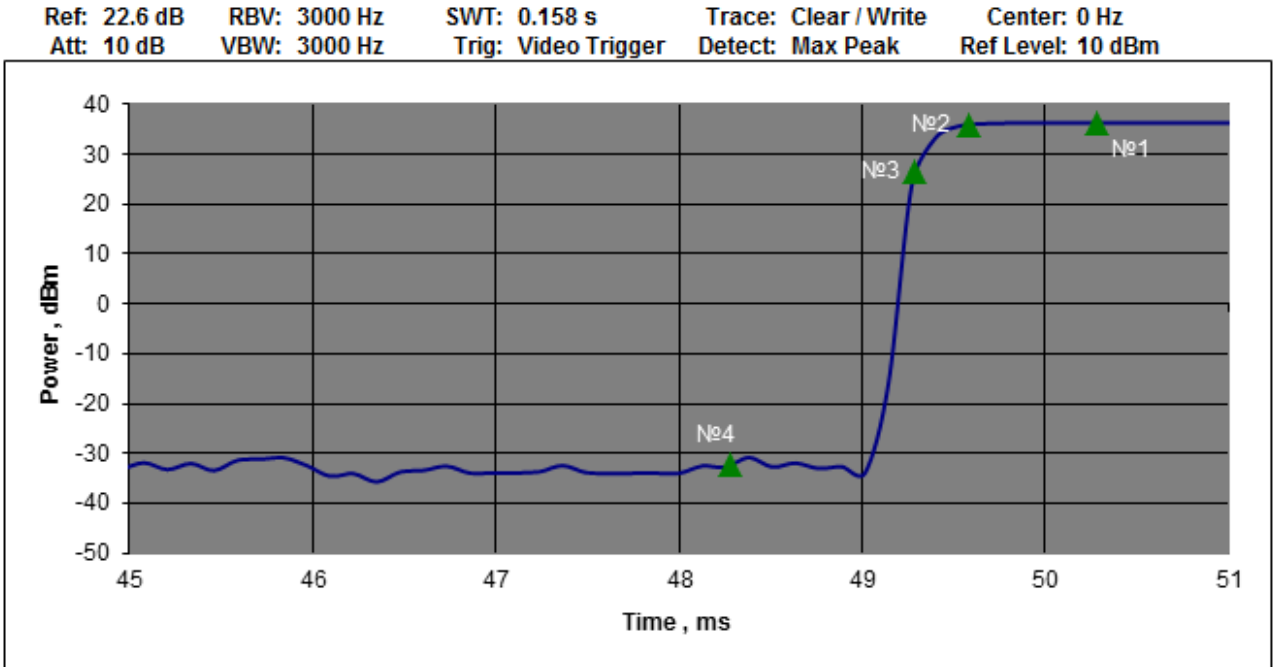


Figure 5.2.2.1 – Transmitter power during test

- **Transmitter Power Output Rise Time (A.3.2.2.2)**



Marker	Trace	Type	Freq/Time		Amplitude	
№1	<A>	Type	50.286	ms	36.37	dBm
№2	<A>	Type	49.585	ms	35.91	dBm
№3	<A>	Type	49.283	ms	26.37	dBm
№4	<A>	Type	48.283	ms	-32.22	dBm

Figure 5.2.2.2 – Transmitter power output rise

b) Message Coding (according to C/S T.007 - A.3.1.4)

Bursts received	60
BCH error	0
Self test message	0
Full HEX message	FFFE2F 8C9E0000007FDFFA79ED3 783E0F66C

Decoding Beacon Message
Full-HEX: FFFE2F 8C9E0000007FDFFA79ED3 783E0F66C

ITEM	**BITS**	**VALUE**
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard Test Location Protocol	37- 40	1110
Binary data (24 bits, i.e. max=0xFF FFFF): 0x00 0000	41- 64	0000 0000 0000 0000 0000 0000
Latitude: Default		
Latitude Base: Default	65- 74	01 1111 1111
Longitude: Default		
Lonitude Base: Default	75- 85	011 1111 1111
BCH1: 0x09 E7B4	86-106	0 1001 1110 0111 1011 0100
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-122	10 0000 1111
Longitude Delta: Default	123-132	10 0000 1111
BCH2: 0x66C	133-144	0110 0110 1100

c) Digital message generator (according to C/S T.007 – section A.3.1)

- **Repetition Period (A.3.1.1)**

406 MHz Transmitter Parameters	Limits		Measured
	min	max	
Average repetition period, s	48.50	51.50	49.96
Minimum repetition period ,s	47.5	48.0	47.79
Maximum repetition period ,s	52.0	52.5	52.44
Standard deviation	0.5	2.0	1.23
Differences of Rep. period, s	4		4.65

- **Measurement of time interval from the moment of beacon activation till the first (operating) burst**

	Time interval, sec
	from the moment of beacon activation till the first (operating) burst
1st measurement	60.00
2d measurement	59.80
3d measurement	60.10
Minimum value	**59.80**
Maximum value	**60.10**

d) Data Encoding and Modulation (according to C/S T.007 – section A.3.2.3)

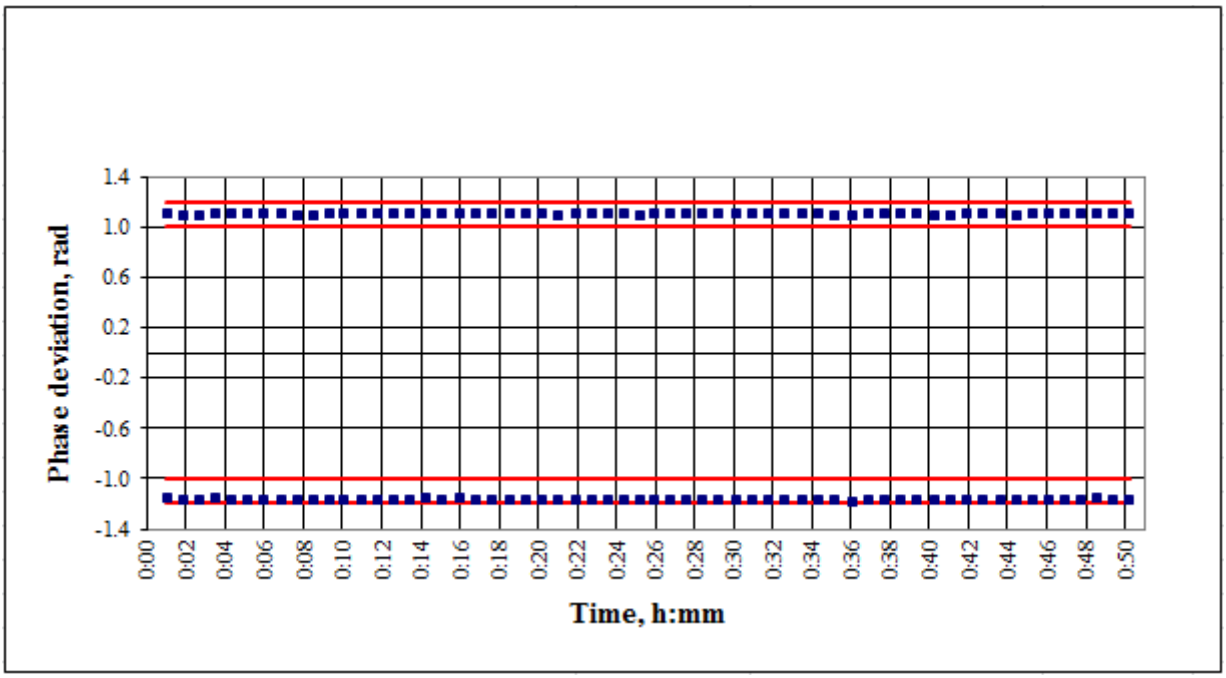
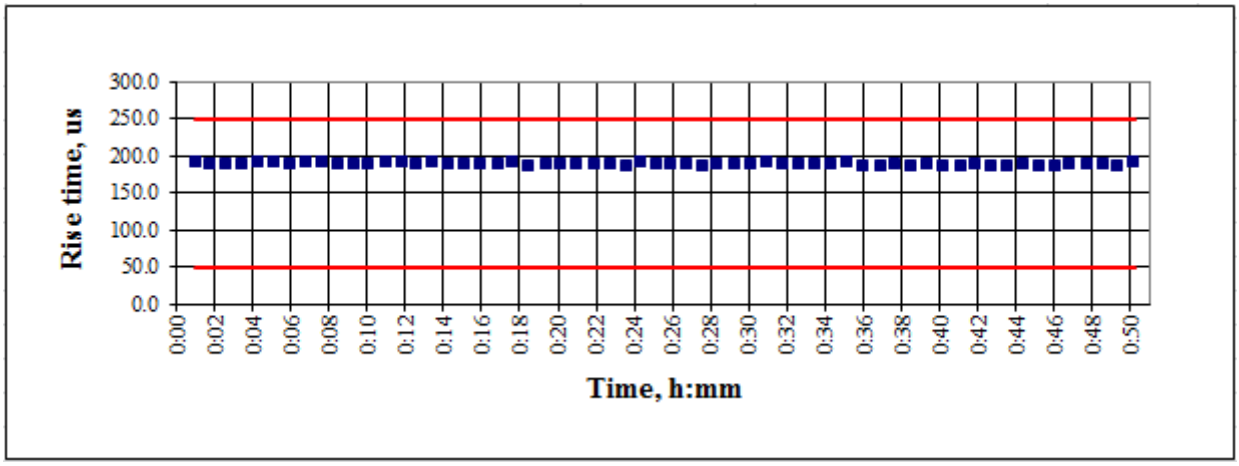


Figure 5.2.2.3 – Modulation index



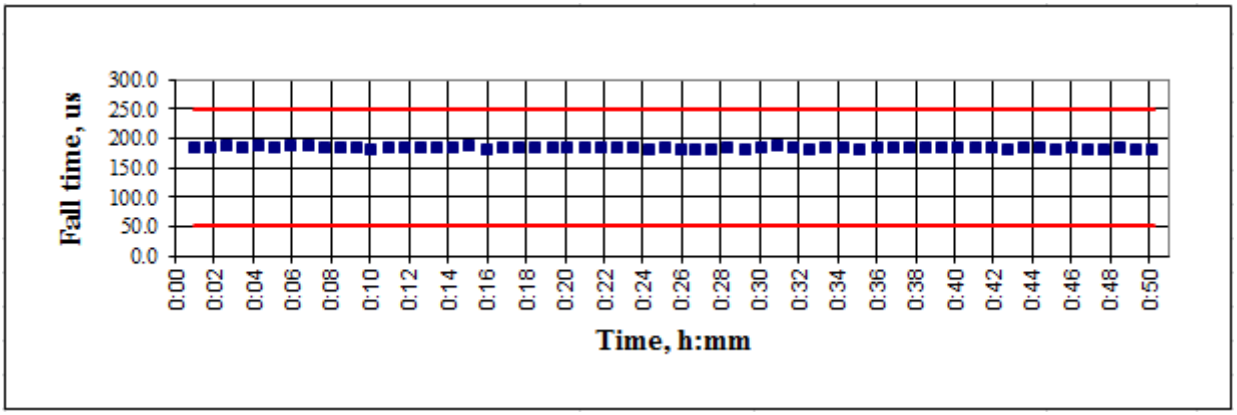


Figure 5.2.2.4 – Modulation rise and fall times

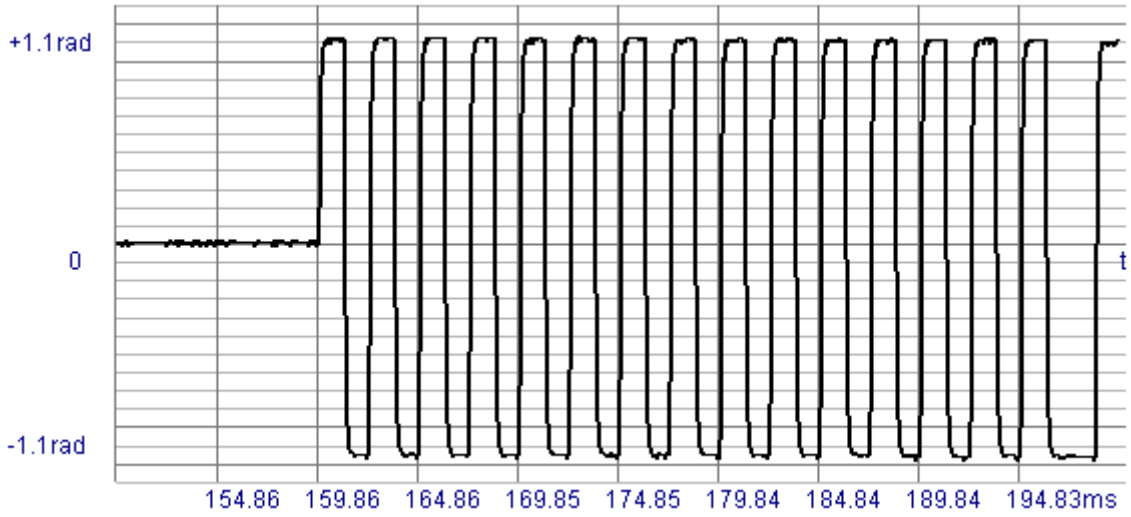


Figure 5.2.2.5 – Modulation symmetry of the bi-phase demodulated signal

e) Spurious output (according to C/S T.007 – section A.3.2.2.4)

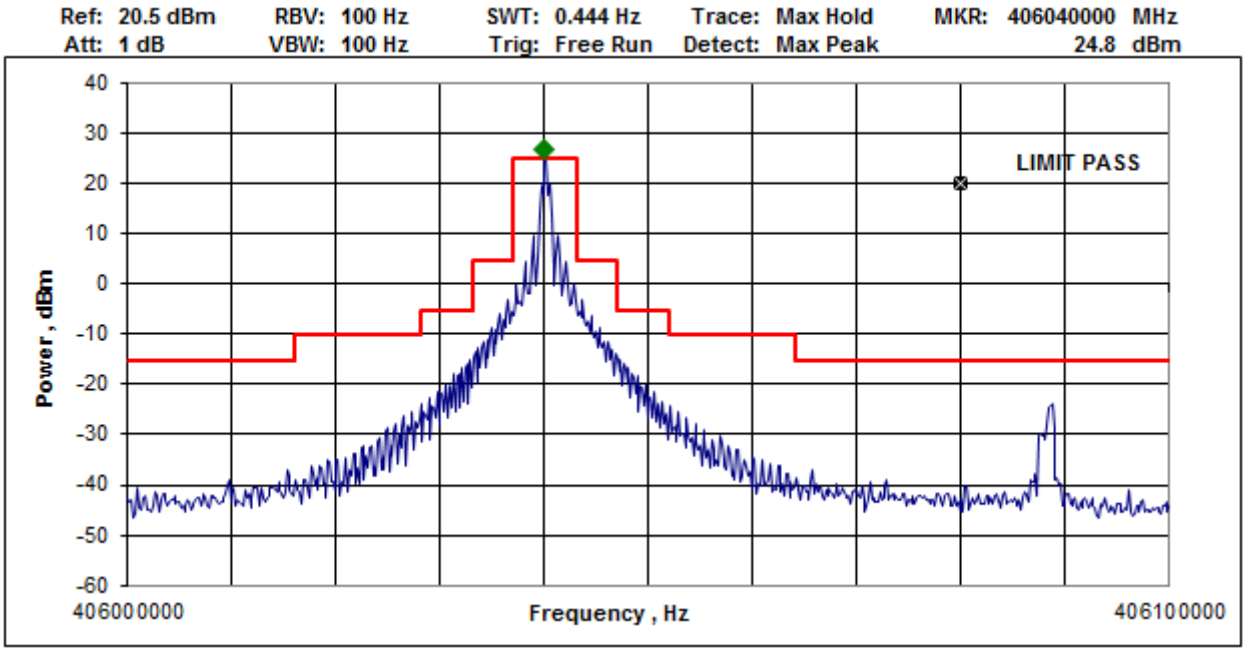


Figure 5.2.2.6 – Spurious output.

f) Voltage Standing-Wave Ratio (according to C/S T.007 – section A.3.3)

Test results.

With a matching network removed, the transmitter was operating into an open circuit during 5 minutes and then into a short circuit during 5minutes. Afterwards, the transmitter was operating into a load having a VSWR of 3:1 (pure resistive 25 Ohm),during which time parameters were measured. The beacon working cycle during measurements and duration of measurements were as per Figure 5.2.1.

Table of measured parameters.

Message	
Contents (full)	:FFFE2F8C9E0000007FDFFA79ED3783E0F66C

Test duration 0:25:05	Bursts received 31		BCH error 0	Self-Test 0	
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, MHz	406.039	406.041	406.039950	406.039950	406.039960
+Phase deviation, rad	1.00	1.20	1.12	1.12	1.14
-Phase deviation, rad	-1.00	-1.20	-1.12	-1.11	-1.10
Phase time rise, us	50.00	250.00	206.62	209.24	214.35
Phase time fall, us	50.00	250.00	197.76	202.43	205.86
Asymmetry, %	0.00	5.00	0.27	0.42	0.78

- **The modulation parameters (A.3.2.3)**

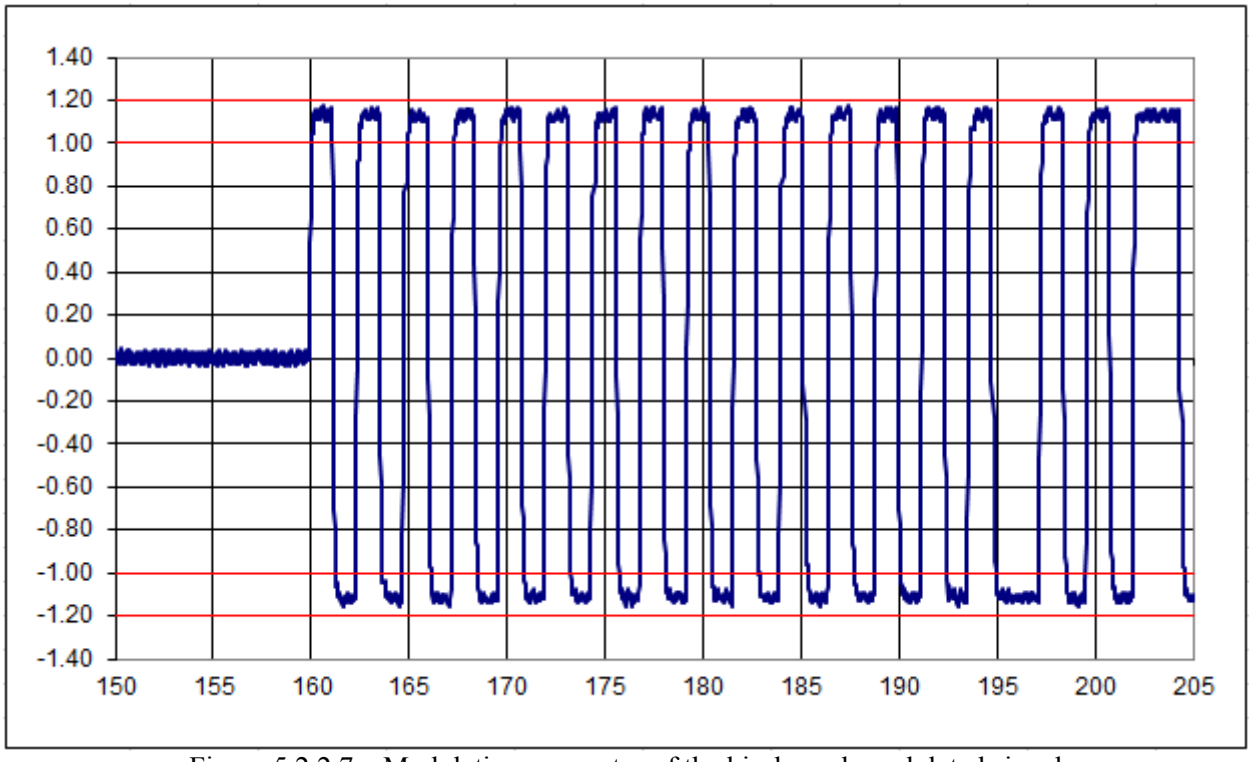


Figure 5.2.2.7 – Modulation symmetry of the bi-phase demodulated signal

- **Message Coding (A.3.1.4)**

Bursts received	31
BCH error	0
Self test message	0
Full HEX message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C

Decoding Beacon Message
Full-HEX: FFFE2F8C9E0000007FDFFA79ED3783E0F66C

ITEM	**BITS**	**VALUE**
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard Test Location Protocol	37- 40	1110
Binary data (24 bits, i.e. max=0xFF FFFF): 0x00 0000	41- 64	0000 0000 0000 0000 0000 0000
Latitude: Default		
Latitude Base: Default	65- 74	01 1111 1111
Longitude: Default		
Lonitude Base: Default	75- 85	011 1111 1111
BCH1: 0x09 E7B4	86-106	0 1001 1110 0111 1011 0100
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-122	10 0000 1111
Longitude Delta: Default	123-132	10 0000 1111
BCH2: 0x66C	133-144	0110 0110 1100

g) Self-test mode (according to C/S T.007 – section A.3.6.)

Test result.

During the self test transmitter emitted only one burst

Table of measured parameters.

Message	
Contents (full)	:FFFED0 8C9E0000007FDFFA79ED3 783E0F66C

Test duration 0 h 0 m	Bursts received 1	BCH error 0	Self-Test 1
406 MHz Transmitter Parameters	**Limits**		**Measured**
	min	**max**	**current**
Frequency, MHz	406.039	406.041	406.039926
Power, dBm	35	39	36.33
Total burst duration, ms	514.80	525.20	520.25
121.5 MHz Transmitter Parameters			
Carrier Frequency, Hz	121648983		
Power, dBm	13.15		

Parameter	Requirement	Result
Distinct indication of self-test start	must be provided	The BUT beeps once and simultaneously the flashes by white strobelight once indicating that the self-test has started.
Distinct indication of RF-power being emitted	must be provided	The BUT flashes by green LED indicating that the RF-power has emitted.
Indication of the self-test result	must be provided	A long green LED indicates the EPIRB has completed and passed all the tests.
Maximum duration of self-test mode	shall not exceed maximum duration of self-test 12 sec	8.25 sec
Distinct indication of insufficient battery capacity	must be provided	After start the self-test the BUT beeps and flashes by red LED with simultaneously flashes by green LED indicating that the excessive numbers of self tests have been preformed.
Automatic termination of the self-test mode upon completion of the self-test and indication of the self-test results	verify automatic termination, irrespectively of the switch position	The self-test mode automatically terminates upon completion of the self-test and indication of the self-test results.

- **Message Coding (A.3.1.4)**

Bursts received	1
BCH error	0
Self test message	1
Full HEX message	FFFED08C9E0000007FDFFA79ED3783E0F66C

Decoding Beacon Message
Full-HEX: FFFED08C9E0000007FDFFA79ED3783E0F66C

ITEM	**BITS**	**VALUE**
Bit synchronization: 0x7FFF	1- 15	1111 111 1111 1111
Frame synchronization: 0x2F	16- 24	0 1101 0000
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard Test Location Protocol	37- 40	1110
Binary data (24 bits, i.e. max=0xFF FFFF): 0x00 0000	41- 64	0000 0000 0000 0000 0000 0000
Latitude: Default		
Latitude Base: Default	65- 74	01 1111 1111
Longitude: Default		
Lonitude Base: Default	75- 85	011 1111 1111
BCH1: 0x09 E7B4	86-106	0 1001 1110 0111 1011 0100
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-122	10 0000 1111
Longitude Delta: Default	123-132	10 0000 1111
BCH2: 0x66C	133-144	0110 0110 1100

5.2.3 Electrical and Functional Tests at Minimum Temperature

Table of measured parameters.

Message	
Contents (full)	:FFFE2F 8C9E0000007FDFFA79ED3 783E0F66C

Test duration 0:28:31	Bursts received 35	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, MHz	406.039	406.041	406.039971	406.039971	406.039971
+Phase deviation, rad	1.00	1.20	1.10	1.11	1.13
-Phase deviation, rad	-1.00	-1.20	-1.10	-1.08	-1.07
Phase time rise, us	50.00	250.00	147.38	148.60	149.63
Phase time fall, us	50.00	250.00	157.45	158.00	160.41
Power, dBm	35	39	36.38	36.39	36.47
Power rise, ms	0.00	5.00	0.04	0.04	0.10
Power output 1 ms before burst, dBm		-10		-45.53	
Bit Rate, bps	396.00	404.00	399.59	399.60	399.74
Asymmetry, %	0.00	5.00	0.31	0.36	0.48
CW Preamble, ms	158.40	161.60	160.15	160.16	160.17
Total burst duration, ms	514.80	525.20	520.35	520.40	520.45
Slope	-1.00E-09	1.00E-09	-4.61E-10	-3.06E-10	3.17E-10
Residual variations	0.00E-09	3.00E-09	1.27E-09	1.50E-09	1.57E-09
Short term variations	0.00E-09	2.00E-09	4.11E-10	4.40E-10	4.40E-10

121.5 MHz Transmitter Parameters[1]			
Carrier Frequency, Hz	121650149	**Low Sweep Frequency, Hz**	371.9
Power, dBm	14.20	**High Sweep Frequency, Hz**	1166
Sweep Period, sec	0.445	**Sweep Range, Hz**	794.1
Modulation Index, %	100		

1 - The homer transmitter's parameters at the minimum temperature were tested during the additional test on 19.12.17 in accordance with the requirements of the CSS.

a) Transmitter Power Output (according to C/S T.007 – section A.3.2.2).

- **Transmitter Power Output Level (A.3.2.2.1)**

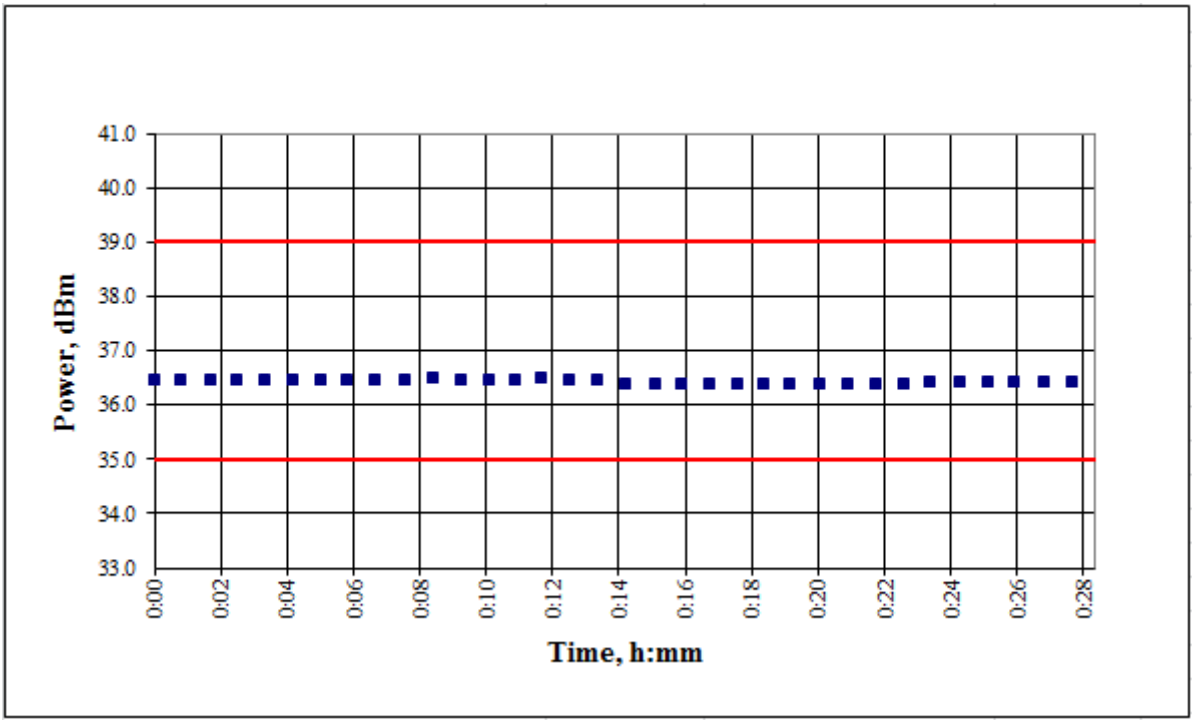
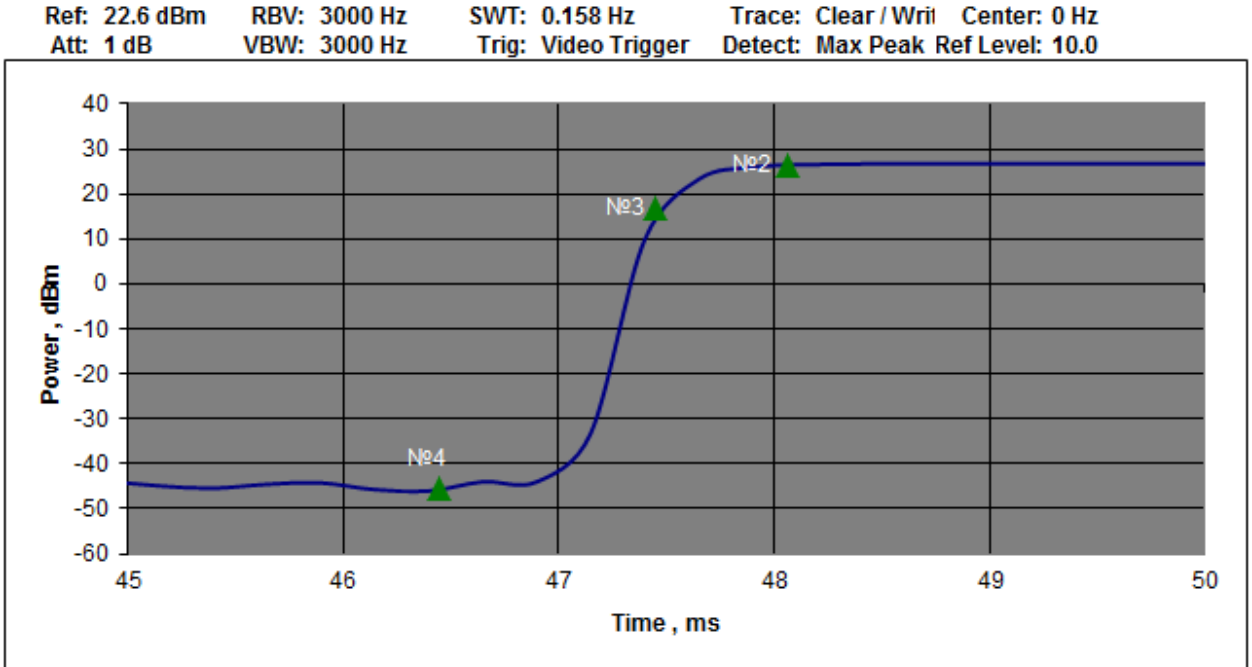


Figure 5.2.3.1 – Transmitter power during test

- **Transmitter Power Output Rise Time (A.3.2.2.2)**



Marker	Trace	Type	Freq/Time		Amplitude	
№1	<A>	Type	155.994	ms	26.80	dBm
№2	<A>	Type	48.067	ms	26.35	dBm
№3	<A>	Type	47.447	ms	16.80	dBm
№4	<A>	Type	46.447	ms	-45.53	dBm

Figure 5.2.3.2 – Transmitter power output rise

b) Message Coding (according to C/S T.007 - A.3.1.4)

Bursts received	35
BCH error	0
Self test message	0
Full HEX message	FFFE2F 8C9E0000007FDFFA79ED3 783E0F66C

Decoding Beacon Message
Full-HEX: FFFE2F 8C9E0000007FDFFA79ED3 783E0F66C

ITEM	**BITS**	**VALUE**
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard Test Location Protocol	37- 40	1110
Binary data (24 bits, i.e. max=0xFF FFFF): 0x00 0000	41- 64	0000 0000 0000 0000 0000 0000
Latitude: Default		
Latitude Base: Default	65- 74	01 1111 1111
Longitude: Default		
Lonitude Base: Default	75- 85	011 1111 1111
BCH1: 0x09 E7B4	86-106	0 1001 1110 0111 1011 0100
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-122	10 0000 1111
Longitude Delta: Default	123-132	10 0000 1111
BCH2: 0x66C	133-144	0110 0110 1100

c) Digital message generator (according to C/S T.007 – section A.3.1)

- **Repetition Period (A.3.1.1)**

406 MHz Transmitter Parameters	Limits		Measured
	min	max	
Average repetition period, s	48.50	51.50	50.35
Minimum repetition period ,s	47.5	48.0	47.59
Maximum repetition period ,s	52.0	52.5	52.42
Standard deviation	0.5	2.0	1.63
Differences of Rep. period, s	4		4.84

- **Measurement of time interval from the moment of beacon activation till the first (operating) burst**

	Time interval, sec
	from the moment of beacon activation till the first (operating) burst
1st measurement	60.10
2d measurement	60.20
3d measurement	59.90
Minimum value	**59.90**
Maximum value	**60.20**

d) Data Encoding and Modulation (according to C/S T.007 – section A.3.2.3)

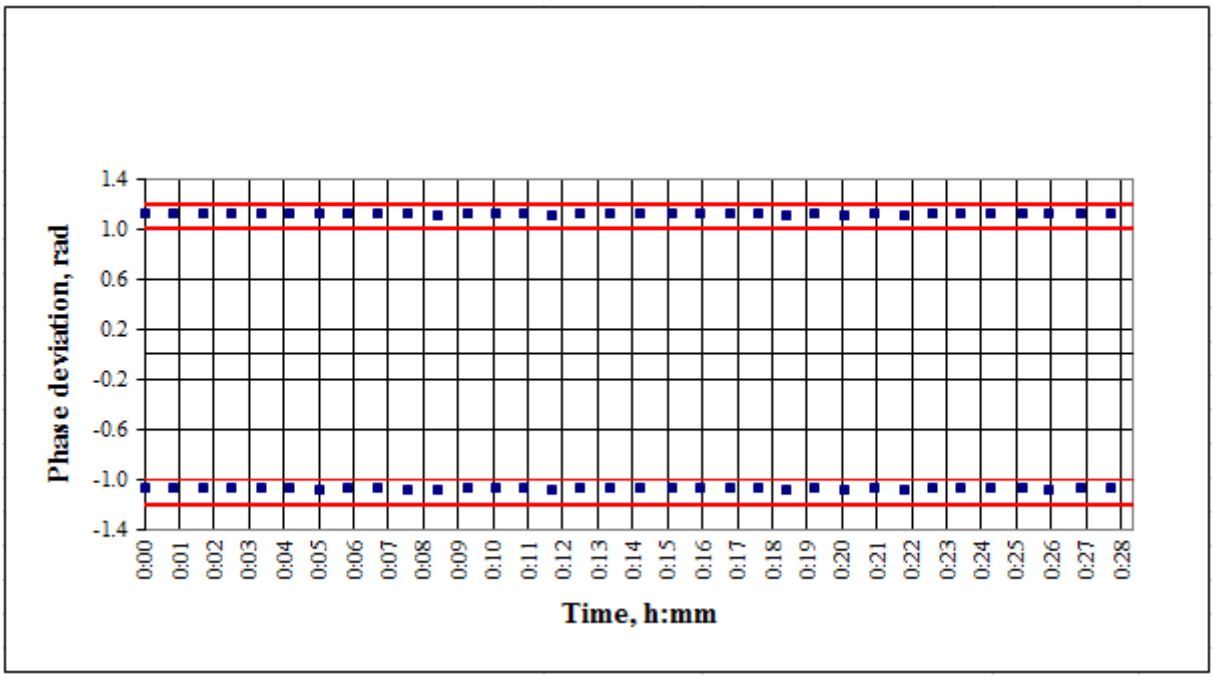
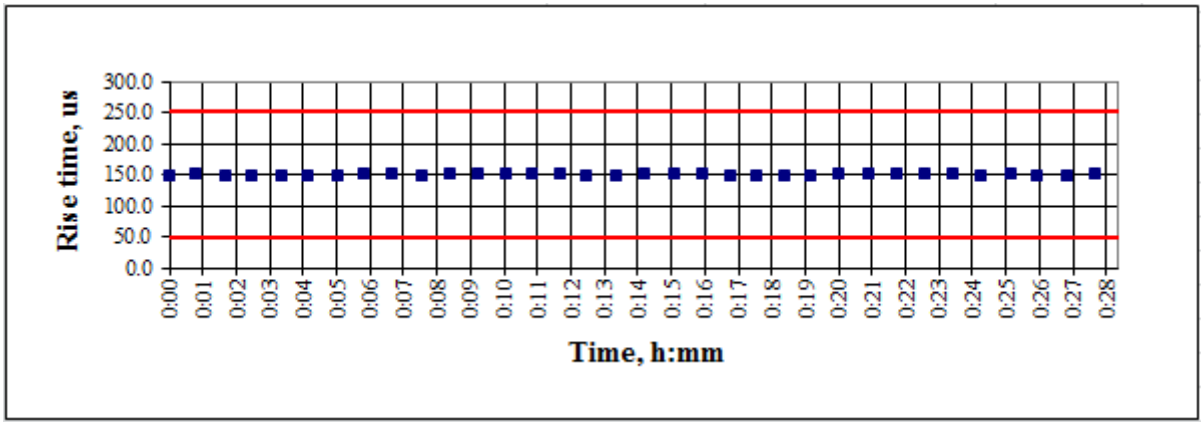


Figure 5.2.3.3 – Modulation index



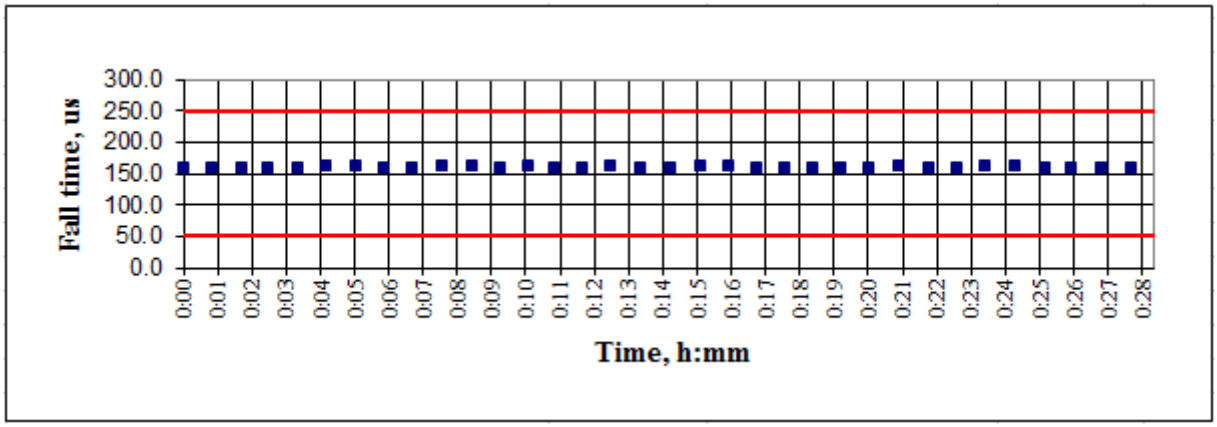


Figure 5.2.3.4– Modulation rise and fall times

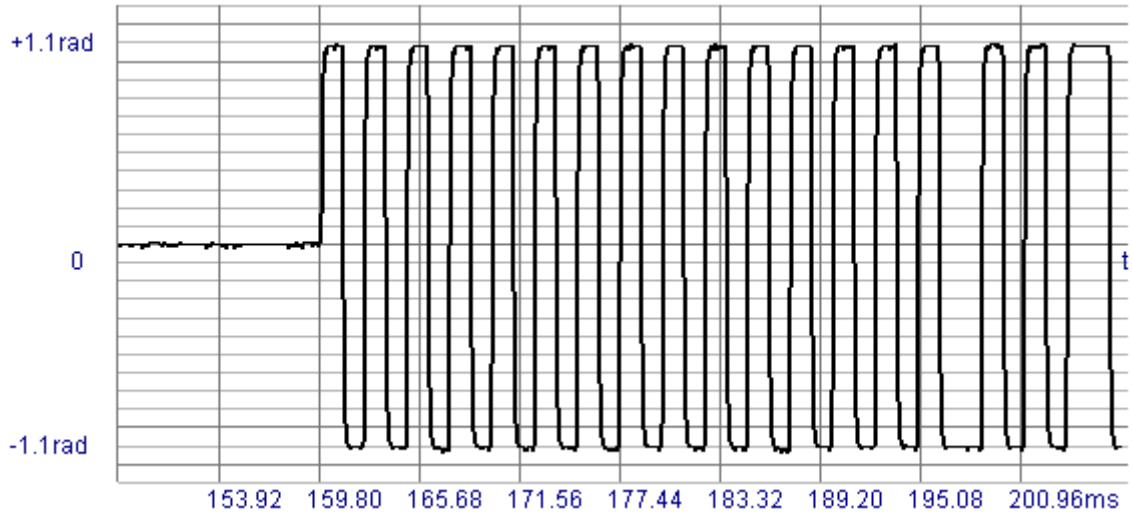


Figure 5.2.3.5– Modulation symmetry of the bi-phase demodulated signal

e) Spurious output (according to C/S T.007 – section A.3.2.2.4)

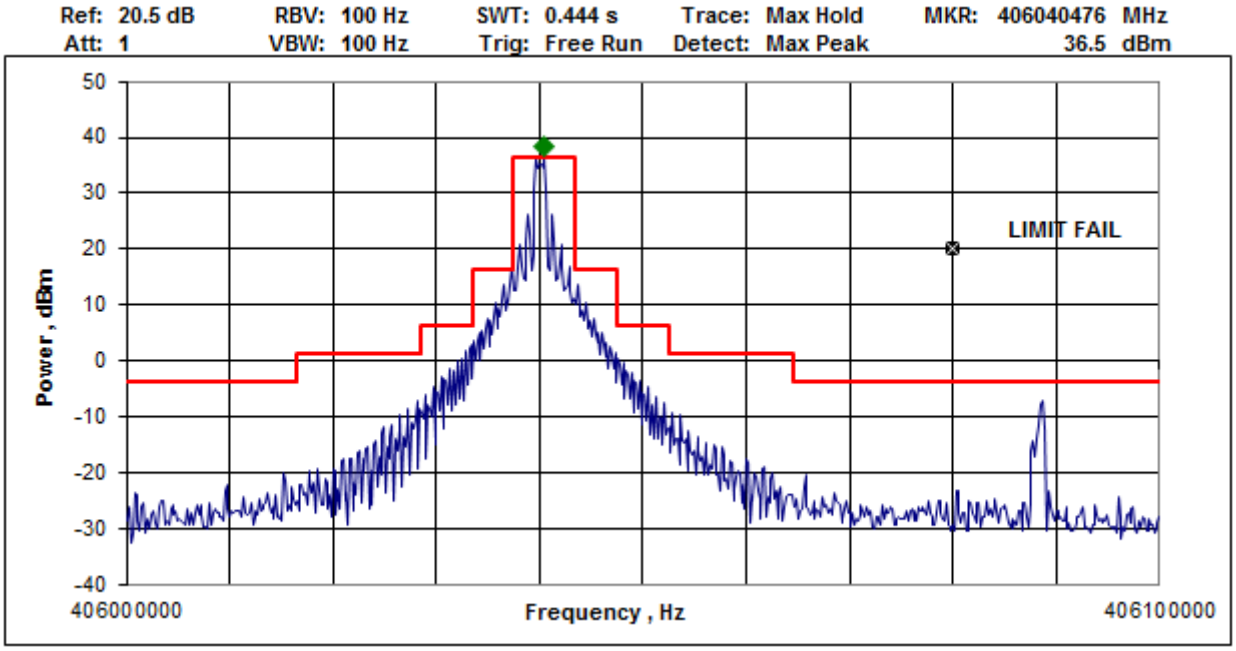


Figure 5.2.3.6 – Spurious output.

f) Voltage Standing-Wave Ratio (according to C/S T.007 – section A.3.3)

Test results.

With a matching network removed, the transmitter was operating into an open circuit during 5 minutes and then into a short circuit during 5minutes. Afterwards, the transmitter was operating into a load having a VSWR of 3:1 (pure resistive 25 Ohm),during which time parameters were measured. The beacon working cycle during measurements and duration of measurements were as per Figure 5.2.1.

Table of measured parameters.

Message	
Contents (full)	:FFFE2F8C9E0000007FDFFA79ED3783E0F66C

Test duration 0:25:05	Bursts received 31	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, MHz	406.039	406.041	406.039959	406.039959	406.039965
+Phase deviation, rad	1.00	1.20	1.05	1.07	1.10
-Phase deviation, rad	-1.00	-1.20	-1.13	-1.12	-1.09
Phase time rise, us	50.00	250.00	183.76	185.31	193.85
Phase time fall, us	50.00	250.00	183.01	183.01	189.18
Asymmetry, %	0.00	5.00	0.19	0.37	0.71

- **The modulation parameters (A.3.2.3)**

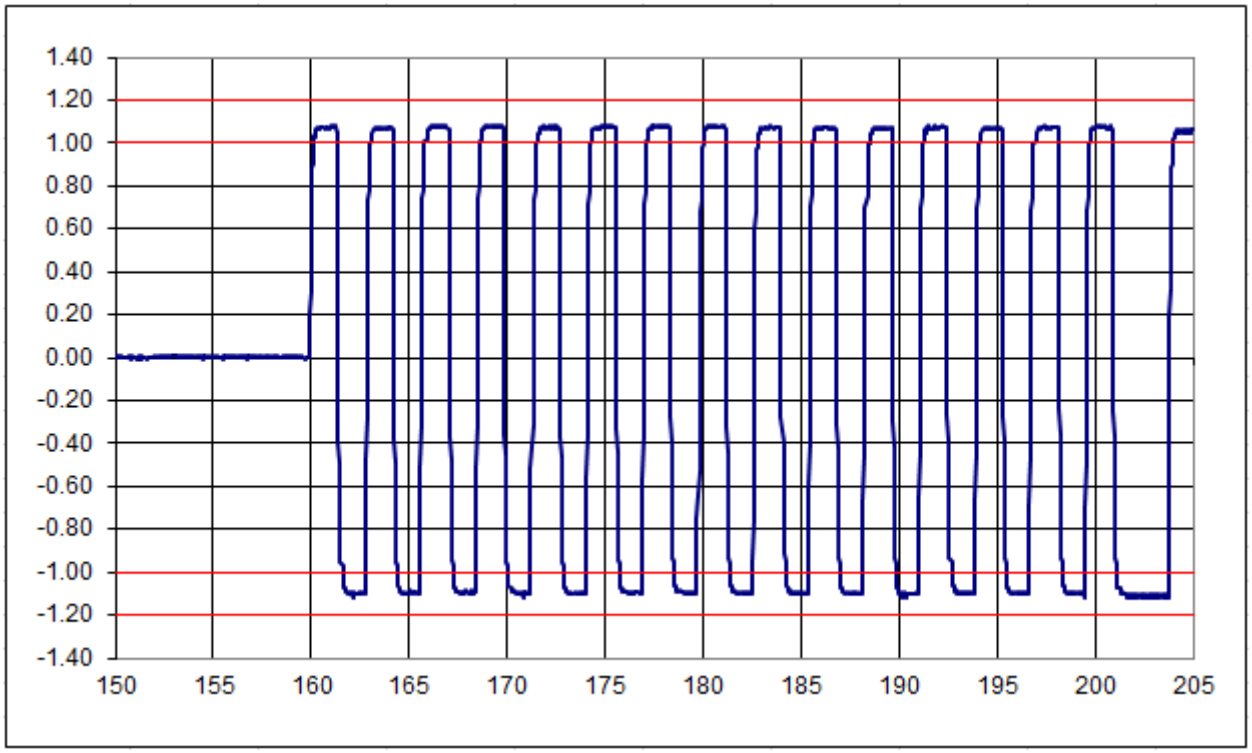


Figure 5.2.3.7– Modulation symmetry of the bi-phase demodulated signal

- **Message Coding (A.3.1.4)**

Bursts received	31
BCH error	0
Self test message	0
Full HEX message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C

Decoding Beacon Message
Full-HEX: FFFE2F8C9E0000007FDFFA79ED3783E0F66C

ITEM	**BITS**	**VALUE**
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard Test Location Protocol	37- 40	1110
Binary data (24 bits, i.e. max=0xFF FFFF): 0x00 0000	41- 64	0000 0000 0000 0000 0000 0000
Latitude: Default		
Latitude Base: Default	65- 74	01 1111 1111
Longitude: Default		
Lonitude Base: Default	75- 85	011 1111 1111
BCH1: 0x09 E7B4	86-106	0 1001 1110 0111 1011 0100
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-122	10 0000 1111
Longitude Delta: Default	123-132	10 0000 1111
BCH2: 0x66C	133-144	0110 0110 1100

- **Self-test mode (according to C/S T.007 – section A.3.6.)**

Test result.

During the self test transmitter emitted only one burst

Table of measured parameters.

Message	
Contents (full)	:FFFED0 8C9E0000007FDFFA79ED3 783E0F66C

Test duration 0 h 0 m	Bursts received 1	BCH error 0	Self-Test 1
406 MHz Transmitter Parameters	**Limits**		**Measured**
	min	**max**	**current**
Frequency, MHz	406.039	406.041	406.039972
Power, dBm	35	39	36.43
Total burst duration, ms	514.80	525.20	520.40
121.5 MHz Transmitter Parameters			
Carrier Frequency, Hz	121649788		
Power, dBm	12.78		

Parameter	Requirement	Result
Distinct indication of self-test start	must be provided	The BUT beeps once and simultaneously the flashes by white strobelight once indicating that the self-test has started.
Distinct indication of RF-power being emitted	must be provided	The BUT flashes by green LED indicating that the RF-power has emitted.
Indication of the self-test result	must be provided	A long green LED indicates the EPIRB has completed and passed all the tests.
Maximum duration of self-test mode	shall not exceed maximum duration of self-test 8.25 sec	8.25 sec
Distinct indication of insufficient battery capacity	must be provided	After start the self-test the BUT beeps and flashes by red LED with simultaneously flashes by green LED indicating that the excessive numbers of self tests have been preformed.
Automatic termination of the self-test mode upon completion of the self-test and indication of the self-test results	verify automatic termination, irrespectively of the switch position	The self-test mode automatically terminates upon completion of the self-test and indication of the self-test results.

- **Message Coding (A.3.1.4)**

Bursts received	1
BCH error	0
Self test message	1
Full HEX message	FFFED08C9E0000007FDFFA79ED3783E0F66C

Decoding Beacon Message
Full-HEX: FFFED08C9E0000007FDFFA79ED3783E0F66C

ITEM	**BITS**	**VALUE**
Bit synchronization: 0x7FFF	1- 15	1111 111 1111 1111
Frame synchronization: 0x2F	16- 24	0 1101 0000
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard Test Location Protocol	37- 40	1110
Binary data (24 bits, i.e. max=0xFF FFFF): 0x00 0000	41- 64	0000 0000 0000 0000 0000 0000
Latitude: Default		
Latitude Base: Default	65- 74	01 1111 1111
Longitude: Default		
Lonitude Base: Default	75- 85	011 1111 1111
BCH1: 0x09 E7B4	86-106	0 1001 1110 0111 1011 0100
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-122	10 0000 1111
Longitude Delta: Default	123-132	10 0000 1111
BCH2: 0x66C	133-144	0110 0110 1100

5.3 Thermal shock test

Date of test	28.01.2016
Specification	C/S T.007 – section A.2.2
Beacon Model	MT603FG
Serial number	1410407582
EUT Mod State	0
EUT system configuration, including ancillary devices and modes of their operation	The EUT was operated using its own power source (internal battery). The EUT was configured so that the antenna port was connected to the 50 Ohms test system using coaxial cable.
EUT operating mode during the test	406 MHz+121.64MHz+Strobe Light
Environmental conditions	Ambient laboratory temperature: 17.8-19.9 °C Relative air humidity: 47-50 %
Initial/Offset temperature	47°C / 17°C
Deviations from standard test procedures	There were no deviations from standard test procedures
Non-compliances noticed	There were not non-compliances

Test procedure:

The beacon under test, while turned off, is to stabilize during 2 hours at a selected temperature in its operating range. The beacon is then simultaneously placed into an environment held at 30 degrees C offset from the initial temperature and turned on. The beacon is then allowed to operate for 15 minutes before measurements are started.

Matching network was used.

GNSS signal not available during test.

List of test parameters

Measured parameters	page No.
Transmission frequency 406 MHz	
Nominal frequency value	67
Short and average frequency stability	67
Maximum and minimum frequency stability values during test	66
Transmitter power output	
Diagram of power output values during test	68
Maximum and minimum power output values during test	66
Message	
Message contents	69

Table of measured parameters.

Message	
Contents (full)	:FFFE2F 8C9E0000007FDFFA79ED3 783E0F66C

Test duration 2:00:34	Bursts received 145		BCH error 0	Self-Test 0	
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, MHz	406.039	406.041	406.039969	406.039980	406.039980
Power, dBm	35	39	36.57	36.57	36.58
Slope	-2.00E-09	2.00E-09	-1.51E-10	9.03E-11	1.31E-09
Residual variations	0.00E-09	3.00E-09	1.93E-10	1.93E-10	1.85E-09
Short term variations	0.00E-09	2.00E-09	3.18E-10	3.28E-10	4.58E-10

121.5 MHz Transmitter Parameters			
Carrier Frequency, Hz	121648783	**Low Sweep Frequency, Hz**	373
Power, dBm	12.96	**High Sweep Frequency, Hz**	1166
Sweep Period, sec	0.3	**Sweep Range, Hz**	793
Modulation Index, %	100		

Note: The homer transmitter's parameters were retested at ambient, minimum and maximum temperatute during the additional test on 18.12.17 – 19.12.17 in accordance with the requirements of CSS (see pp. 34, 45, 55)

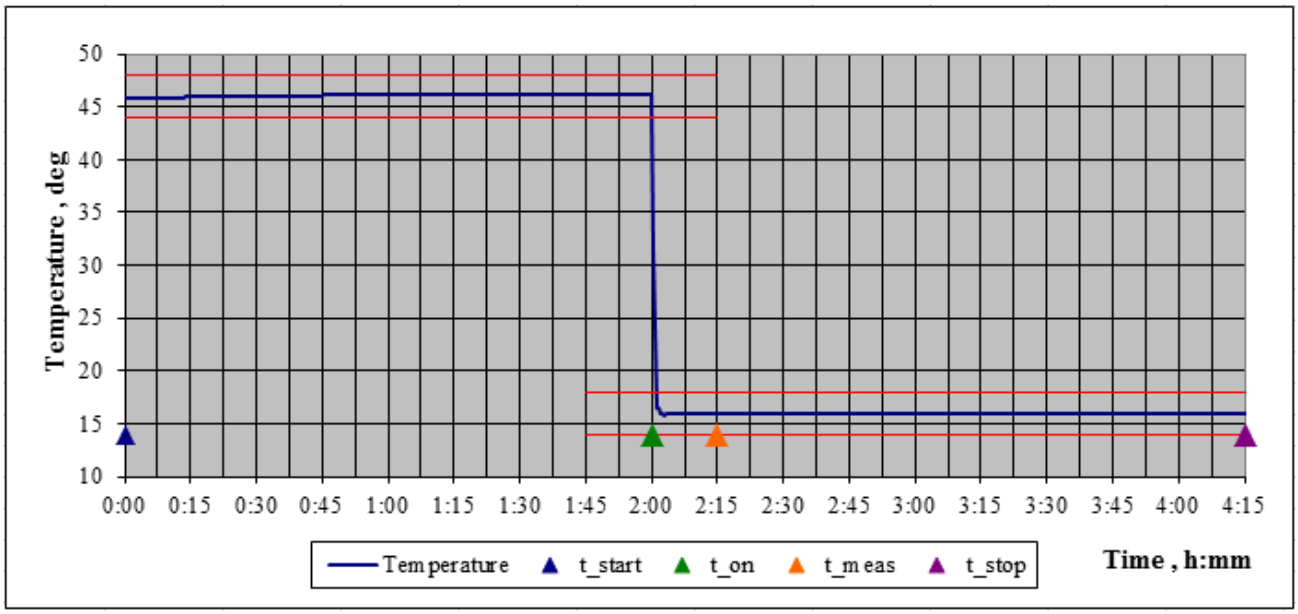


Figure 5.3.1 - Temperature During The Test

a) Transmitted Frequency (according to C/S T.007 – section A.3.2.1)

- **Nominal Value (A.3.2.1.1)**

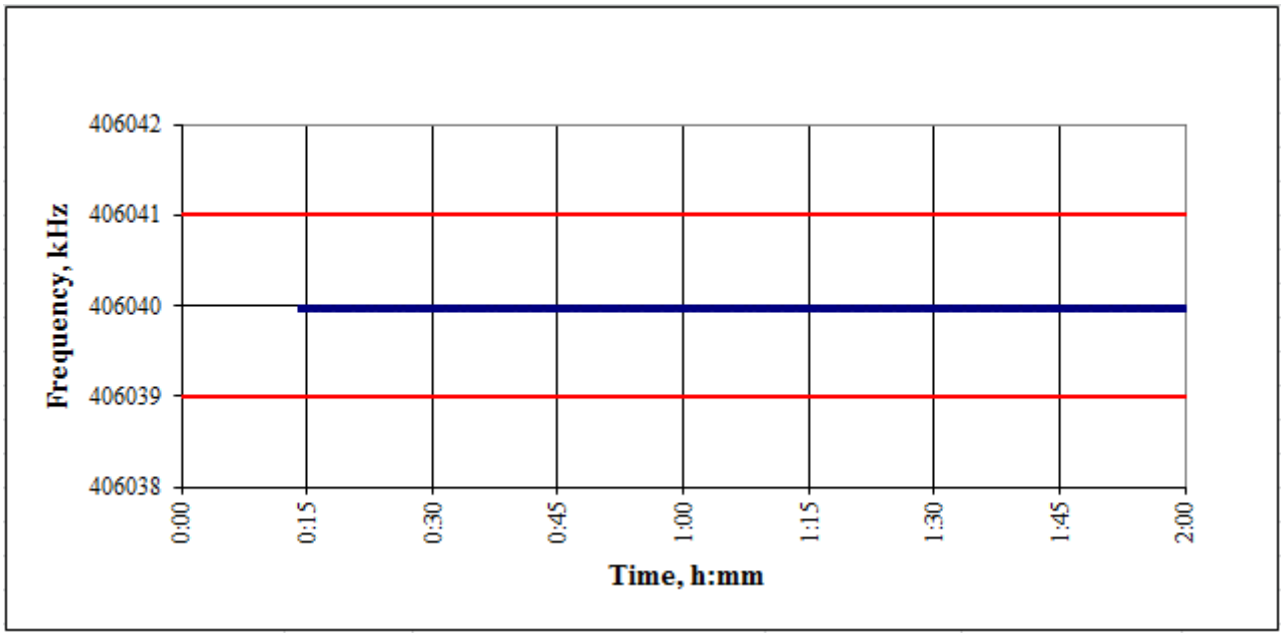


Figure 5.3.2 – Nominal Value of frequency

- **Short-Term Stability (A.3.2.1.2)**

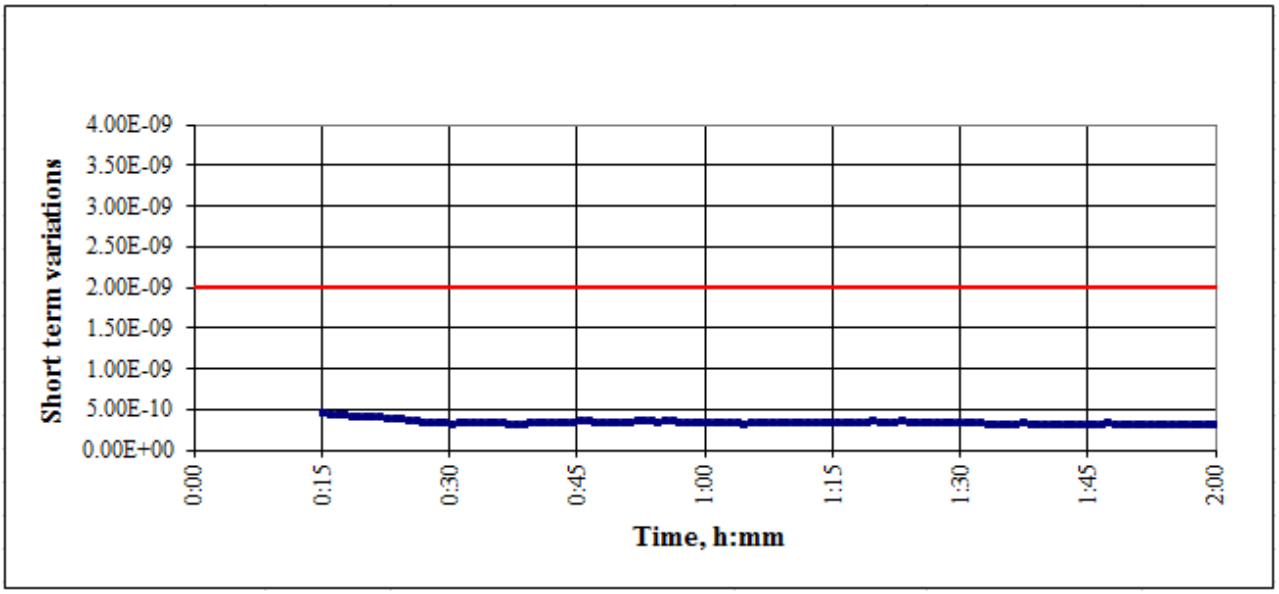


Figure 5.3.3 – Short-Term Stability

- **Medium-Term Stability (A.3.2.1.3)**

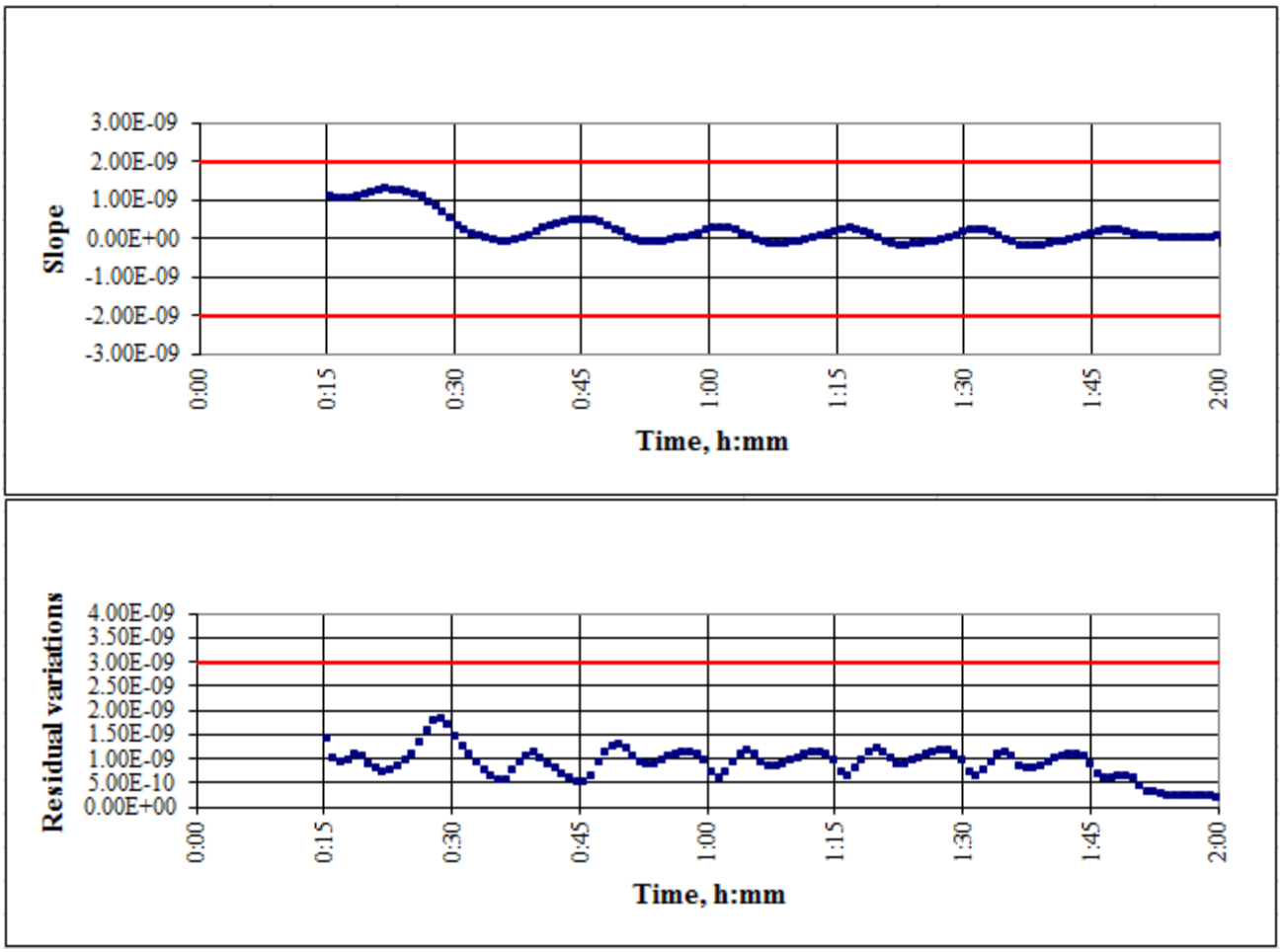


Figure 5.3.4 – Medium-Term Stability

b) Transmitter Power Output (according to C/S T.007 – section A.3.2.2.1).

- **Transmitter Power Output Level (A.3.2.2.1)**

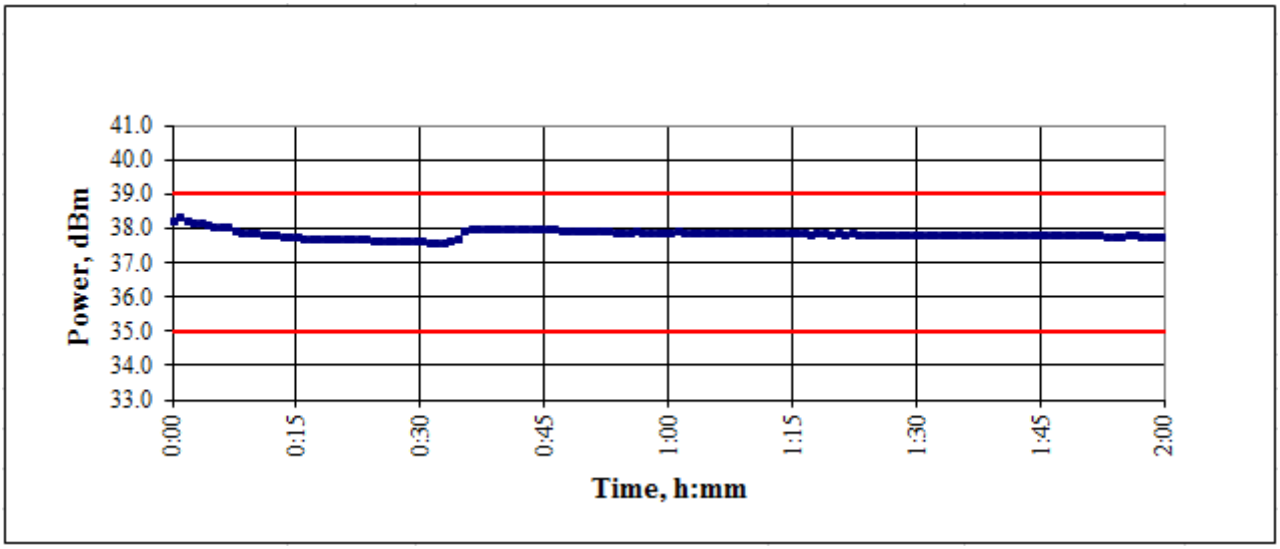


Figure 5.3.5 – Transmitter power during test

c) Message Coding (according to C/S T.007 - A.3.1.4)

Bursts received	145
BCH error	0
Self test message	0
Full HEX message	FFFE2F8C9E0000007FDFFA79ED3783E0F66C

Decoding Beacon Message
Full Hex message: FFFE2F8C9E0000007FDFFA79ED3783E0F66C

ITEM	**BITS**	**VALUE**
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard Test Location Protocol	37- 40	1110
Binary data (24 bits, i.e. max=0xFF FFFF): 0x00 0000	41- 64	0000 0000 0000 0000 0000 0000
Latitude: Default		
Latitude Base: Default	65- 74	01 1111 1111
Longitude: Default		
Lonitude Base: Default	75- 85	011 1111 1111
BCH1: 0x09 E7B4	86-106	0 1001 1110 0111 1011 0100
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-122	10 0000 1111
Longitude Delta: Default	123-132	10 0000 1111
BCH2: 0x66C	133-144	0110 0110 1100

5.4 Operating Lifetime at Minimum Temperature

Date of test Date of additional test of the homer transmitter's parameters.	15.02.2016-18.02.2016 20.12.2017-22-12.2017
Specification	C/S T.007 – section A.2.3
Beacon Model	MT603FG
Serial number	1410407582
EUT Mod State	0
EUT system configuration, including ancillary devices and modes of their operation	The EUT was operated using its own power source (internal battery). The EUT was configured so that the antenna port was connected to the 50 Ohms test system using coaxial cable.
EUT operating mode during the test	406 MHz+121.64MHz+GPS+Strobe Light
Environmental conditions	Ambient laboratory temperature: 16.2-21.5°C Relative air humidity: 45-69 %
Test temperature	minus 20°C
Pre-test battery discharge duration Pre-test battery discharge duration	12:20:01 hours with current 97.7 mA 12:55:56 hours with current 97.7 mA
Lifetime test duration Additional Lifetime test duration	77 hours 39 minutes 78 hours 30 minutes
Deviations from standard test procedures	The battery replacement was required therefore two separate tests were performed.
Non-compliances noticed	There were not non-compliances

Test procedure:

- Beacon was placed in climatic chamber in turn off mode;
- Soaking time of the turned-off beacon at the minimal temperature: 2 hours;
- PLB in turn off mode was placed in climatic chamber at normal room temperature. Then the temperature was reduced to and maintained at minus 20°C for period of 2 hours.
- After soaking period the beacon was activated and then kept working continuously until power of 406 MHz transmitter was reduced to the minimal acceptable value.
- Parameters were measured immediately after activation of beacon except for the Medium Term Frequency Stability (the mean slope of the frequency and the residual frequency variation about the mean slope), which were computed after 15 minutes according to T.001 section 2.3.1;
- The total duration of the lifetime test was 77 hours 39 minutes then beacon was switched OFF;
- Matching network was used;
- GNSS signal was not available during the test.
- The homer transmitter's parameters were retested during the additional lifetime test on 20.12.17 – 22.12.17 in accordance with the requirements of the CSS.
  The battery discharge calculation see Note 2 on page 74.
  The homer transmitter's parameters were measured at the test point agreed with the manufacturer (see page 418)
  The homer transmitter's parameters were measured for 78 hours 30 minutes, after which the beacon was switched OFF.

5.4.1 Operating Current Measurements and Analysis

Beacon manufacturer provided operating currents and pre-test battery discharge calculations (Annex A, page 225).

Operational currents were verified by the testing laboratory with measurement results reported in Table F-E.1 below. During operating current measurement GNSS signal was not available.

Measured values do not exceed values provided by manufacturer.

Table F-E.1: Beacon Operating Current

No.	Beacon Operating Modes	Mode: Manually selectable or Automatic	Measurement interval, sec	Average Current, mA	Peak Current, mA
1.	406 + 121 + GNSS Search	Automatic	102.5	89	2864
2.	406 + 121 + GNSS Sleep	Automatic	102.5	69	2789
3.	GNSS Self-test	Manual	130.2	46.5	2770
4.	Self-test	Manual	8.24	217.8	2780
5.	Stand-by	Automatic	20	0.001	0.001

Conclusion:
The beacon mode: when the beacon is mode at which beacon has the highest current consumption.
Current consumption was measured using circuit shown on Figure 5.4.1.

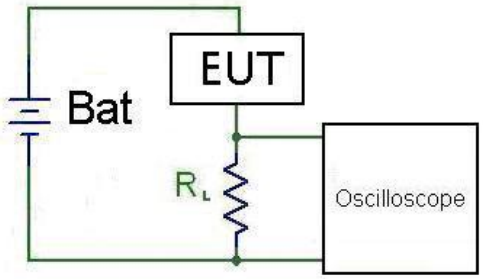


Figure 5.4.1 - The Circuit for Current Consumption Measurement

The value of the current calculated by equation: $I = \frac{U}{R}$, where ***I*** is a value of current (A), ***U*** is a value of voltage (V), ***R*** is a value of resistance (Ohm). Voltage was measured by digital oscilloscope with load R=0.1 Ohm.

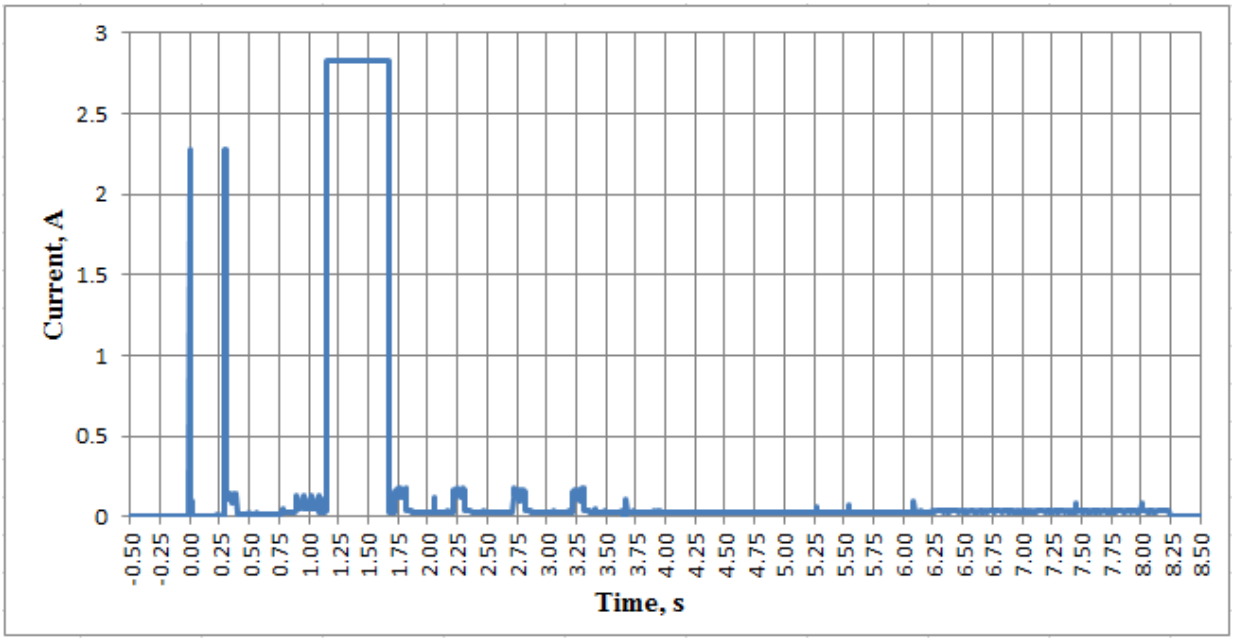


Figure 5.4.2 - Current during self-test

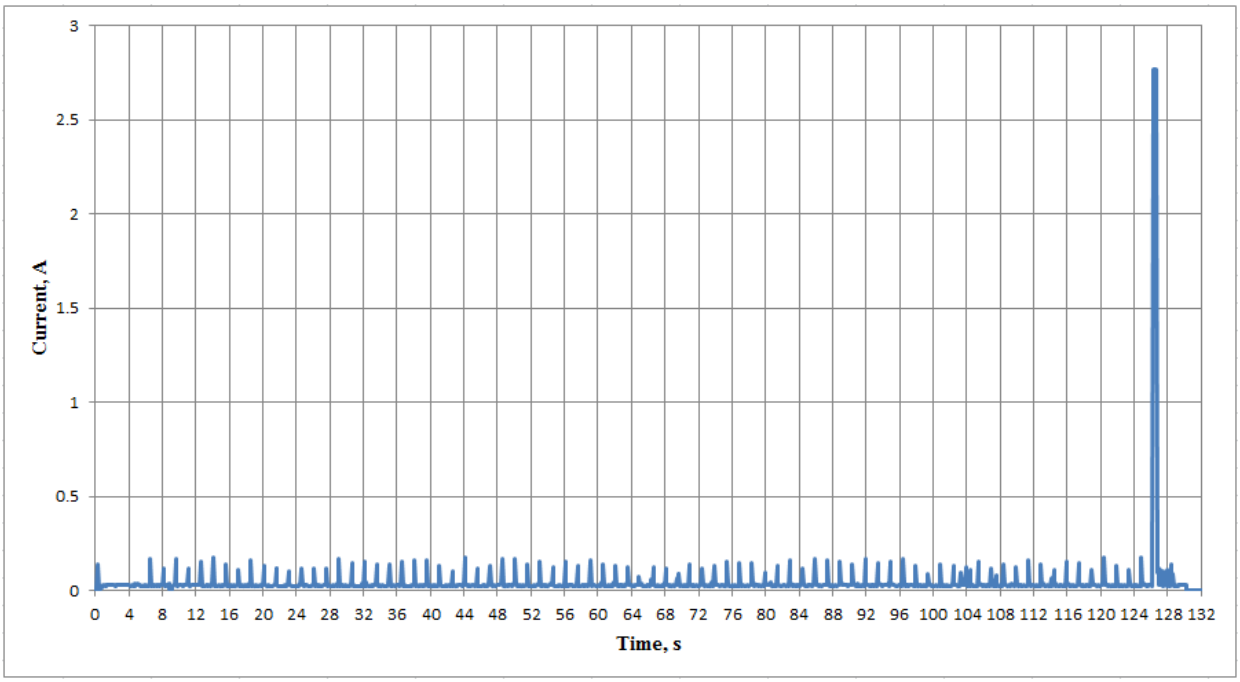


Figure 5.4.3 - Current during GNSS self-test

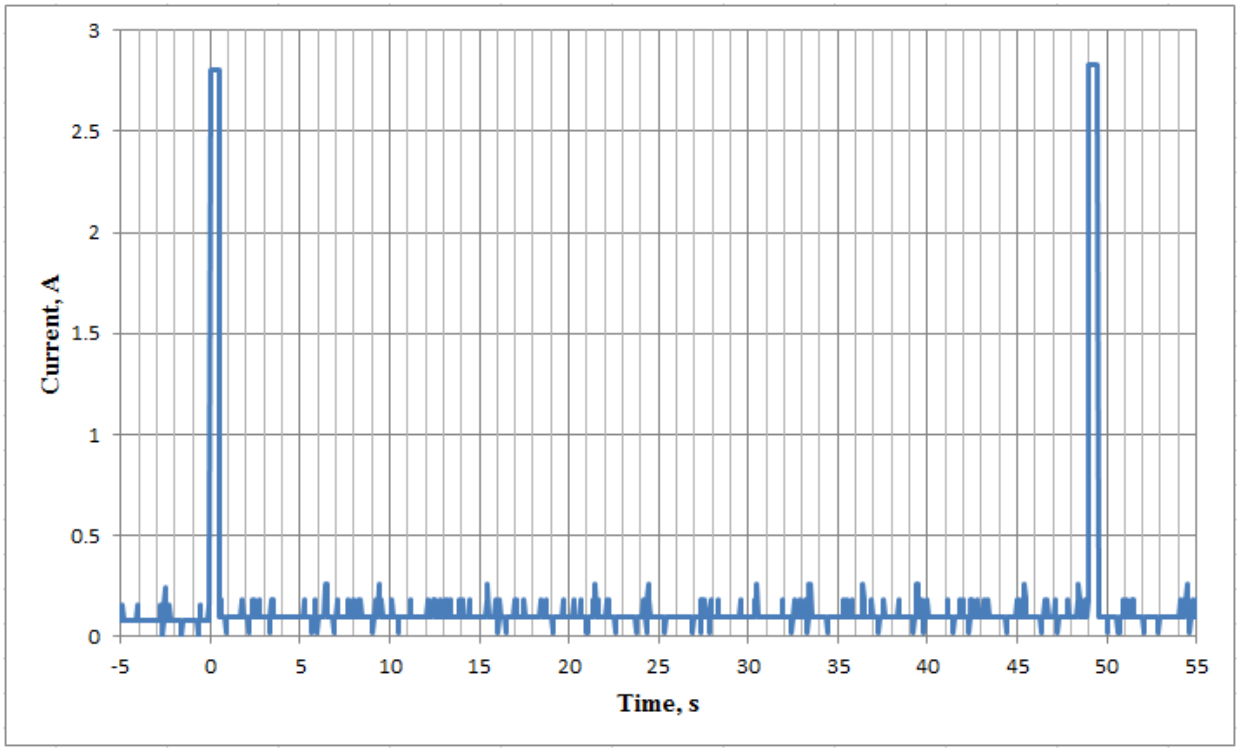


Figure 5.4.4 - GPS receiver is switching to GNSS search mode.

5.4.2 Pre-test Battery Discharge

Table F-E.2: Pre-test Battery Discharge Calculations as provided by manufacturer

Characteristic	Designation	Units	Value	Comments
Beacon manufacturers declared maximum allowed cell shelf-life (from date of cell manufacture to date of battery pack installation in the beacon)	T_{CS} or TCS	Years	1	
Declared beacon battery replacement period (from date of installation in the beacon to expiry date marked on the beacon)	T_{BR} or TBR	Years	7	
Battery pack electrical configuration	2 x D Cells series wired			
Cell model and cell chemistry	Saft LO26SX, $LiSO_2$			
Nominal cell capacity		A-hrs	7.75	
Nominal battery pack capacity	C_{BN}	A-hrs	7.75	
Annual battery cell capacity loss (self-discharge) due to aging, as specified by cell manufacturer at ambient temperature	L_{SDC}	%	3	
Calculated battery pack capacity loss due to self-discharge: $L_{CBN} = C_{BN} - [C_{BN} * (1 - L_{SDC}/100)^{TBR+TCS}]$	L_{CBN}	A-hrs	1.68	
Number of self-tests per year	N_{ST}		12	
Average battery current during a self-test	I_{ST}	mA	221	
Maximum duration of a self-test	T_{ST}	sec	8.25	
Calculated battery pack capacity loss due to self-tests during battery replacement period: $L_{ST} = I_{ST} * T_{ST} * T_{BR} * N_{ST} / 3600$	L_{ST}	mA-hrs	42.5	
Maximum Number of GNSS self-tests between battery replacements	N_{GST}		7	
Average battery current during a GNSS self-test of maximum duration	I_{GST}	mA	48	
Maximum duration of a GNSS self-test	T_{GST}	sec	130.2	
Calculated battery pack capacity loss due to GNSS self-tests during battery replacement period: $L_{GST} = I_{GST} * T_{GST} * N_{GST} / 3600$	L_{GST}	mA-hrs	12.2	
Average stand-by battery pack current	I_{SB}	mA	0.001	
Other Capacity Losses	L_{OTH}	mA-hrs		Note 1
Battery pack capacity loss due to constant operation of circuitry prior to beacon activation: $L_{ISB} = I_{SB} * T_{BR} * 8760$	L_{ISB}	mA-hrs	61.3	
Calculated value of the battery pack pre-test discharge $L_{CDC} = L_{CBN} + 1.65*(L_{ST} + L_{GST} + L_{ISB})/1000 + L_{OTH}/1000$	L_{CDC}	A-hrs	1.87	

Note 1.
The worst case depletion in battery power due to current drawn that cannot be replicated during the lifetime test.

The pre- test battery discharge is calculated for the worst case drain / operational current.
Production date of cells installed in the battery: 2013.03.
Duration of storage prior to the test: 2.92 years.
The loss of energy due to the battery ageing:

$L_{AGEING} = C_{BN} - [C_{BN} * (1 - L_{SDC}/100)^{2.92}] = 0.66$ A-hrs.
Before the start of pre-discharge, the battery was discharged with current pulse 2 A duration of 10 seconds by the manufacturer's recommendations, because the battery was kept in the the test laboratory over 1 year.
$L_{PRE-DISCHARGE} = 2 * 10 / 3600 = 5.56$ mA-hrs

The final value of the discharge to take into account the cell ageing:
$L_{CDC} - L_{AGEING\_total} - L_{PRE-DISCHARGE} = 1.87$ A-hrs – 0.66 A-hrs – 0.00556 = 1.205 A-hrs.
The discharge current is 97.7 mA.

The time of pre-discharge of battery is:
1.205 A-hrs / 0.0977 A = 12.334 hrs.

The pre- test battery discharge was carried out before Lifetime test at room temperature on the unused battery. Discharge was carried out on resistive load using battery analyzer UBA5 (Vencon Technologies Inc., Canada). The discharge current was 97.7 mA, as current similar to beacon operational current. Discharge current 97.7 mA was confirmed by manufacturer. Duration of preliminary battery discharge with discharge current 97.7 mA was 12:20:01.

Lifetime test at minimum temperature -20°C with preliminary discharged battery was carried out for 77 hours 39 minutes. Mode of beacon peration during the Lifetime Test was 406MHz + Homer + GPS ON + Strobe Light ON. List of parameters measured during lifetime test are shown below.

Note 2.
For additional lifetime test of verivication of the homer transmitter's parameters a battery of production date of cells installed in the battery: 2015.05 was used.
Duration of storage prior to the test: 2.65 years.
The loss of energy due to the battery ageing:

$L_{AGEING} = C_{BN} - [C_{BN} *(1 - L_{SDC} /100)^{2.65}] = 0.601$ A-hrs.
Before the start of pre-discharge, the battery was discharged with current pulse 2 A duration of 10 seconds by the manufacturer's recommendations, because the battery was kept in the the test laboratory over 1 year.
$L_{PRE-DISCHARGE}=2 * 10 / 3600 = 5.56$ mA-hrs

The final value of the discharge to take into account the cell ageing:
$L_{CDC} - L_{AGEING\_total} - L_{PRE-DISCHARGE} = 1.87$ A-hrs – 0.601 A-hrs – 0.00556 = 1.263 A-hrs.
The discharge current is 97.7 mA.
The time of pre-discharge of battery is:
1.263 A-hrs / 0.0977 A = 12.932 hrs.

The pre- test battery discharge was carried out before Lifetime test at room temperature on the unused battery. Discharge was carried out on resistive load using battery analyzer UBA5 (Vencon Technologies Inc., Canada). The discharge current was 97.7 mA, as current similar to beacon operational current. Discharge current 97.7 mA was confirmed by manufacturer. Duration of preliminary battery discharge with discharge current 97.7 mA was 12:55:56.

Lifetime test at minimum temperature -20°C with preliminary discharged battery was carried out for 78 hours 30 minutes. Mode of beacon peration during the lifetime test was 406MHz + Homer + GPS ON + Strobe Light ON.

List of the homer transmitter's parameters measured during additional lifetime test are shown below (see note below the table).

List of test parameters

Measured parameters	**page No.**
Transmission frequency 406 MHz:	
Nominal frequency value	77
Short and average frequency stability	78
Maximum and minimum frequency stability values during test	75
Transmitter power output:	
Diagram of power output values during test	81
Maximum and minimum power output values during test	75
Message:	
Message contents	82

Table of measured parameters.

Message	
Contents (full)	:FFFE2F8C9F0018DFC0FF04F9E4379F3C0010

Test duration 77:39:27	Bursts received 5587	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, MHz	406.039	406.041	406.039949	406.039957	406.039957
Power, dBm	35	39	36.30	36.32	36.47
Slope	-1.00E-09	1.00E-09	-1.71E-10	-6.34E-12	1.76E-10
Residual variations	0.00E-09	3.00E-09	7.82E-11	1.20E-10	7.42E-10
Short term variations	0.00E-09	2.00E-09	2.77E-11	8.37E-11	1.26E-10
Power, dBm (at 48:00:06)	35	39	36.30	36.30	36.47

121.5 MHz Transmitter Parameters at the beginning of the test 00:15:00[1]			
Carrier Frequency, Hz	121650158	**Low Sweep Frequency, Hz**	371.7
Power, dBm	14.39	**High Sweep Frequency, Hz**	1168
Sweep Period, sec	0.445	**Sweep Range, Hz**	796.3
Modulation Index, %	100	**Homer-transmitter duty cycle, % (per min rep.period)**	96.25
121.5 MHz Transmitter Parameters at 48:00:00[1]			
Carrier Frequency, Hz	121650158	**Low Sweep Frequency, Hz**	371.6
Power, dBm	14.60	**High Sweep Frequency, Hz**	1165
Sweep Period, sec	0.445	**Sweep Range, Hz**	793.4
Modulation Index, %	100	**Homer-transmitter duty cycle, % (per min rep.period)**	96.25
121.5 MHz Transmitter Parameters at the end of the test 78:30:00[1]			
Carrier Frequency, Hz	121650148	**Low Sweep Frequency, Hz**	371.7
Power, dBm	14.58	**High Sweep Frequency, Hz**	1167
Sweep Period, sec	0.445	**Sweep Range, Hz**	795.3
Modulation Index, %	100	**Homer-transmitter duty cycle, % (per min rep.period)**	96.25

[1] - The homer transmitter's parameters were retested during the additional lifetime test on 20.12.2017 – 22.12.2017 in accordance with the requirements of the CSS.

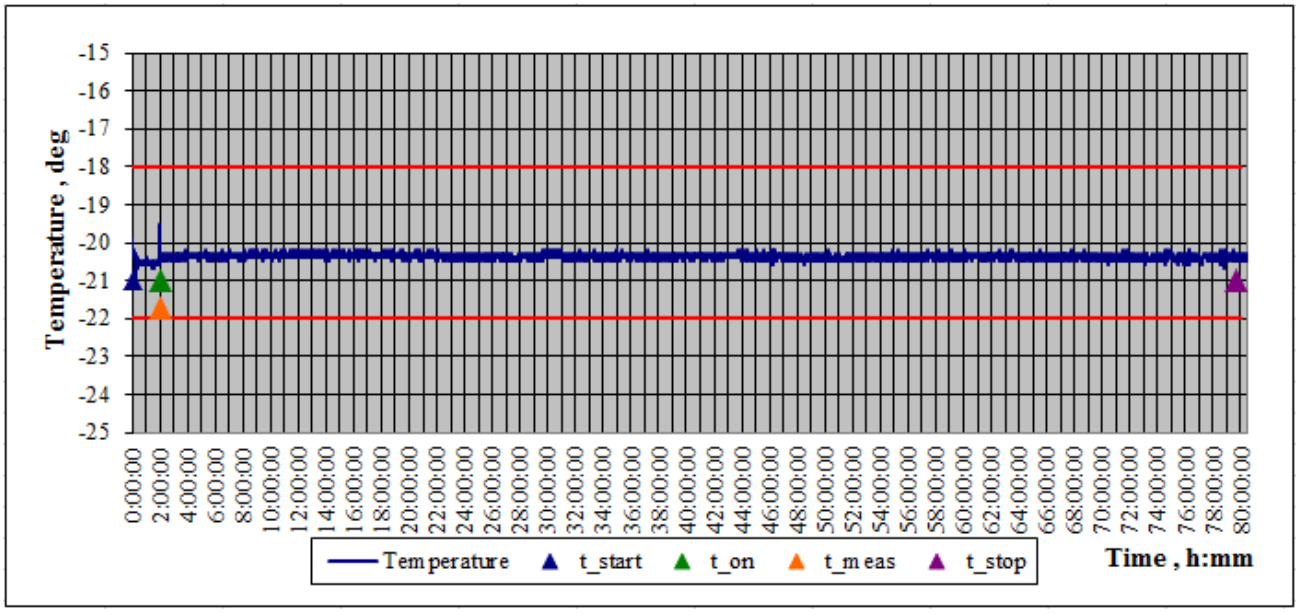


Figure 5.4.5 – Temperature During The Test

Table of data measured during 30 minutes after activation of PLB.

Time (h:mm:ss)	Rep. period (s)	Power (dBm)	Frequency (MHz)	Slope	Residual variations	Short term variations	Digital message
0:01:00	0	36.44	_	-	-	-	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:01:48	48.4563	36.44	_	-	-	-	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:02:39	51.0027	36.44	_	-	-	-	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:03:31	51.4539	36.44	_	-	-	-	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:04:20	49.2996	36.44	_	-	-	-	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:05:10	49.4294	36.44	_	-	-	-	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:06:00	50.2289	36.44	_	-	-	-	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:06:49	49.4139	36.45	_	-	-	-	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:07:41	51.218	36.45	_	-	-	-	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:08:29	48.4904	36.46	_	-	-	-	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:09:20	50.754	36.46	_	-	-	-	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:10:11	50.9155	36.46	_	-	-	-	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:11:01	50.1545	36.46	_	-	-	-	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:11:50	48.7944	36.46	_	-	-	-	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:12:39	49.003	36.47	_	-	-	-	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:13:26	47.7733	36.47	_	-	-	-	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:14:19	52.443	36.46	_	-	-	-	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:15:09	50.2859	36.46	406.039957	-	-	-	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:15:59	49.7992	36.46	406.039955	-4.55E-09	1.35E-08	5.75E-11	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:16:49	49.6549	36.47	406.039954	-3.53E-09	1.21E-08	5.75E-11	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:17:37	48.3882	36.46	406.039952	-2.56E-09	1.01E-08	5.73E-11	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:18:27	50.2726	36.46	406.039951	-1.71E-09	7.51E-09	5.67E-11	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:19:20	52.3156	36.38	406.039950	-1.02E-09	4.73E-09	5.59E-11	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:20:12	52.4012	36.38	406.039950	-5.47E-10	2.06E-09	5.90E-11	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:21:01	49.2905	36.38	406.039949	-3.37E-10	1.06E-09	5.91E-11	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:21:52	50.3604	36.39	406.039949	-2.28E-10	5.69E-10	5.40E-11	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:22:43	51.5993	36.39	406.039949	-1.71E-10	3.63E-10	5.42E-11	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:23:32	48.9854	36.39	406.039949	-1.25E-10	4.33E-10	5.44E-11	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:24:23	50.3605	36.39	406.039949	-7.98E-11	5.12E-10	4.73E-11	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:25:14	51.708	36.39	406.039949	-3.30E-11	6.23E-10	5.18E-11	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:26:05	50.9864	36.39	406.039949	8.59E-12	6.92E-10	5.49E-11	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:26:55	49.6959	36.38	406.039949	4.82E-11	6.67E-10	6.17E-11	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:27:43	47.8306	36.38	406.039949	7.57E-11	6.70E-10	6.13E-11	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:28:31	48.67	36.39	406.039949	1.00E-10	6.62E-10	5.86E-11	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:29:19	47.5135	36.39	406.039949	1.37E-10	5.68E-10	6.32E-11	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010
0:30:07	47.8781	36.39	406.039949	1.68E-10	4.58E-10	5.96E-11	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010

Note:

Column “Time”	Time from EPIRB activation.	
Column “Rep. Period”	Value of repetition period fixed after first message.	
Column Slope, Residual variations		Medium Term Frequency Stability computed with Frequency measurement immediately after beacon activation and out off C/S specification limit.

a) Transmitted Frequency (according to C/S T.007 – section A.3.2.1)

- **Nominal Value (A.3.2.1.1)**

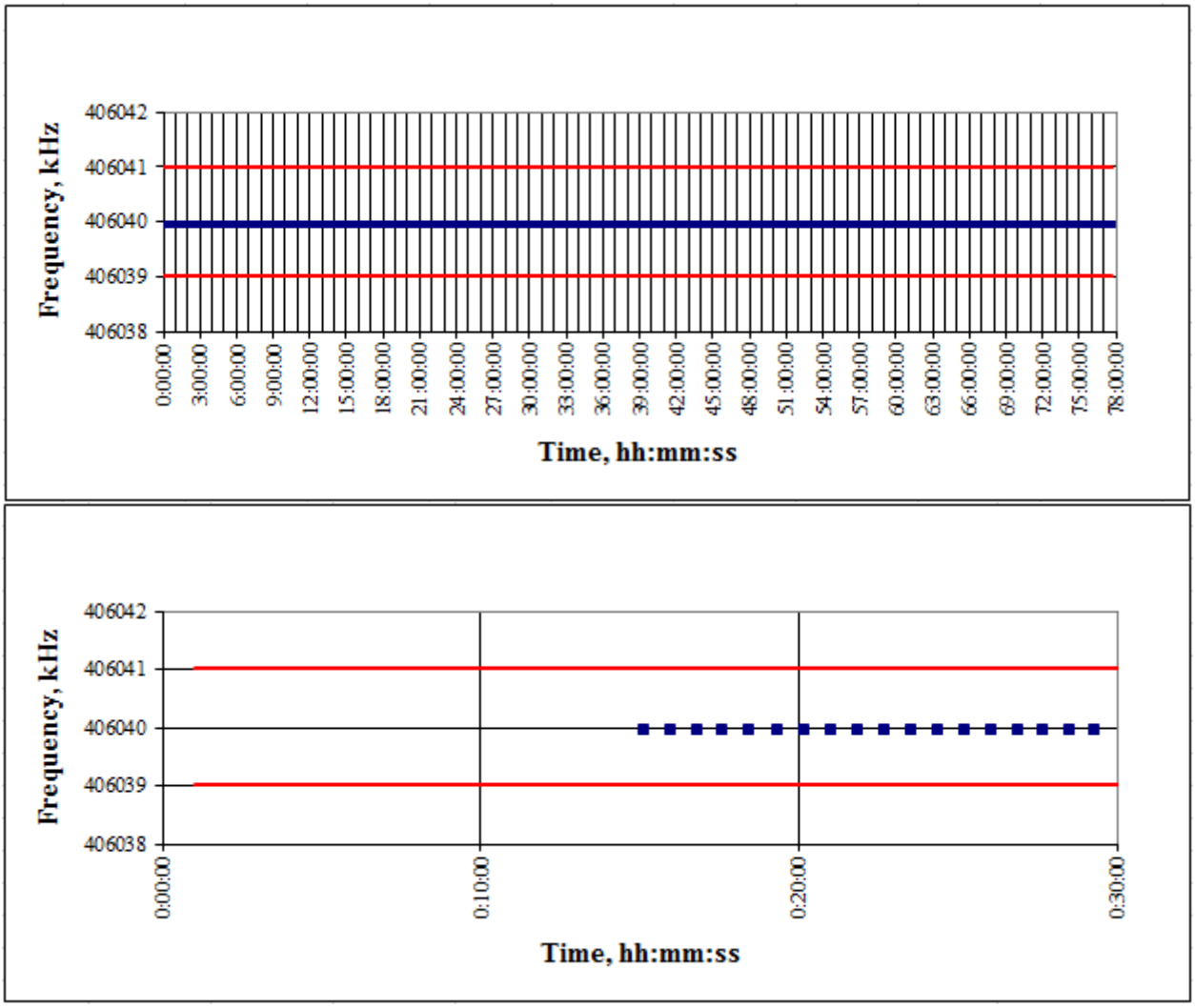


Figure 5.4.6 – Nominal Value of frequency

- **Short-Term Stability (A.3.2.1.2)**

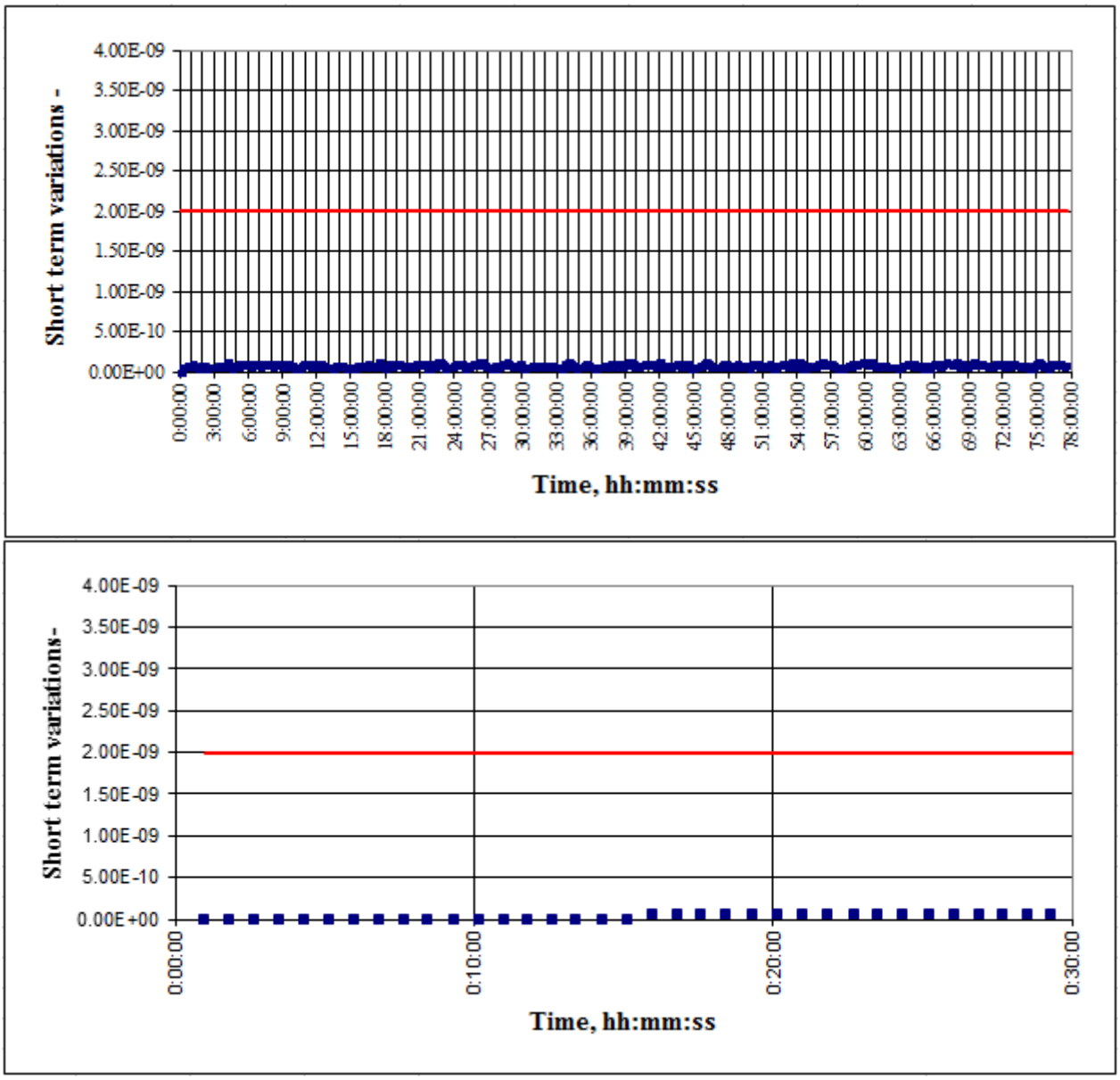


Figure 5.4.7 – Short-Term Stability

- **Medium-Term Stability (A.3.2.1.3)**

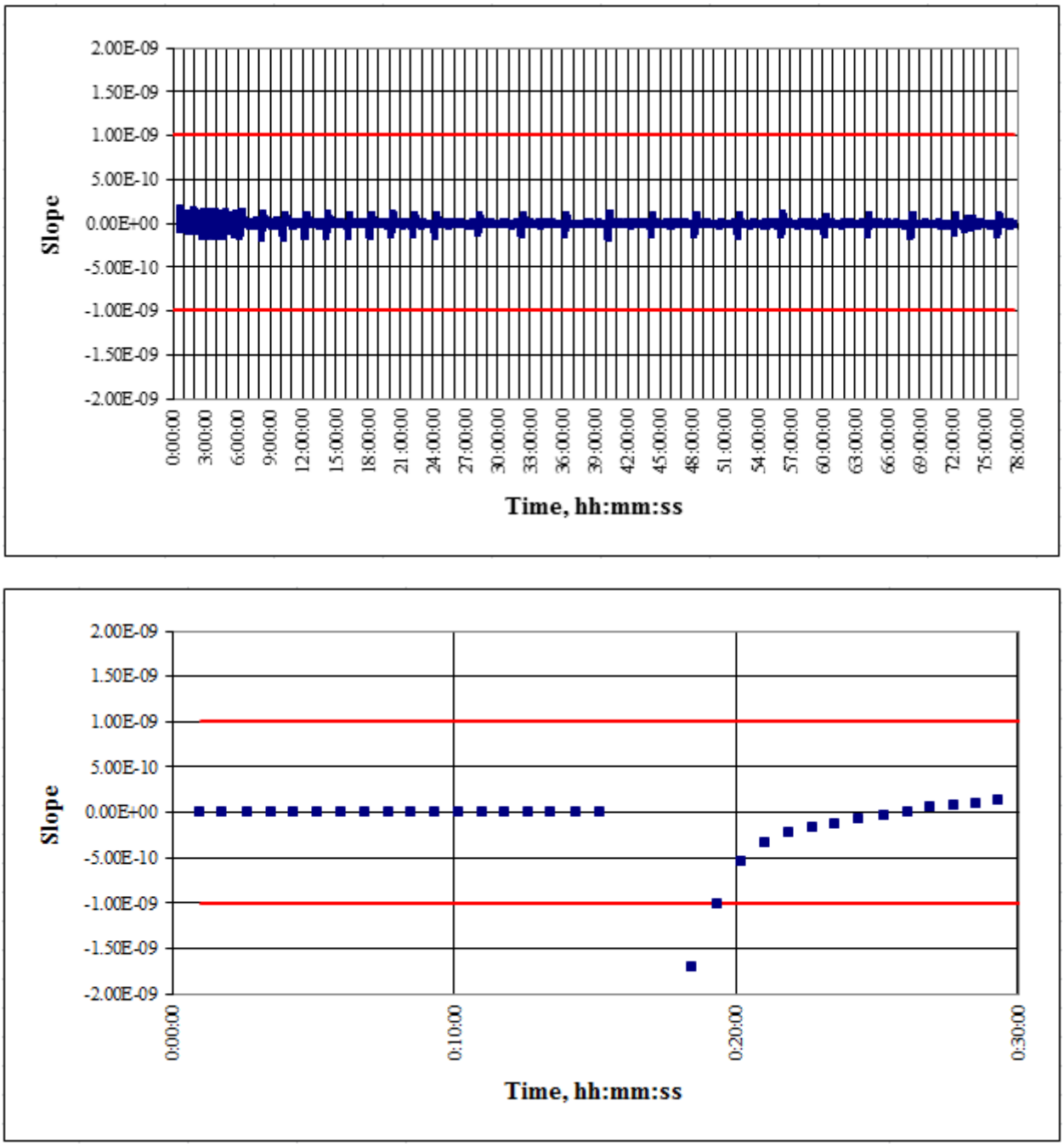


Figure 5.4.8 – Medium-Term Stability. Slope

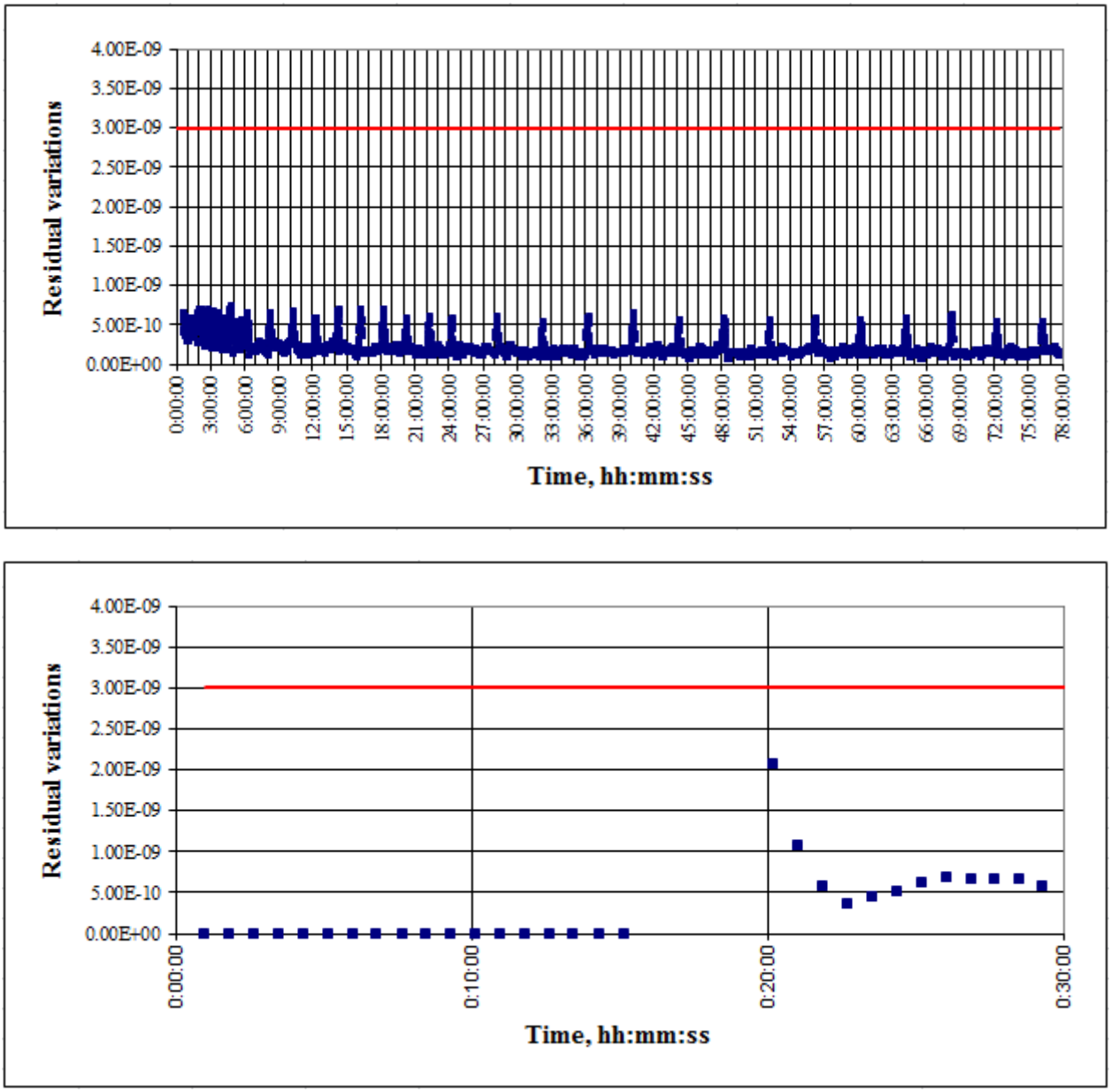
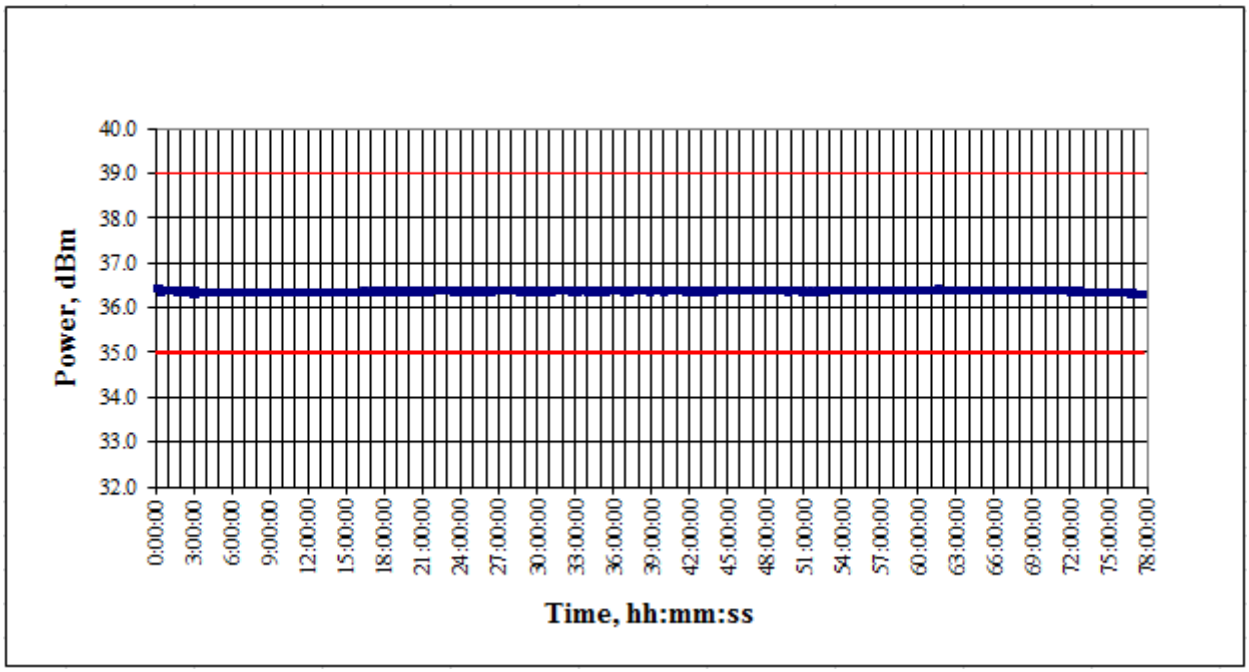


Figure 5.4.9 – Medium-Term Stability. Residual variations

b) Transmitter Power Output (according to C/S T.007 – section A.3.2.2.1).

- **Transmitter Power Output Level (A.3.2.2.1)**



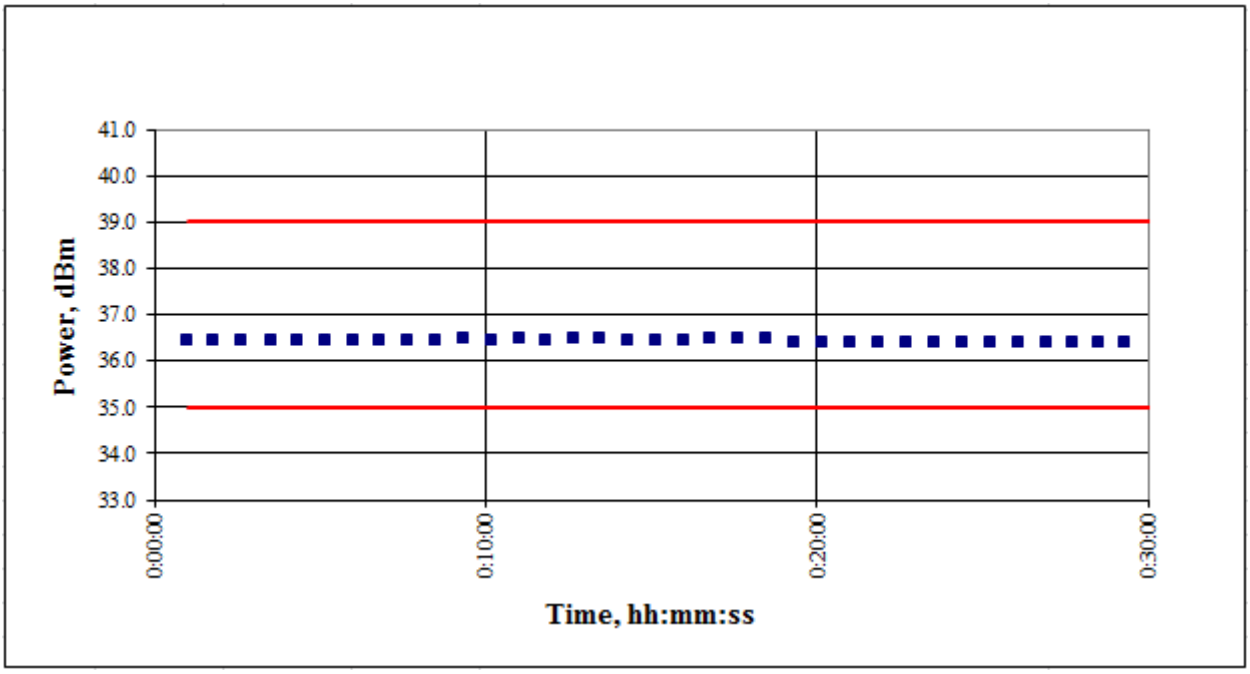


Figure 5.4.10– Transmitter power during test

c) Message Coding (according to C/S T.007 - A.3.1.4)

Bursts received	5588
BCH error	0
Self test message	0
Full HEX message	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010

Decoding Beacon Message
Full Hex message: FFFE2F8C9F0018DFC0FF04F9E4379F3C0010

ITEM	**BITS**	**VALUE**
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long National Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): National Test Location Protocol	37- 40	1111
National ID Number (18 bits, i.e. max=0x3 FFFF): 0x0 0063	41- 58	00 0000 0000 0110 0011
Latitude: Default		
Latitude Base: Default	59- 71	0 1111 1110 0000
Longitude: Default		
Lonitude Base: Default	72- 85	01 1111 1110 0000
BCH1: 0x13 E790	86-106	1 0011 1110 0111 1001 0000
Fixed bits (3 bits = 110): 6	107-109	110
Additional data type: Position Delta	110	1
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-119	100 1111
Longitude Delta: Default	120-126	100 1111
Additional Beacon Identification (6bit, i.e. max value - 0x3F): 0x00	127-132	00 0000
BCH2: 0x010	133-144	0000 0001 0000

d) Homer-transmitter duty cycle

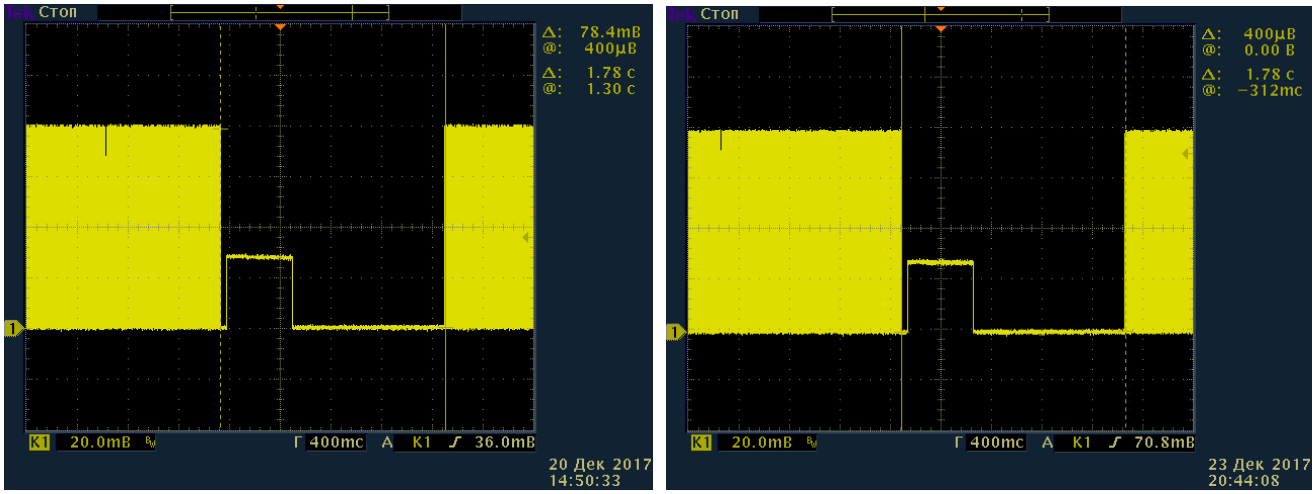


Figure 5.4.11– Homer-transmitter shutdown time during life-time test.

Maximum time of the shutdown time of the homing transmitter is 1.78 sec. For a minimum duration of the repetition period cycle the homer-transmitter duty cycle is calculated as (47.5 - 1.78) / 47.5 * 100% = 96.25%

5.5 Frequency Stability Test with Temperature Gradient

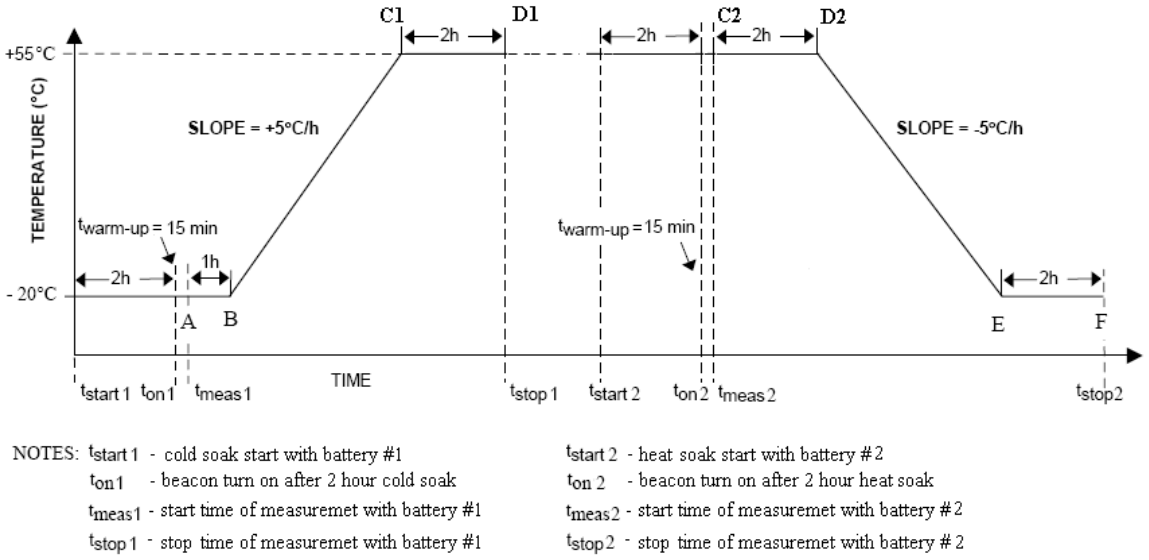
Date of test	27.01.2016-29.01.2016
Specification	C/S T.007 – section A.2.4
Beacon Model	MT603FG
Serial number	1410407582
EUT Mod State	0
EUT system configuration, including ancillary devices and modes of their operation	The EUT was operated using its own power source (internal battery). The EUT was configured so that the antenna port was connected to the 50 Ohms test system using coaxial cable.
EUT operating mode during the test	406 MHz+121.64MHz+Strobe Light
Environmental conditions	Ambient laboratory temperature: 17.6-19.0 °C Relative air humidity: 45-61 %
Temperature range	-20ºC to 55ºC: 5°C/hour and 55ºC to -20ºC: minus 5°C/hour
Deviations from standard test procedures	There were no deviations from standard test procedures
Non-compliances noticed	There were not non-compliances

Test procedure:

- Soaking time of the turned-off beacon at the temperature (Tmin): 2 hours;
- Warm-up time of the turned-on beacon at the temperature (Tmin) prior to measurements: 15 minutes;
- Parameters measurement duration of turned-on beacon at the temperature (Tmin) : 1 hour;
- Temperature gradient from -20ºC to 55ºC: 5°C/hour;
- Duration of temperature gradient from -20ºC to 55ºC: 15 hours;
- Maximum declared operating temperature of the beacon (Tmax): 55 °C;
- Soaking time of the turned-on beacon at the temperature (Tmax=55 °C): 2 hours;
- Temperature gradient from 55 ºC to -20ºC: - 5 °C/hour;
- The battery was replaced during temperature gradient test and the whole test cycle was divided for the up-ramp and down-ramp parts as it is allowed in A.2.4 of C/S T.007.
- Soaking time of the turned-off beacon at the temperature (Tmax): 2 hours;
- Warm-up time of the turned-on beacon at the temperature (Tmax) prior to measurements: 15 minutes;
- Parameters measurement duration of turned-on beacon at the temperature (Tmax): 2 hour;
- Duration of temperature gradient from 55 ºC to -20ºC: 15 hours;
- Soaking time of the turned-on beacon at the temperature (Tmin= -20ºC): 2 hours.
- Matching network was used.
- Satellite’s GNSS signal not available during test.

List of test parameters

Measured parameters	page No.	
	Up ramp	Down ramp
Transmission frequency 406 MHz		
Nominal frequency value	87	91
Short and average frequency stability	87	92
Maximum and minimum frequency stability values during test	87	91
Transmitter power output		
Diagram of power output values during test	84	93
Maximum and minimum power output values during test	87	91
Message		
Message contents	90	94



NOTES: $t_{start\,1}$ - cold soak start with battery #1
$t_{on\,1}$ - beacon turn on after 2 hour cold soak
t_{meas1} - start time of measuremet with battery #1
$t_{stop\,1}$ - stop time of measuremet with battery #1
$t_{start\,2}$ - heat soak start with battery #2
$t_{on\,2}$ - beacon turn on after 2 hour heat soak
t_{meas2} - start time of measuremet with battery #2
t_{stop2} - stop time of measuremet with battery #2

Figure 5.5.1 – Temperature Gradient Test Profile

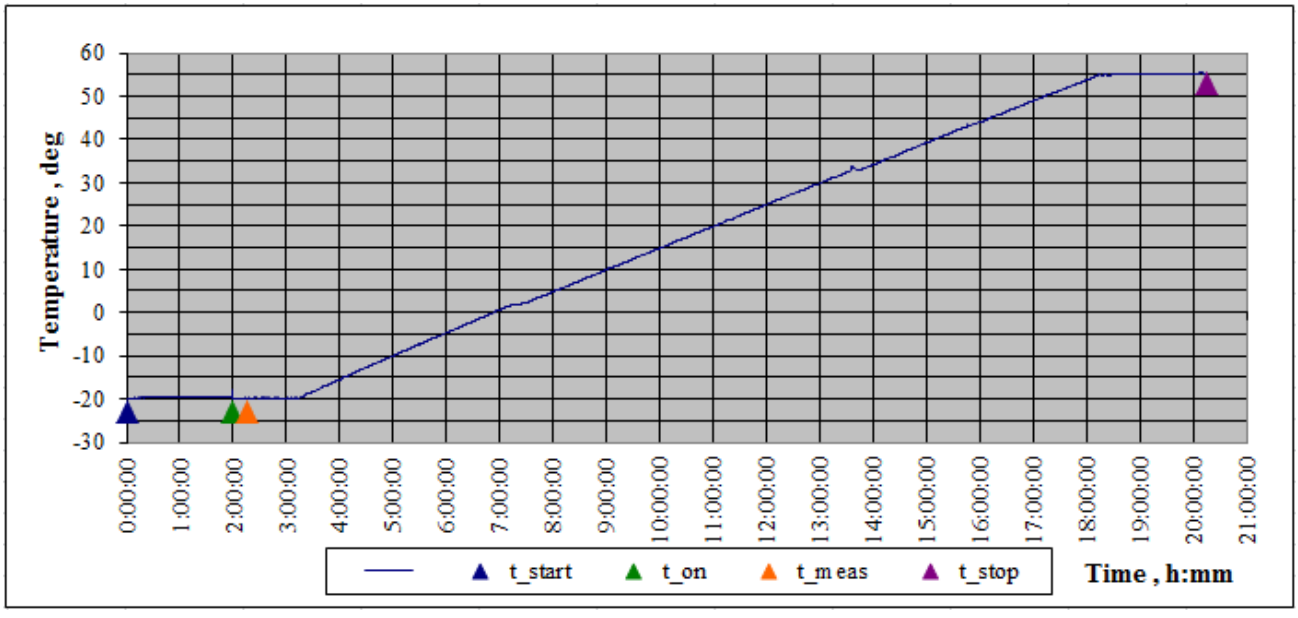


Figure 5.5.2 – Gradient up ramp temperature during the Test

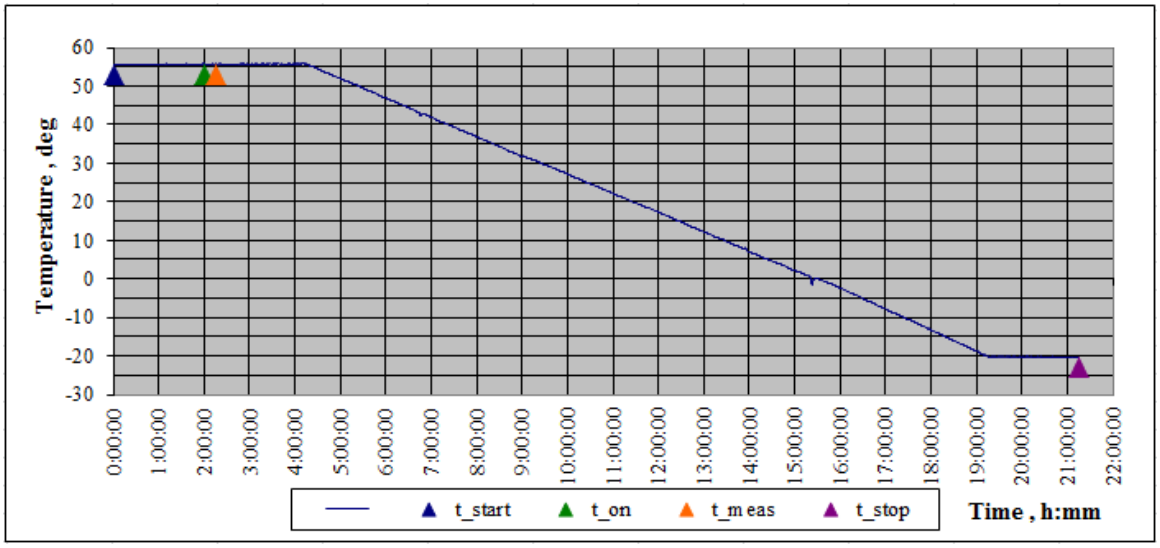


Figure 5.5.3 – Gradient up ramp temperature during the Test

Gradient up ramp

Table of measured parameters.

Message					
Contents (full)	:fffe2f8c9e0000007fdffa79ed3783e0f66c				
Test duration 18:15:52	Bursts received 1313	BCH error 0	Self-Test 0		
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, MHz	406.039	406.041	406.039923	406.039924	406.039986
Power, dBm	35	39	36.45	36.47	36.64
slope (A to B and C+15 to D)	-1.00E-09	1.00E-09	-2.33E-10	-7.45E-11	5.53E-10
slope (B to C+15 and D to E+15)	-2.00E-09	2.00E-09	-1.02E-09		1.01E-09
Residual variations	0.00E+00	3.00E-09	1.11E-10	4.73E-10	1.85E-09
Short term variations	0.00E+00	2.00E-09	1.05E-10	2.25E-10	6.21E-10

121.5 MHz Transmitter Parameters			
Carrier Frequency, Hz	121649631	**Low Sweep Frequency, Hz**	375
Power, dBm	12.67 – 13.23	**High Sweep Frequency, Hz**	1166
Sweep Period, sec	0.3	**Sweep Range, Hz**	791
Modulation Index, %	100		

Note: The homer transmitter's parameters were retested at ambient, minimum and maximum temperatures during the additional testing on 18.12.17 – 19.12.17 in accordance with the requirements of the CSS (see pp. 34, 45, 55)

a) Transmitted Frequency (according to C/S T.007 – section A.3.2.1)

- **Nominal Value (A.3.2.1.1)**

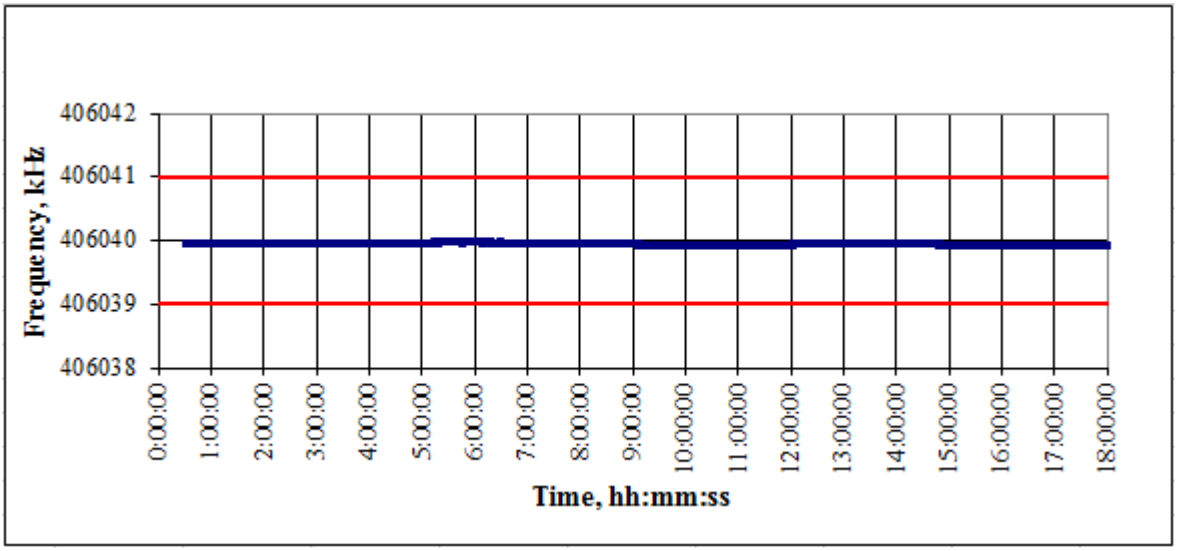


Figure 5.5.4 – Nominal Value of frequency

- **Short-Term Stability (A.3.2.1.2)**

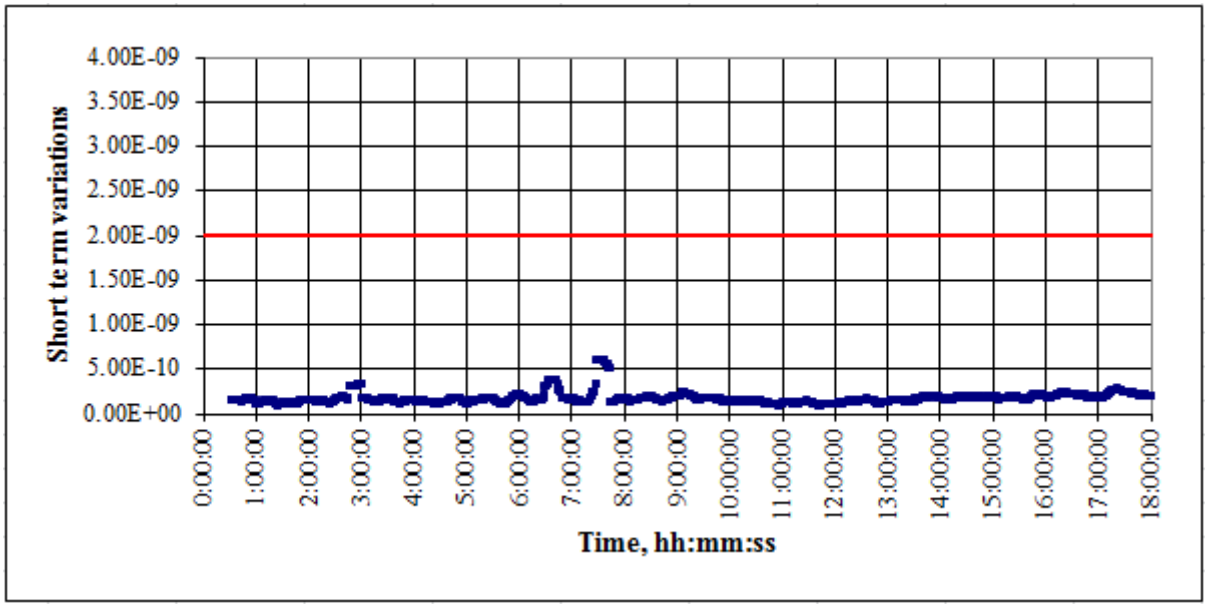


Figure 5.5.5 – Short-Term Stability

- **Medium-Term Stability (A.3.2.1.3)**

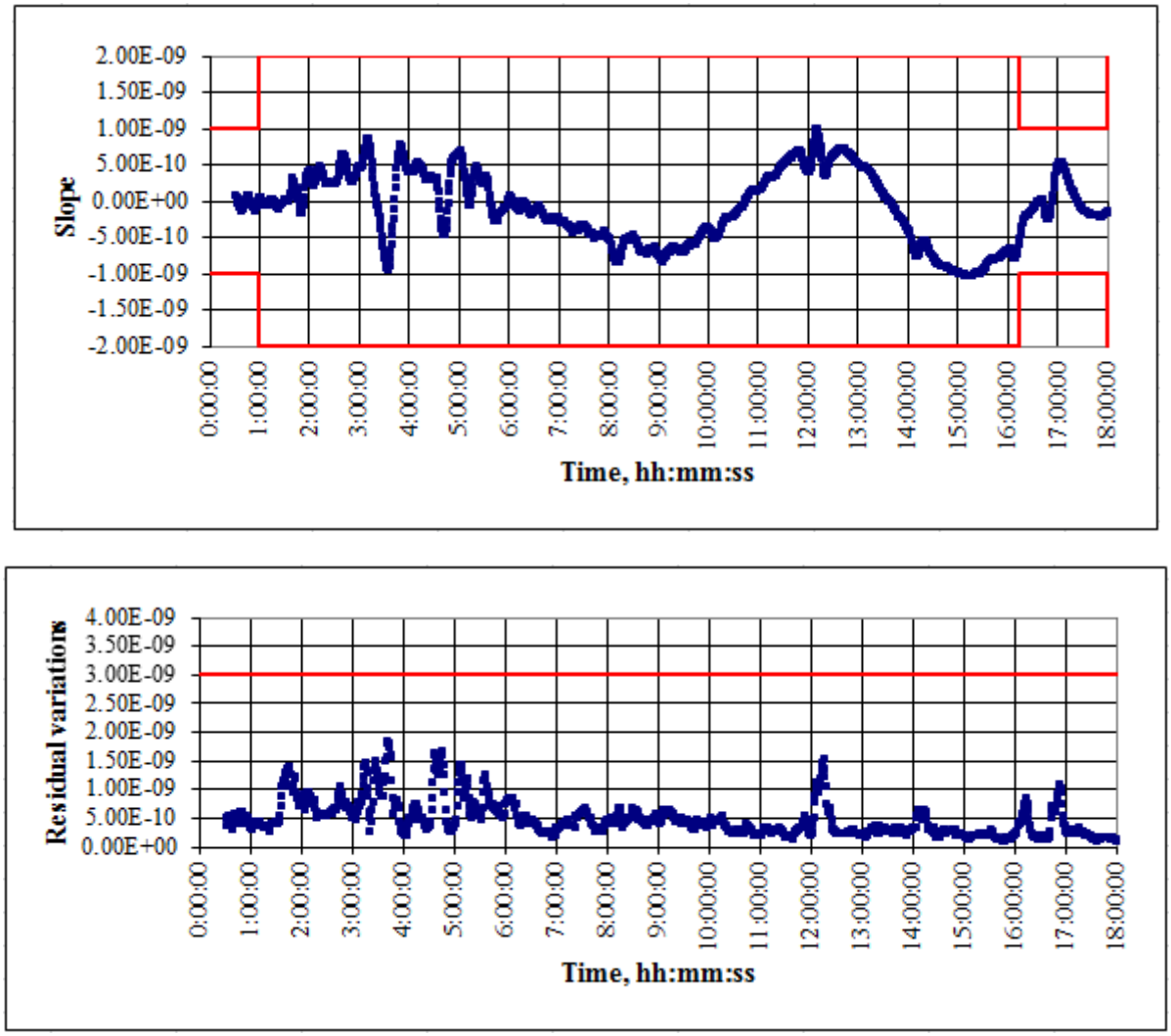


Figure 5.5.6 – Medium-Term Stability

b) Transmitter Power Output (according to C/S T.007 – section A.3.2.2.1).

- **Transmitter Power Output Level (A.3.2.2.1)**

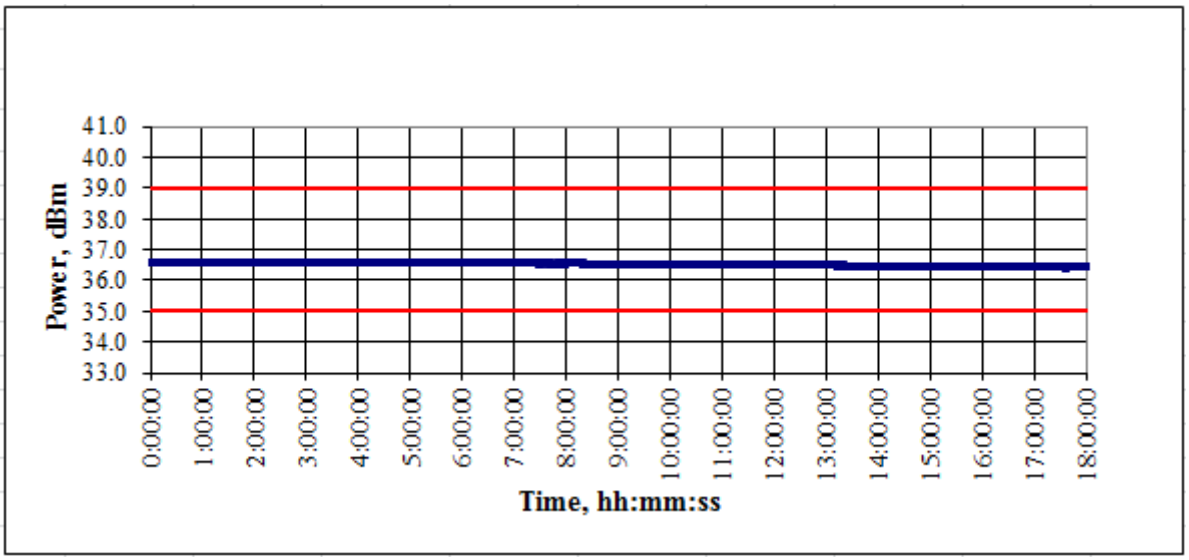


Figure 5.5.7 – Transmitter power during test

c) Message Coding (according to C/S T.007 - A.3.1.4)

Bursts received	1313
BCH error	0
Self test message	0
Full HEX message	fffe2f8c9e0000007fdffa79ed3783e0f66c

Decoding Beacon Message
Full-HEX: fffe2f8c9e0000007fdffa79ed3783e0f66c

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard Test Location Protocol	37- 40	1110
Binary data (24 bits, i.e. max=0xFF FFFF): 0x00 0000	41- 64	0000 0000 0000 0000 0000 0000
Latitude: Default		
Latitude Base: Default	65- 74	01 1111 1111
Longitude: Default		
Lonitude Base: Default	75- 85	011 1111 1111
BCH1: 0x09 E7B4	86-106	0 1001 1110 0111 1011 0100
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-122	10 0000 1111
Longitude Delta: Default	123-132	10 0000 1111
BCH2: 0x66C	133-144	0110 0110 1100

Gradient down ramp

Table of measured parameters.

Message	
Contents (full)	:fffe2f8c9e0000007fdffa79ed3783e0f66c

Test duration 19:14:59	Bursts received 1384		BCH error 0	Self-Test 0	
406 MHz Transmitter Parameters	**Limits**		**Measured**		
	min	**max**	**min**	**current**	**max**
Frequency, MHz	406.039	406.041	406.039924	406.039954	406.039990
Power, dBm	35	39	36.47	37.08	37.16
slope (C+15 to D and E+15 to F)	-1.00E-09	1.00E-09	-6.76E-10	6.62E-11	1.01E-10
slope (D to E+15)	-2.00E-09	2.00E-09	-6.28E-10		1.05E-09
Residual variations	0.00E+00	3.00E-09	1.71E-10	5.55E-10	1.24E-09
Short term variations	0.00E+00	2.00E-09	8.21E-11	1.22E-10	3.04E-10

121.5 MHz Transmitter Parameters			
Carrier Frequency, Hz	121649934	**Low Sweep Frequency, Hz**	374
Power, dBm	12.74 – 13.24	**High Sweep Frequency, Hz**	1166
Sweep Period, sec	0.3	**Sweep Range, Hz**	792
Modulation Index, %	100		

Note: The homer transmitter's parameters were retested at ambient, minimum and maximum temperatute during the additional test on 18.12.17 – 19.12.17 in accordance with the requirements of CSS (see pp. 34, 45, 55)

d) Transmitted Frequency (according to C/S T.007 – section A.3.2.1)

- **Nominal Value (A.3.2.1.1)**

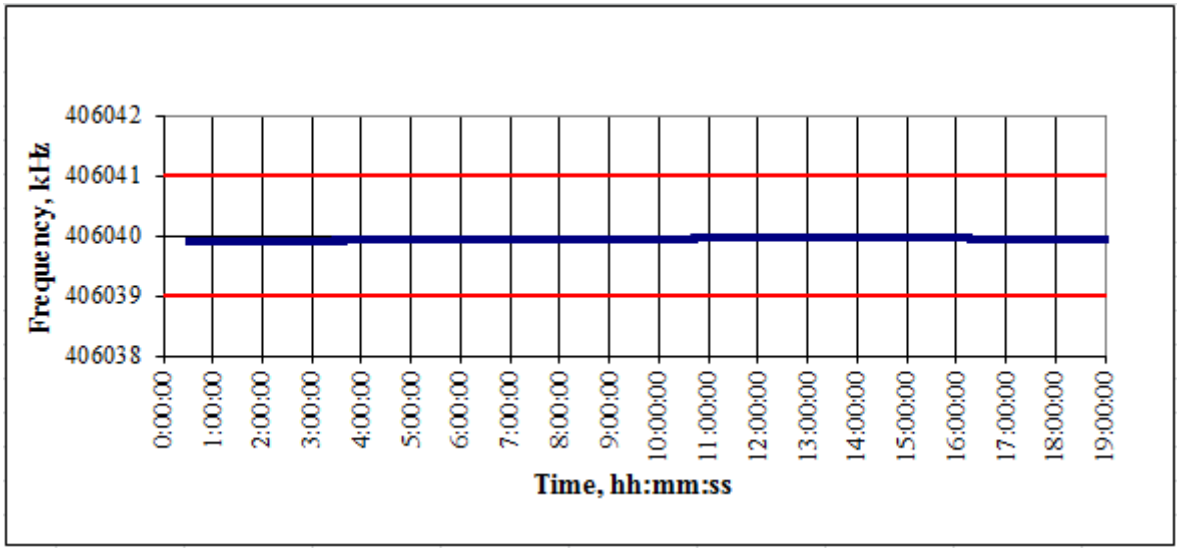


Figure 5.5.8 – Nominal Value of frequency

- **Short-Term Stability (A.3.2.1.2)**

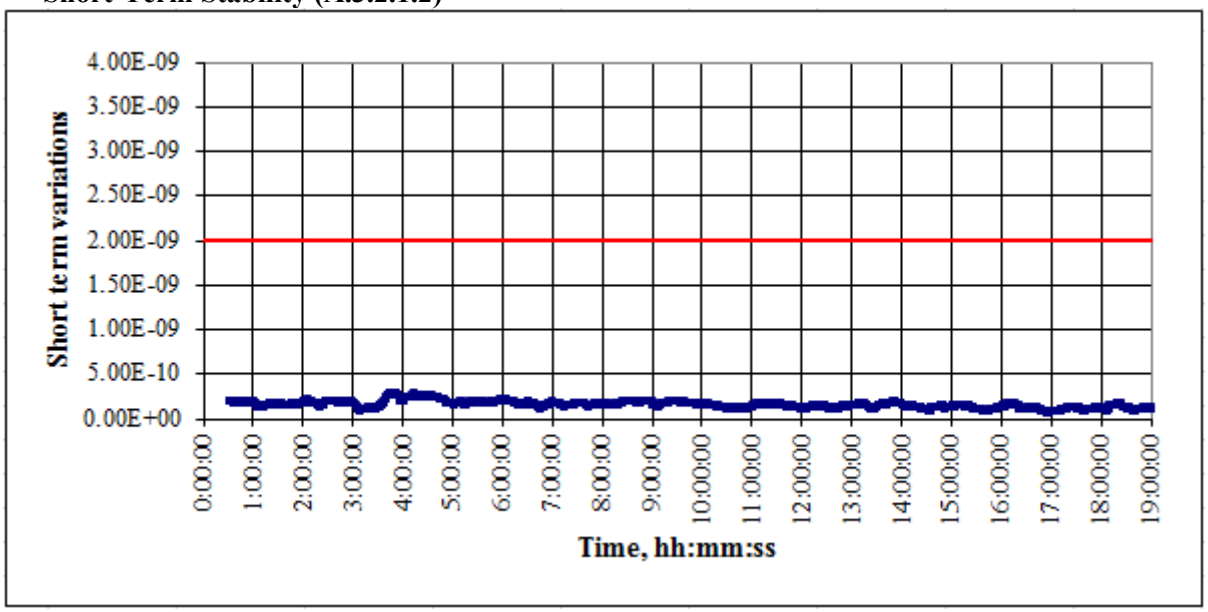
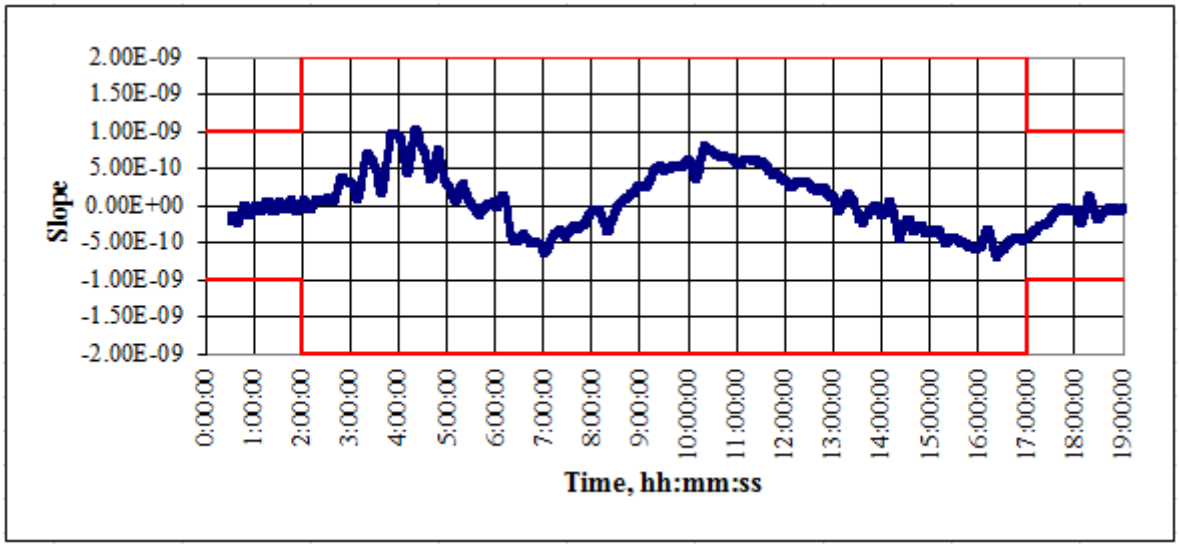


Figure 5.5.9 – Short-Term Stability

- **Medium-Term Stability (A.3.2.1.3)**
-



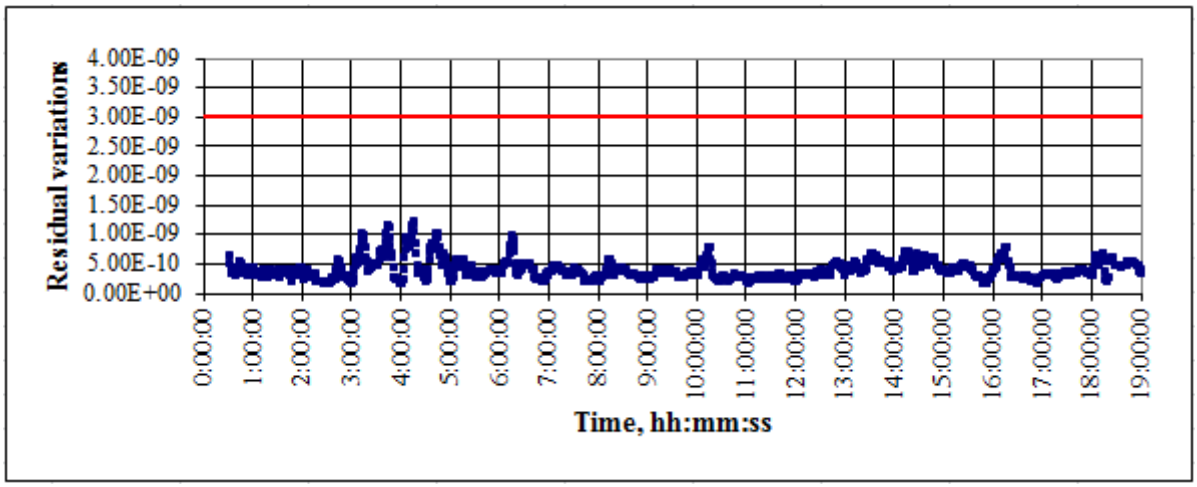


Figure 5.5.10 – Medium-Term Stability

e) Transmitter Power Output (according to C/S T.007 – section A.3.2.2.1).

- **Transmitter Power Output Level (A.3.2.2.1)**

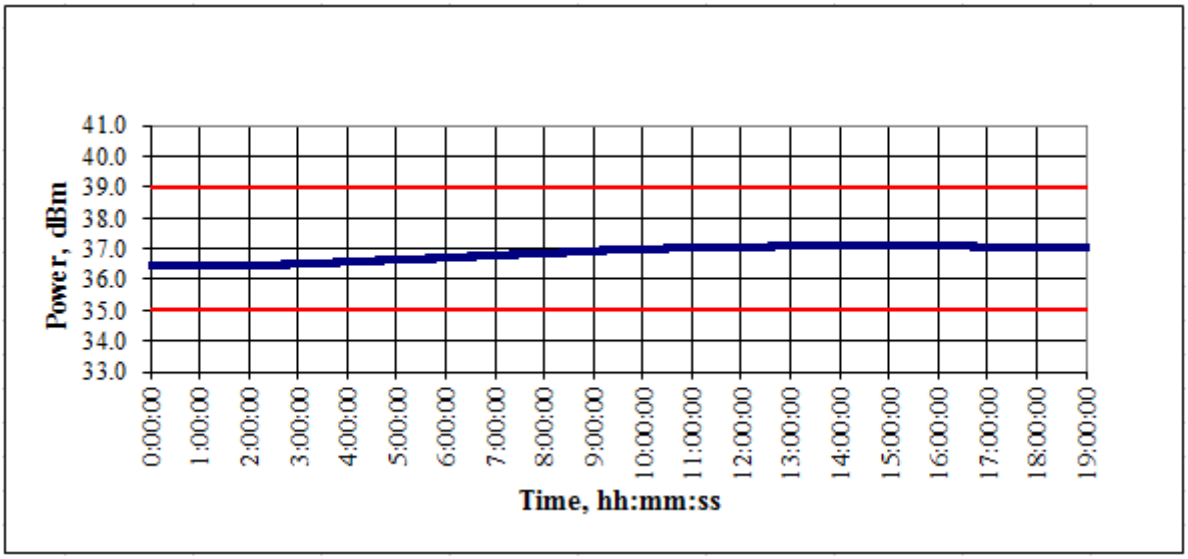


Figure 5.5.11 – Transmitter power during test

f) Message Coding (according to C/S T.007 - A.3.1.4)

Bursts received	1384
BCH error	0
Self test message	0
Full HEX message	fffe2f8c9e0000007fdffa79ed3783e0f66c

Decoding Beacon Message

Full-HEX: fffe2f8c9e0000007fdffa79ed3783e0f66c

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard Test Location Protocol	37- 40	1110
Binary data (24 bits, i.e. max=0xFF FFFF): 0x00 0000	41- 64	0000 0000 0000 0000 0000 0000
Latitude: Default		
Latitude Base: Default	65- 74	01 1111 1111
Longitude: Default		
Lonitude Base: Default	75- 85	011 1111 1111
BCH1: 0x09 E7B4	86-106	0 1001 1110 0111 1011 0100
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-122	10 0000 1111
Longitude Delta: Default	123-132	10 0000 1111
BCH2: 0x66C	133-144	0110 0110 1100

5.5 Oscillator Aging

Date of analysis	17.03.2016
Specification	C/S IP (TCXO)
Beacon Model	MT603FG
EUT Mod State	0
Oscillator Manufacturer and Model (or P/N):	Rakon UK Limited TCXO E5344LF(T)
Oscillator S/N	NK9508
Reference documents	TCXO Manufacturer's spread sheet data for NK9508 (TCXO Data Sheet E5344LF(T).pdf)
Environmental conditions:	Ambient laboratory temperature: 18.0-18.6°C Relative air humidity: 45-47 %
Deviations from standard test procedures	There were no deviations from standard test procedures
Non-compliances noticed	Gradient mean slope MTS by Point by point analysis are Fail; Pass with MU 0.1 ppb applied.

Test description

Point by point analysis method according to Interim Procedure (Rev.5 Oct. 2013) was used for the purpose of determining the compliance of beacons equipped with a TCXO with the Cospas-Sarsat requirements concerning the beacon medium-term frequency stability.

The Rakon UK Limited part number E5344LF(T), serial number NK9508 is installed in Beacon Model MT603FG serial number 1410407582 according to beacon manufacturer's statement (see Annex A, page 269). Technical data for TCXO part number E5344LF(T), serial number NK9508 and details of calculation are presented in file " MT603FG_TCXO_Point_by_Point_analysis.xls". Result of calculation is showed in tables below.

Table A-2: Point by Point Analysis

MTS Characteristic	Time	Temp. C°	tot	osc	beacon wc	MAX-OSC / MIN-OSC	beacon max/ min	ageing factor	beacon 5 year	C/S spec	Pass/ Fail
Residual, ppb	3:24:40	-6.5°C (Up-ramp)	1.847	0.309	1.821	2	2.705	0.2	2.905	3	Pass
Static Positive Mean Slope, ppb/min	16:44:12	55.0°C (Up-ramp)	0.553	0.094	0.545	0.7	0.887	0.1	0.987	1	Pass
Static Negative Mean Slope, ppb/min	16:30:02	-20.0°C (Down-ramp)	-0.134	0.221	-0.259	-0.7	-0.746	0.1	-0.846	-1	Pass
Gradient Positive Mean Slope, ppb/min	11:50:52	44.6°C (Down-ramp)	1.052	0.041	1.051	1.7	1.999	0.1	2.099	2	Fail. Pass with MU
Gradient Negative Mean Slope, ppb/min	3:16:40	-8.7°C (Up-ramp)	-0.945	0.440	-1.043	-1.7	-1.994	0.1	-2.094	-2	Fail. Pass with MU

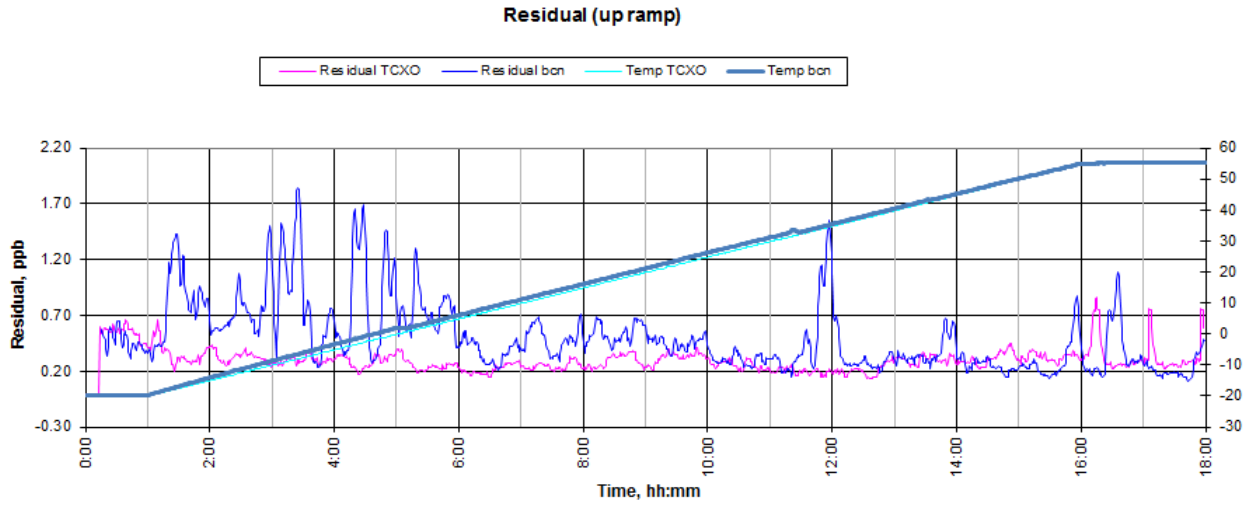


Fig. 5.5.1 Residual (up rump) during Temperature Gradient Test

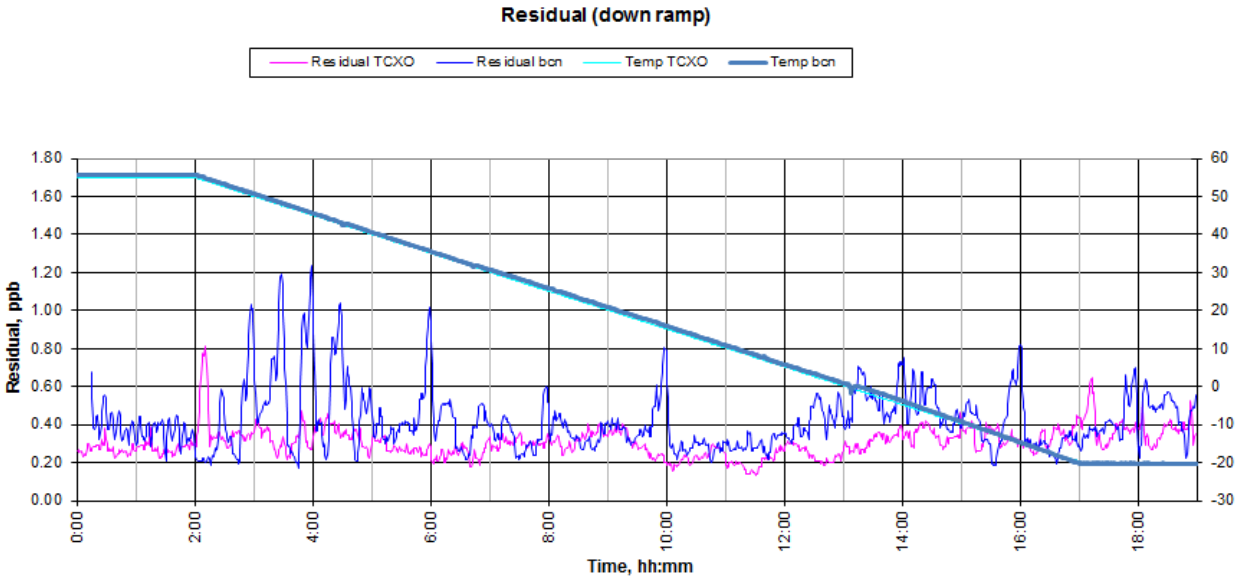


Fig. 5.5.2 Residual (down rump) during Temperature Gradient Test

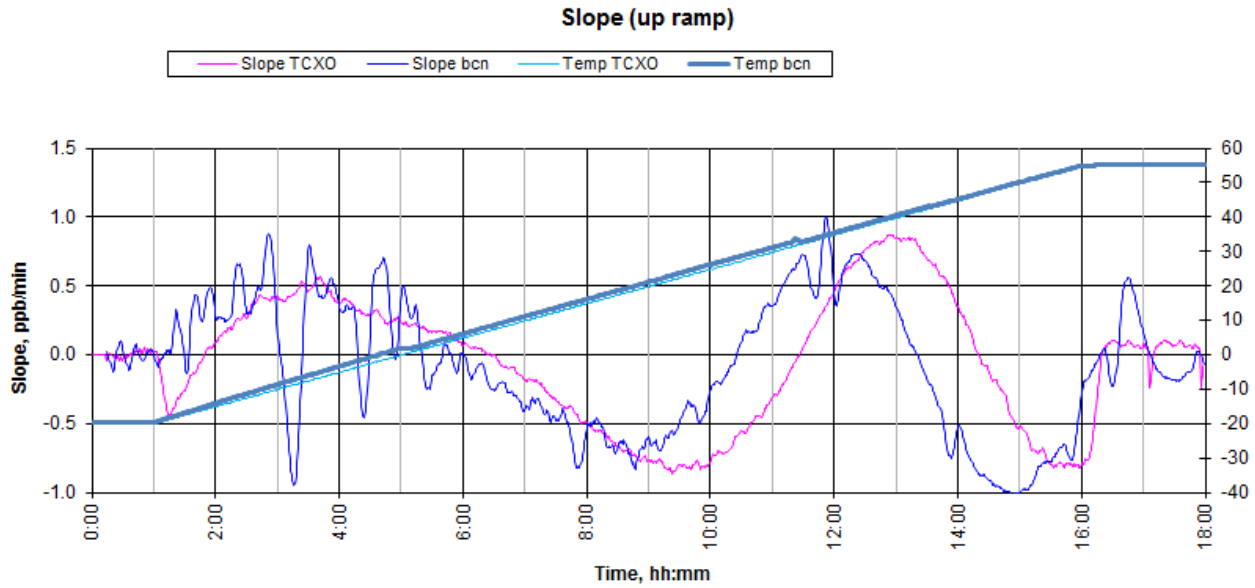


Fig. 5.5.3 Slope (up ramp) during temperature gradient test

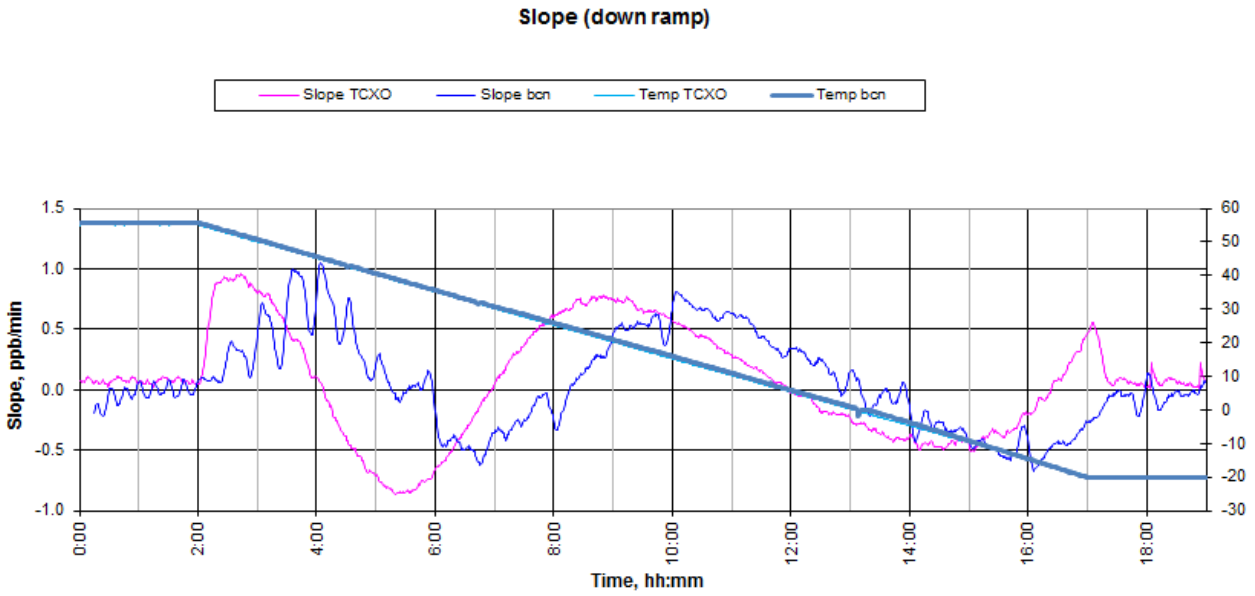


Fig. 5.5.4 Slope (down ramp) during temperature gradient test

5.6 Antenna Characteristics

Date of tests	
Specification	C/S T.007 – section A.2.6
Beacon Model	MT603FG
Serial number	97MT400ANT
EUT Mod State	0
EUT system configuration, including antenna, external ancillary devices and modes of their operation	The EUT was operated using its own power source (internal battery). The EUT was a fully packaged beacon, similar to the proposed production beacons equipped with its proper antenna
Beacon antenna model (P/N)	
Measurement antenna type and model	Tuned dipole, FCC-4
Environmental conditions	Ambient laboratory temperature: 23.0-26.0°C Relative air humidity: 45-62 %
Deviations from standard test procedures	There were no deviations from standard test procedures
Non-compliances noticed	There were not non-compliances

5.6.1 Test Configuration 1: "Water" Ground Plane (C/S T.007, Figure B.4)

Test site:
The measurement was performed in accordance with Figures B.4 C/S T.007.

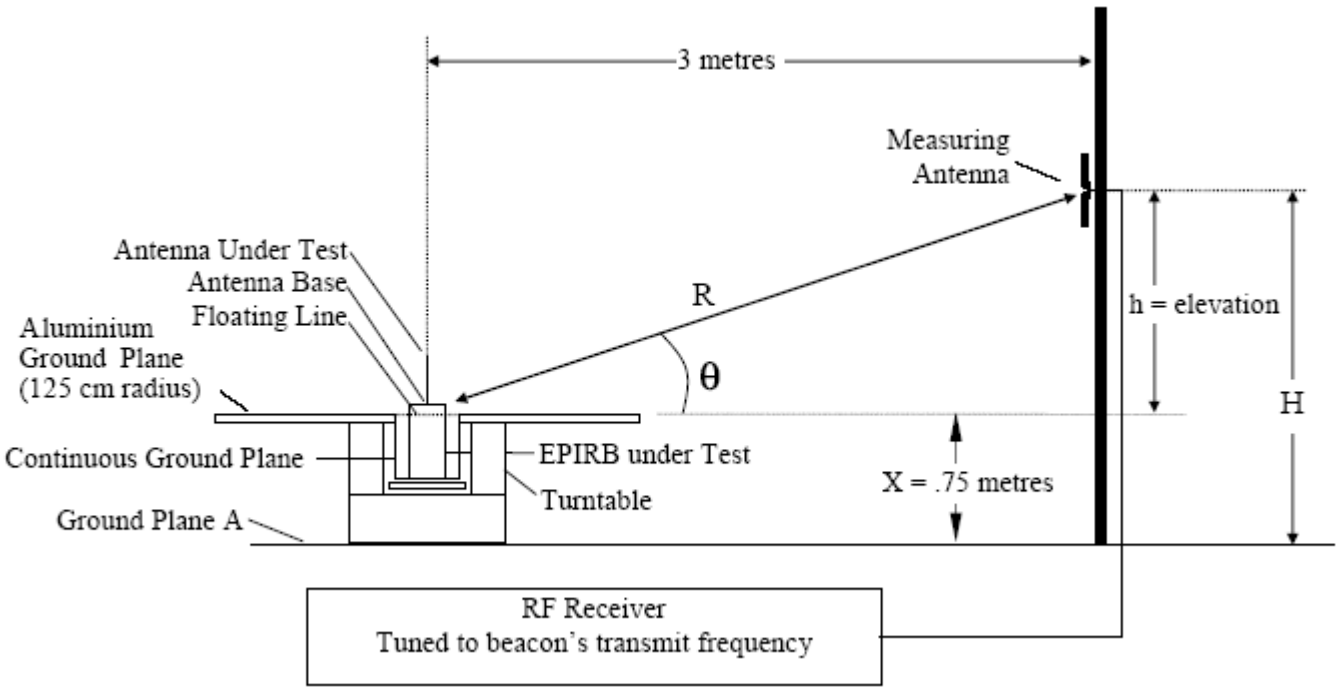


Table F-B.2: Induced Voltage Measurements Vv / Vh (dBuV)

Azimuth Angle (degrees)	Elevation Angle (degrees)				
	10	**20**	**30**	**40**	**50**
0	113.60 / 96.00	111.30 / 95.50	109.90 / 86.70	108.20 / 92.30	101.40 / 90.60
30	113.20 / 96.80	110.70 / 96.60	110.10 / 87.00	108.50 / 89.80	101.80 / 88.80
60	113.50 / 96.20	110.70 / 96.80	109.90 / 90.60	108.50 / 91.70	102.10 / 82.90
90	113.50 / 96.60	110.40 / 97.10	109.70 / 89.40	108.40 / 90.10	102.00 / 88.60
120	113.70 / 95.70	110.40 / 96.40	109.60 / 91.10	108.60 / 92.50	102.20 / 90.30
150	113.80 / 94.80	110.20 / 96.00	109.90 / 89.60	108.70 / 93.20	102.20 / 91.20
180	113.90 / 93.80	110.40 / 95.70	110.10 / 91.70	108.90 / 95.60	~~**101.90 / 92.40**~~
210	113.50 / 94.30	110.30 / 96.30	110.00 / 91.70	108.60 / 94.80	101.80 / 91.20
240	113.50 / 94.90	111.10 / 96.20	109.50 / 92.40	108.40 / 94.50	101.70 / 91.50
270	113.60 / 96.00	111.20 / 97.10	109.60 / 91.20	108.40 / 91.30	101.70 / 90.80
300	113.70 / 95.40	110.80 / 96.40	109.80 / 91.20	108.90 / 92.80	102.00 / 91.70
330	113.80 / 95.50	110.60 / 96.00	109.80 / 88.80	108.60 / 90.50	101.80 / 89.40
Min(Vv-Vh)	16.40	13.30	17.10	13.30	9.50

Note: Red highlighted text to indicate all induced voltage measurements that are within 10 dB of each other.

406 MHz BEACON ANTENNA TEST RESULTS

Table F-B.1: Effective isotropically radiated power (dBm) / antenna gain (dBi)

Azimuth Angle (degrees)	Elevation Angle (degrees)				
	10	**20**	**30**	**40**	**50**
0	41.30 / 4.67	39.44 / 2.82	38.66 / 2.03	38.12 / 1.49	33.08 / -3.55
30	40.92 / 4.29	38.90 / 2.27	38.86 / 2.23	38.36 / 1.74	33.34 / -3.29
60	41.20 / 4.58	38.90 / 2.28	38.69 / 2.06	38.40 / 1.77	33.48 / -3.15
90	41.21 / 4.58	38.63 / 2.00	38.48 / 1.85	38.27 / 1.64	33.52 / -3.10
120	41.39 / 4.76	38.60 / 1.97	38.40 / 1.77	38.51 / 1.88	33.80 / -2.83
150	41.48 / 4.85	38.39 / 1.77	38.68 / 2.05	38.63 / 2.00	33.86 / -2.77
180	41.57 / 4.94	38.58 / 1.95	38.90 / 2.28	38.90 / 2.28	33.69 / -2.94
210	41.18 / 4.55	38.50 / 1.87	38.80 / 2.18	38.58 / 1.96	33.49 / -3.14
240	41.18 / 4.56	39.27 / 2.64	38.32 / 1.70	38.38 / 1.75	33.43 / -3.20
270	41.30 / 4.67	39.40 / 2.77	38.40 / 1.78	38.29 / 1.66	33.37 / -3.26
300	41.39 / 4.76	38.99 / 2.36	38.60 / 1.97	38.81 / 2.18	33.72 / -2.91
330	41.49 / 4.86	38.78 / 2.15	38.57 / 1.95	38.47 / 1.85	33.37 / -3.25

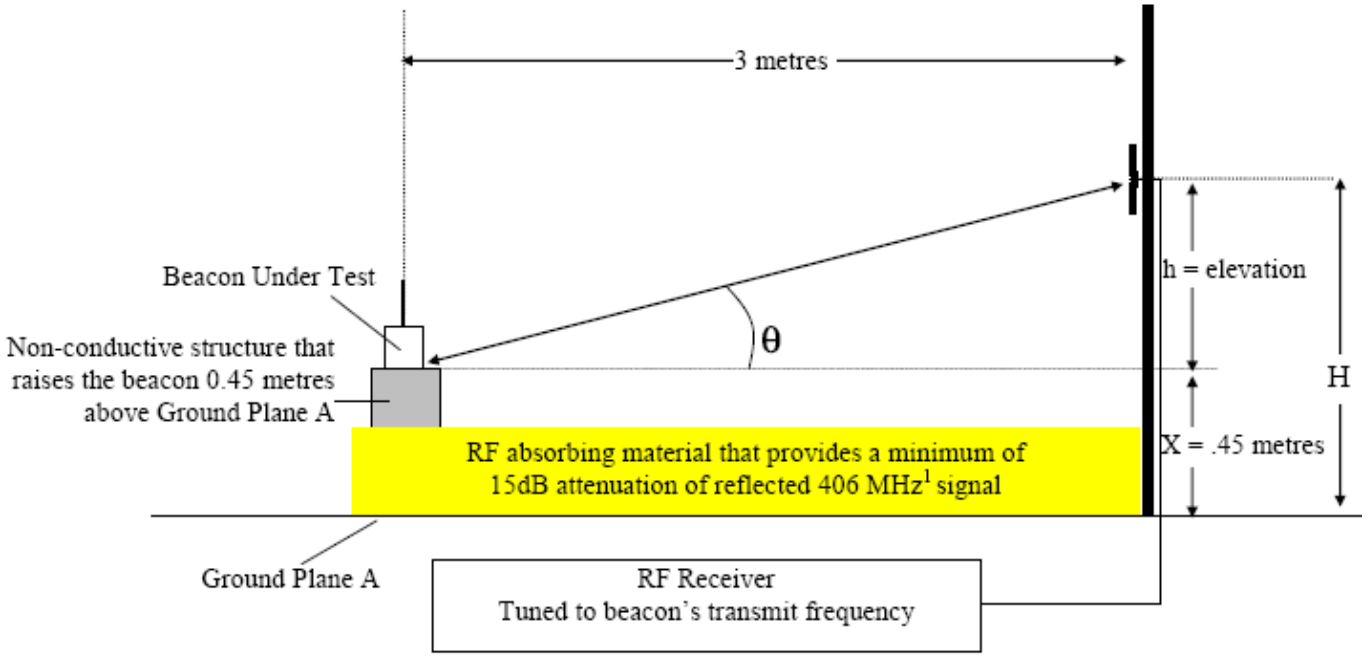
$EIRP_{LOSS} = P_{t\ ambient} - P_{t\ EOL} = 36.63-36.47 = 0.16$ dB

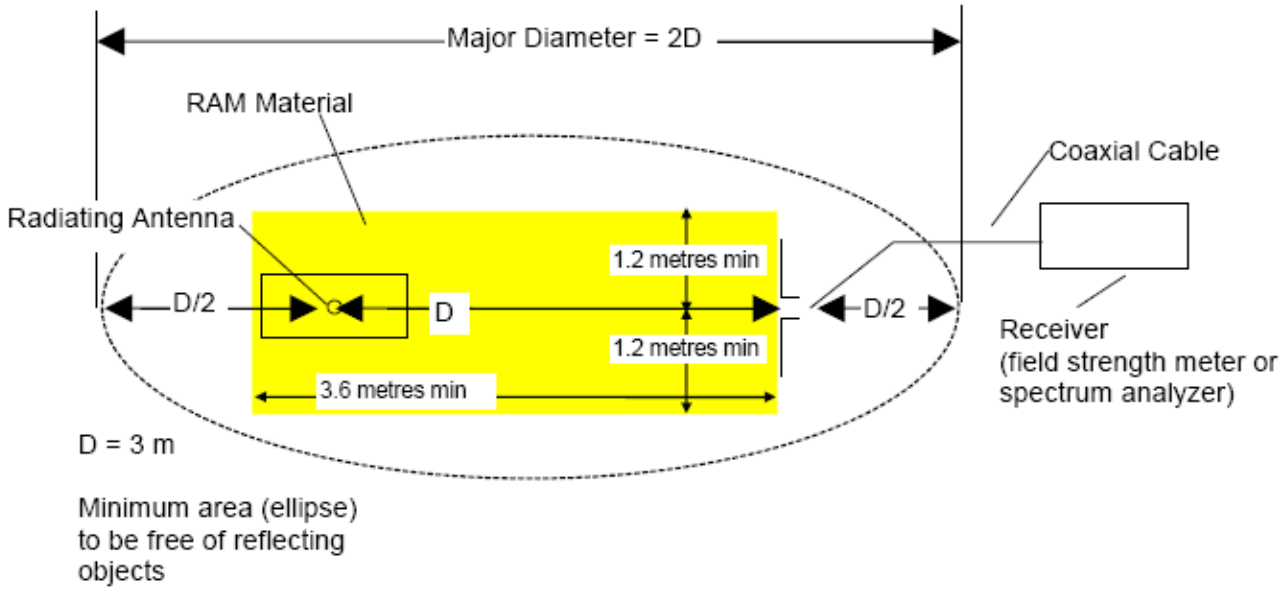
$EIRP_{max\ EOL} = MAX [EIRP_{max} , (EIRP_{max} - EIRP_{LOSS})] = MAX (41.57,41.41)=41.57$ dBm (<= 43 dBm)

$EIRP_{min\ EOL} = MIN [EIRP_{min} , (EIRP_{min} – EIRP_{LOSS})] = MIN (33.08, 32.92)=32.92$ dBm (>= 32 dBm)

5.6.2 Test Configuration 4: Beacon Above Ground Plane

Test site.
The measurement was performed in accordance with Figures B.5 C/S T.007.





406 MHz BEACON ANTENNA TEST RESULTS

Table F-B.3: Equivalent Isotropically Radiated Power (dBm) / Antenna Gain (dBi)

Azimuth Angle (degrees)	Elevation Angle (degrees)				
	10	20	30	40	50
0	35.58 / -1.04	36.80 / 0.17	37.10 / 0.47	35.31 / -1.32	33.33 / -3.30
90	35.27 / -1.36	36.59 / -0.04	36.80 / 0.17	35.01 / -1.62	33.11 / -3.51
180	35.58 / -1.05	36.80 / 0.17	37.01 / 0.38	35.36 / -1.27	33.22 / -3.41
270	35.77 / -0.86	36.99 / 0.36	37.29 / 0.67	35.81 / -0.82	34.17 / -2.46

$EIRP_{LOSS} = P_{t\ ambient} - P_{t\ EOL} = 36.63-36.47 = 0.16$ dB

$EIRP_{max\ EOL} = MAX [EIRP_{max} , (EIRP_{max} - EIRP_{LOSS})] = MAX (37.3, 37.1)=37.3$ dBm (<= 43 dBm)

$EIRP_{min\ EOL} = MIN [EIRP_{min} , (EIRP_{min} - EIRP_{LOSS})] = MIN (33.1, 33)=33$ dBm (>= 30 dBm)

5.7 Beacon Coding Software

Date of test Date of additional test of the NUP	18.03.2016 26.12.2017
Specification	C/S T.007 – section A.2.1
Beacon Model	MT603FG
EUT Mod State	0
Performed by	Manufacturer
Verified by	Test facility
Measurement Equipment, provided by beacon manufacturer	N/A
Reference documents	C/S T.007 – Annex C
Environmental conditions:	Ambient laboratory temperature: 18.0-20.6°C Relative air humidity: 45-55 %
Deviations from standard test procedures	There were no deviations from standard test procedures
Non-compliances noticed	There were not non-compliances

Beacon coding software test was carried out by beacon manufacturer as it is allowed by CS T.007 and test result provided below.

Test facility carried out additional navigation test with National User (Long) Protocol as requred by the CS Secretariat.

Pages of test report of Standard Location, National Location, User and User Location protocols

Protocol type		Page No.			
		Decoded operational message, location A	**Decoded operational message, location B**	**Decoded self-test message**	**Decoded GNSS self-test message**
1.	Standard Location: EPIRB with MMSI	111	112	113	114
2.	Standard Location: EPIRB with Serial Number	115	116	117	118
3.	National Location: EPIRB	119	120	121	122
4.	National User: Long	Message has no location data See result of additional test in page 121		123	123
5.	User Location: Maritime Protocol with MMSI	125	126	127	128
6.	User Location: Maritime Protocol with Radio Call Sign	129	130	131	132
7.	User Location: Radio Call Sign	133	134	135	136
8.	Serial User Location: Float-Free EPIRB	137	138	139	140
9.	Serial User Location: Non Float-Free EPIRB	141	142	143	144

Table F-D.1: Examples of User Protocol Beacon Messages

Protocol	Operational Message (in hexadecimal including bit and frame synchronisation bits)	Self-Test Message (in hexadecimal including bit and frame synchronisation bits)
Maritime User Protocol with MMSI	N/A	N/A
Maritime User Protocol with Radio Call Sign	N/A	N/A
Radio Call Sign User Protocol	N/A	N/A
Serial User: Float-Free EPIRB with Serial Number	N/A	N/A
Serial User: Non Float-Free EPIRB with Serial Number	N/A	N/A
Aviation User Protocol	N/A	N/A
Serial User: ELT with Serial Number	N/A	N/A
Serial User: ELT with Aircraft Operator Designator & Serial Number	N/A	N/A
Serial User: ELT with Aircraft 24-bit address	N/A	N/A
Serial User: PLB with Serial Number	N/A	N/A
National User (Short)	N/A	N/A
National User (Long)	FFFE2FCC98E08C800 0000165E98000000000	FFFED0CC98E08C800 0000165E98000000000
User Test	N/A	N/A

The additional test was carried out for the National User (Long) Protocol as required the CS Secretariat (see page 121).

Test procedure.

The test site includes a GNSS simulator connected to the external antenna. The initial location data of the GPS signal was set to N44° 44.5’ E033° 33.5’. Beacon was activated. Latitude data from the simulator changed to 5.0’ every 5 minutes.

Table F-D.2: Examples of Standard and National Location Protocol Beacon Messages

Protocol	Operational Message (in hexadecimal including bit and frame synchronisation bits)		Self-Test Message (in hexadecimal including bit and frame synchronisation bits)	GNSS Self Test Message (in hexadecimal including bit and frame synchronisation bits)
	Location "A" [1] N:44°35′16″, E:33°29′20″	Location "B" [1] N: 44°31′20″, E: 33°33′00″		Location "A" N:44°35′16″, E:33°29′20″
Standard Location: EPIRB with MMSI	FFFE2F8C92F423F02C842B1503F7952E5AC9	FFFE2F8C92F423F02C8431CF8AB785630AB0	FFFED08C92F423F07FDFFB2BF03783E0F66C	FFFED08C92F423F02C842B1503F7952E5AC9
Standard Location: EPIRB with Serial Number	FFFE2F8C96F9C0632C8429AC1CF7952E5AC9	FFFE2F8C96F9C0632C84337695B785630AB0	FFFED08C96F9C0637FDFF992EF3783E0F66C	FFFED08C96F9C0632C8429AC1CF7952E5AC9
Standard Location: ELT with 24-bit Address	N/A	N/A	N/A	N/A
Standard Location: ELT with Serial Number	N/A	N/A	N/A	N/A
Standard Location: ELT with Aircraft Operator Designator	N/A	N/A	N/A	N/A
Standard Location: PLB with Serial Number	N/A	N/A	N/A	N/A
Standard Location: Test	N/A	N/A	N/A	N/A
National Location: EPIRB	FFFE2F8C9A00000B222172C5CCB7A9540F06	FFFE2F8C9A00000B1E21866C5F37AB400CC6	FFFED08C9A00001FC0FF021F5DB79F3C0010	FFFED08C9A00000B222172C5CCB7A9540F06
National Location: ELT	N/A	N/A	N/A	N/A
National Location: PLB	N/A	N/A	N/A	N/A
National Location: Test	N/A	N/A	N/A	N/A
RLS Location: (ELT,EPIRB or PLB) [2]	N/A	N/A	N/A	N/A

[1] Location "A" and location "B" must be separated by at least 500 meters for the Standard, National and RLS location protocols.

[2] RLS protocols will be effective as of 1 November 2015. The use of RLS-enabled beacons will be regulated by national administrations.

Table F-D.3: Examples of User-Location Protocol Beacon Messages

Protocol	Operational Message (in hexadecimal including bit and frame synchronisation bits)		Self-Test Message (in hexadecimal including bit and frame synchronisation bits)	GNSS Self Test Message (if applicable, in hexadecimal, including bit and frame synchronisation bits)
	Location "A"	Location "B"		Location "A"
Maritime Protocol with MMSI	FFFE2FCC9418618618 6689DE52A59221788C	FFFE2FCC9418618618 6689DE52A59021875F	FFFED0CC9418618618 6689DE52AFE0FF0146	FFFED0CC9418618618 6689DE52A59221788C
Maritime Protocol with Radio Call Sign	FFFE2FCC946EF6F06B 268BD3F3A59221788C	FFFE2FCC946EF6F06B 268BD3F3A59021875F	FFFED0CC946EF6F06B 268BD3F3AFE0FF0146	FFFED0CC946EF6F06B 268BD3F3A59221788C
Radio Call Sign	FFFE2FCC9C6EF6F005 468D0ACC259221788C	FFFE2FCC9C6EF6F005 468D0ACC259021875F	FFFED0CC9C6EF6F005 468D0ACC2FE0FF0146	FFFED0CC9C6EF6F005 468D0ACC259221788C
Serial User-Location: Float-Free EPIRB	FFFE2FCC96A000C600 7CEEBD42E59221788C	FFFE2FCC96A000C600 7CEEBD42E59021875F	FFFED0CC96A000C600 7CEEBD42EFE0FF0146	FFFED0CC96A000C600 7CEEBD42E59221788C
Serial User-Location: Non Float-Free EPIRB	FFFE2FCC972000C600 7CEB7FB1659221788C	FFFE2FCC972000C600 7CEB7FB1659021875F	FFFED0CC972000C600 7CEB7FB16FE0FF0146	FFFED0CC972000C600 7CEB7FB1659221788C
Aviation	N/A	N/A	N/A	N/A
Serial User-Location: ELT	N/A	N/A	N/A	N/A
Serial User-Location: ELT with Aircraft Operator Designator & Serial Number	N/A	N/A	N/A	N/A
Serial User-Location: ELT with Aircraft 24-bit address	N/A	N/A	N/A	N/A
Serial User-Location: PLB	N/A	N/A	N/A	N/A

Decoded messages

Standard Location: EPIRB with MMSI, Location “A”
Full Hex message: FFFE2F8C92F423F02C842B1503F7952E5AC9

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard EPIRB - MMSI/Location Protocol	37- 40	0010
Last 6 digits of MMSI: 999999	41- 60	1111 0100 0010 0011 1111
Specific beacon number: 00	61- 64	0000
Latitude: N 44°35'16"		
Latitude Base Sign: North	65	0
Latitude Base(15' step): 44°30'	66- 74	0 1011 0010
Longitude: E 33°29'20"		
Longitude Base Sign: East	75	0
Longitude Base (step 15'): 33°15'	76- 85	00 1000 0101
BCH1: 0x0C 540F	86-106	0 1100 0101 0100 0000 1111
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta Sign: +	113	1
Latitude Delta Minute (0..30): 5	114-118	0 0101
Latitude Delta Seconds (4 seconds step): 16	119-122	0100
Longitude Delta Sign: +	123	1
Longitude Delta Minute (0..30): 14	124-128	0 1110
Longitude Delta Seconds (4 seconds step): 20	129-132	0101
BCH2: 0xAC9	133-144	1010 1100 1001

Standard Location: EPIRB with MMSI, Location “B”
Full Hex message: FFFE2F8C92F423F02C8431CF8AB785630AB0

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard EPIRB - MMSI/Location Protocol	37- 40	0010
Last 6 digits of MMSI: 999999	41- 60	1111 0100 0010 0011 1111
Specific beacon number: 00	61- 64	0000
Latitude: N 44°31' 20"		
Latitude Base Sign: North	65	0
Latitude Base(15' step): 44°30'	66- 74	0 1011 0010
Longitude: E 33°33' 00"		
Longitude Base Sign: East	75	0
Longitude Base (step 15'): 33°30'	76- 85	00 1000 0110
BCH1: 0x07 3E2A	86-106	0 0111 0011 1110 0010 1010
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta Sign: +	113	1
Latitude Delta Minute (0..30): 1	114-118	0 0001
Latitude Delta Seconds (4 seconds step): 20	119-122	0101
Longitude Delta Sign: +	123	1
Longitude Delta Minute (0..30): 3	124-128	0 0011
Longitude Delta Seconds (4 seconds step): 00	129-132	0000
BCH2: 0xAB0	133-144	1010 1011 0000

Standard Location: EPIRB with MMSI, Self-Test Message
Full Hex message: FFFED08C92F423F07FDFFB2BF03783E0F66C

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0xD0	16- 24	0 1101 0000
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard EPIRB - MMSI/Location Protocol	37- 40	0010
Last 6 digits of MMSI: 999999	41- 60	1111 0100 0010 0011 1111
Specific beacon number: 00	61- 64	0000
Latitude: Default		
Latitude Base: Default	65- 74	01 1111 1111
Longitude: Default		
Lonitude Base: Default	75- 85	011 1111 1111
BCH1: 0x0C AFC0	86-106	0 1100 1010 1111 1100 0000
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-122	10 0000 1111
Longitude Delta: Default	123-132	10 0000 1111
BCH2: 0x66C	133-144	0110 0110 1100

Standard Location: EPIRB with MMSI, GNSS Self Test Message
Full Hex message: FFFED08C92F423F02C842B1503F7952E5AC9

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 1101 0000
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard EPIRB - MMSI/Location Protocol	37- 40	0010
Last 6 digits of MMSI: 999999	41- 60	1111 0100 0010 0011 1111
Specific beacon number: 00	61- 64	0000
Latitude: N 44°35'16"		
Latitude Base Sign: North	65	0
Latitude Base(15' step): 44°30'	66- 74	0 1011 0010
Longitude: E 33°29'20"		
Longitude Base Sign: East	75	0
Longitude Base (step 15'): 33°15'	76- 85	00 1000 0101
BCH1: 0x0C 540F	86-106	0 1100 0101 0100 0000 1111
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta Sign: +	113	1
Latitude Delta Minute (0..30): 5	114-118	0 0101
Latitude Delta Seconds (4 seconds step): 16	119-122	0100
Longitude Delta Sign: +	123	1
Longitude Delta Minute (0..30): 14	124-128	0 1110
Longitude Delta Seconds (4 seconds step): 20	129-132	0101
BCH2: 0xAC9	133-144	1010 1100 1001

Standard Location: EPIRB with Serial Number, Location “A”
Full-HEX: FFFE2F8C96F9C0632C84337695B79500A39A

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard EPIRB serial	37- 40	0110
Cospas-Sarsat Certificate Number (1-1023): 999	41- 50	11 1110 0111
Serail Number (1 to 16 383): 00 099	51- 64	00 0000 0110 0011
Latitude: N 44°35' 16"		
Latitude Base Sign: North	65	0
Latitude Base(15' step): 44°30'	66- 74	0 1011 0010
Longitude: E 33°29' 20"		
Longitude Base Sign: East	75	0
Longitude Base (step 15'): 33°15'	76- 85	00 1000 0101
BCH1: 0x06 B073	86-106	0 0110 1011 0000 0111 0011
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta Sign: +	113	1
Latitude Delta Minute (0..30): 5	114-118	0 0101
Latitude Delta Seconds (4 seconds step): 16	119-122	0100
Longitude Delta Sign: +	123	1
Longitude Delta Minute (0..30): 14	124-128	0 1110
Longitude Delta Seconds (4 seconds step): 20	129-132	0101
BCH2: 0xAC9	133-144	1010 1100 1001

Standard Location: EPIRB with Serial Number, Location “B”
Full Hex message: FFFE2F8C96F9C0632C84337695B785630AB0

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard EPIRB serial	37- 40	0110
Cospas-Sarsat Certificate Number (1-1023): 999	41- 50	11 1110 0111
Serail Number (1 to 16 383): 00 099	51- 64	00 0000 0110 0011
Latitude: N 44°31' 20"		
Latitude Base Sign: North	65	0
Latitude Base(15' step): 44°30'	66- 74	0 1011 0010
Longitude: E 33°33' 00"		
Longitude Base Sign: East	75	0
Longitude Base (step 15'): 33°30'	76- 85	00 1000 0110
BCH1: 0x0D DA56	86-106	0 1101 1101 1010 0101 0110
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta Sign: +	113	1
Latitude Delta Minute (0..30): 1	114-118	0 0001
Latitude Delta Seconds (4 seconds step): 20	119-122	0101
Longitude Delta Sign: +	123	1
Longitude Delta Minute (0..30): 3	124-128	0 0011
Longitude Delta Seconds (4 seconds step): 00	129-132	0000
BCH2: 0xAB0	133-144	1010 1011 0000

Standard Location: EPIRB with Serial Number, Self-Test Message
Full Hex message: FFFED08C96F9C0637FDFF992EF3783E0F66C

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0xD0	16- 24	0 1101 0000
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard EPIRB serial	37- 40	0110
Cospas-Sarsat Certificate Number (1-1023): 999	41- 50	11 1110 0111
Serail Number (1 to 16 383): 00 099	51- 64	00 0000 0110 0011
Latitude: Default		
Latitude Base: Default	65- 74	01 1111 1111
Longitude: Default		
Lonitude Base: Default	75- 85	011 1111 1111
BCH1: 0x06 4BBC	86-106	0 0110 0100 1011 1011 1100
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-122	10 0000 1111
Longitude Delta: Default	123-132	10 0000 1111
BCH2: 0x66C	133-144	0110 0110 1100

Standard Location: EPIRB with Serial Number, GNSS Self Test Message
Full-HEX: FFFED08C96F9C0632C84337695B79500A39A

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 1101 0000
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard EPIRB serial	37- 40	0110
Cospas-Sarsat Certificate Number (1-1023): 999	41- 50	11 1110 0111
Serail Number (1 to 16 383): 00 099	51- 64	00 0000 0110 0011
Latitude: N 44°35' 16"		
Latitude Base Sign: North	65	0
Latitude Base(15' step): 44°30'	66- 74	0 1011 0010
Longitude: E 33°29' 20"		
Longitude Base Sign: East	75	0
Longitude Base (step 15'): 33°15'	76- 85	00 1000 0101
BCH1: 0x06 B073	86-106	0 0110 1011 0000 0111 0011
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta Sign: +	113	1
Latitude Delta Minute (0..30): 5	114-118	0 0101
Latitude Delta Seconds (4 seconds step): 16	119-122	0100
Longitude Delta Sign: +	123	1
Longitude Delta Minute (0..30): 14	124-128	0 1110
Longitude Delta Seconds (4 seconds step): 20	129-132	0101
BCH2: 0xAC9	133-144	1010 1100 1001

National Location: EPIRB, Location “A”
Full Hex message: FFFE2F8C9A00000B222172C5CCB7A9540F06

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long National Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): National EPIRB	37- 40	1010
National ID Number (18 bits, i.e. max=0x3 FFFF): 0x0 0000	41- 58	00 0000 0000 0000 0000
Latitude: N 44° 35' 16"		
Latitude Base Sign: North	59	0
Latitude Base Degree: 44	60- 66	010 1100
Latitude Base Minute (2 minute step): 34	67- 71	1 0001
Longitude: E 33°29' 20"		
Longitude Base Sign: East	72	0
Longitude Base Degree: 33	73- 80	0010 0001
Longitude Base Minute (2 minute step): 28	81- 85	0 1110
BCH1: 0x0B 1732	86-106	0 1011 0001 0111 0011 0010
Fixed bits (3 bits = 110): 6	107-109	110
Additional data type: Position Delta	110	1
Position data source: Internal	111	1
Auxiliary Radio Locating Device : 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta Sign: +	113	1
Latitude Delta Minute (0..3): 1	114-115	01
Latitude Delta Seconds (4 seconds step): 16	116-119	0100
Longitude Delta Sign: +	120	1
Longitude Delta Minute (0..3): 1	121-122	01
Longitude Delta Seconds (4 seconds step): 20	123-126	0101
Additional Beacon Identification (6bit, i.e. max value - 0x3F): 0x00	127-132	00 0000
BCH2: 0xF06	133-144	1111 0000 0110

National Location: EPIRB, Location “B”
Full Hex message: FFFE2F8C9A00000B1E21866C5F37AB400CC6

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long National Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): National EPIRB	37- 40	1010
National ID Number (18 bits, i.e. max=0x3 FFFF): 0x0 0000	41- 58	00 0000 0000 0000 0000
Latitude: N 44°31' 20"		
Latitude Base Sign: North	59	0
Latitude Base Degree: 44	60- 66	010 1100
Latitude Base Minute (2 minute step): 30	67- 71	0 1111
Longitude: E 33° 33' 00"		
Longitude Base Sign: East	72	0
Longitude Base Degree: 33	73- 80	0010 0001
Longitude Base Minute (2 minute step): 32	81- 85	1 0000
BCH1: 0x19 B17C	86-106	1 1001 1011 0001 0111 1100
Fixed bits (3 bits = 110): 6	107-109	110
Additional data type: Position Delta	110	1
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta Sign: +	113	1
Latitude Delta Minute (0..3): 1	114-115	01
Latitude Delta Seconds (4 seconds step): 20	116-119	0101
Longitude Delta Sign: +	120	1
Longitude Delta Minute (0..3): 1	121-122	01
Longitude Delta Seconds (4 seconds step): 00	123-126	0000
Additional Beacon Identification (6bit, i.e. max value - 0x3F): 0x00	127-132	00 0000
BCH2: 0xCC6	133-144	1100 1100 0110

National Location: EPIRB, Self-Test Message
Full Hex message: FFFED08C9A00001FC0FF021F5DB79F3C0010

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0xD0	16- 24	0 1101 0000
Protocol: Long National Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): National EPIRB	37- 40	1010
National ID Number (18 bits, i.e. max=0x3 FFFF): 0x0 0000	41- 58	00 0000 0000 0000 0000
Latitude: Default		
Latitude Base: Default	59- 71	0 1111 1110 0000
Longitude: Default		
Lonitude Base: Default	72- 85	01 1111 1110 0000
BCH1: 0x08 7D76	86-106	0 1000 0111 1101 0111 0110
Fixed bits (3 bits = 110): 6	107-109	110
Additional data type: Position Delta	110	1
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-119	100 1111
Longitude Delta: Default	120-126	100 1111
Additional Beacon Identification (6bit, i.e. max value - 0x3F): 0x00	127-132	00 0000
BCH2: 0x010	133-144	0000 0001 0000

National Location: EPIRB, GNSS Self Test Message
Full Hex message: FFFED08C9A00000B222172C5CCB7A9540F06

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 1101 0000
Protocol: Long National Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): National EPIRB	37- 40	1010
National ID Number (18 bits, i.e. max=0x3 FFFF): 0x0 0000	41- 58	00 0000 0000 0000 0000
Latitude: N 44° 35' 16"		
Latitude Base Sign: North	59	0
Latitude Base Degree: 44	60- 66	010 1100
Latitude Base Minute (2 minute step): 34	67- 71	1 0001
Longitude: E 33°29' 20"		
Longitude Base Sign: East	72	0
Longitude Base Degree: 33	73- 80	0010 0001
Longitude Base Minute (2 minute step): 28	81- 85	0 1110
BCH1: 0x0B 1732	86-106	0 1011 0001 0111 0011 0010
Fixed bits (3 bits = 110): 6	107-109	110
Additional data type: Position Delta	110	1
Position data source: Internal	111	1
Auxiliary Radio Locating Device : 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta Sign: +	113	1
Latitude Delta Minute (0..3): 1	114-115	01
Latitude Delta Seconds (4 seconds step): 16	116-119	0100
Longitude Delta Sign: +	120	1
Longitude Delta Minute (0..3): 1	121-122	01
Longitude Delta Seconds (4 seconds step): 20	123-126	0101
Additional Beacon Identification (6bit, i.e. max value - 0x3F): 0x00	127-132	00 0000
BCH2: 0xF06	133-144	1111 0000 0110

National User: Long

National User: Long
Full Hex message: FFFE2FCC98E08C8000000165E98000000000

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): National User Protocol	37- 39	100
Binary data (46 bits, i.e. max=0x3FFF FFFF FFFF): 0x1C11 9000 0000	40- 85	01 1100 0001 0001 1001 0000 0000 0000 0000 0000 0000 0000
BCH1: 0x05 97A6	86-106	0 0101 1001 0111 1010 0110
Binary data (26 bits, i.e. max=0x3FF FFFF): 0x000 0000	107-132	00 0000 0000 0000 0000 0000 0000
BCH2: 0x000	133-144	0000 0000 0000

National User: Long, Self-Test Message
Full Hex message: FFFED0CC98E08C8000000165E98000000000

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0xD0	16- 24	0 1101 0000
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): National User Protocol	37- 39	100
Binary data (46 bits, i.e. max=0x3FFF FFFF FFFF): 0x1C11 9000 0000	40- 85	01 1100 0001 0001 1001 0000 0000 0000 0000 0000 0000 0000
BCH1: 0x05 97A6	86-106	0 0101 1001 0111 1010 0110
Binary data (26 bits, i.e. max=0x3FF FFFF): 0x000 0000	107-132	00 0000 0000 0000 0000 0000 0000
BCH2: 0x000	133-144	0000 0000 0000

Test Date: 26.12.2017

Test conditions:
- Ambient laboratory temperature: 19 °C
- Relative air humidity: 54 %

The time stamp of tests.

Event	Time, UTC+3	Hex Message	Comment
User Location Protocol			
Start of test			BUT was in a shielded room, GNSS simulator transmitte GPS signal via antenna with location data: N44° 44.5` E033° 33.5`
Activation EUT	26.12.2017 11:18:04		
Received message	26.12.2017 11:19:04	FFFE2FCC98000000000 003AAC24000000000	
GNSS data was changed	26.12.2017 11:23:00		N44° 49.5` E033° 33.5`
Received message	26.12.2017 11:23:13	FFFE2FCC98000000000 003AAC24000000000	
GNSS data was changed	26.12.2017 11:28:00		N44° 54.5` E033° 33.5`
Received message	26.12.2017 11:28:15	FFFE2FCC98000000000 003AAC24000000000	
GNSS data was changed	26.12.2017 11:33:00		N45° 59.5` E033° 33.5`
Received message	26.12.2017 11:33:13	FFFE2FCC98000000000 003AAC24000000000	
GNSS data was changed	26.12.2017 11:38:00		N45° 04.5` E033° 33.5`
Received message	26.12.2017 11:38:16	FFFE2FCC98000000000 003AAC24000000000	
GNSS data was changed	26.12.2017 11:43:00		N45° 09.5` E033° 33.5`
Received message	26.12.2017 11:43:13	FFFE2FCC98000000000 003AAC24000000000	
GNSS data was changed	26.12.2017 11:48:00		N45° 14.5` E033° 33.5`
Received message	26.12.2017 11:43:18	FFFE2FCC98000000000 003AAC24000000000	
GNSS data was changed	26.12.2017 11:53:00		N45° 19.5` E033° 33.5`
Received last message	26.12.2017 11:53:10	FFFE2FCC98000000000 003AAC24000000000	
Deactivation EUT	26.12.2017 11:53:30		

Decoded messages

User Location: Maritime Protocol with MMSI, Location “A”
Full Hex message: FFFE2FCC94186186186689DE52A59221788C

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): EPIRB. Maritime User Protocol	37- 39	010
MMSI/Call sign(last 6 digits MMSI or up to 6 symbols: 999999		
1 char of MMSI/Call Sign: 9	40- 45	00 0011
2 char of MMSI/Call Sign: 9	46- 51	00 0011
3 char of MMSI/Call Sign: 9	52- 57	00 0011
4 char of MMSI/Call Sign: 9	58- 63	00 0011
5 char of MMSI/Call Sign: 9	64- 69	00 0011
6 char of MMSI/Call Sign: 9	70- 75	00 0011
Specific Beacon Number: 0	76- 81	00 1101
Spare: 0	82- 83	00
Auxiliary radio-locating device type: 121.5 MHz	84- 85	01
BCH1: 0x07 794A	86-106	0 0111 0111 1001 0100 1010
Position data source: Internal	107	1
Latitude: N 44° 36' 00"	108-119	0010 1100 1001
Latitude Sign: North	108	0
Latitude Degree: 44	109-115	010 1100
Latitude Minute (4 minute step): 36	116-119	1001
Longitude: E 33° 28' 00"	120-132	0 0010 0001 0111
Longitude Sign: East	120	0
Longitude Degree: 33	121-128	0010 0001
Longitude Minute (4 minute step): 28	129-132	0111
BCH2: 0x88C	133-144	1000 1000 1100

User Location: Maritime Protocol with MMSI, Location “B”
Full Hex message: FFFE2FCC94186186186689DE52A59021875F

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): EPIRB. Maritime User Protocol	37- 39	010
MMSI/Call sign(last 6 digits MMSI or up to 6 symbols: 999999		
1 char of MMSI/Call Sign: 9	40- 45	00 0011
2 char of MMSI/Call Sign: 9	46- 51	00 0011
3 char of MMSI/Call Sign: 9	52- 57	00 0011
4 char of MMSI/Call Sign: 9	58- 63	00 0011
5 char of MMSI/Call Sign: 9	64- 69	00 0011
6 char of MMSI/Call Sign: 9	70- 75	00 0011
Specific Beacon Number: 0	76- 81	00 1101
Spare: 0	82- 83	00
Auxiliary radio-locating device type: 121.5 MHz	84- 85	01
BCH1: 0x07 794A	86-106	0 0111 0111 1001 0100 1010
Position data source: Internal	107	1
Latitude: N 44° 32' 00"	108-119	0010 1100 1000
Latitude Sign: North	108	0
Latitude Degree: 44	109-115	010 1100
Latitude Minute (4 minute step): 32	116-119	1000
Longitude: E 33° 32' 00"	120-132	0 0010 0001 1000
Longitude Sign: East	120	0
Longitude Degree: 33	121-128	0010 0001
Longitude Minute (4 minute step): 32	129-132	1000
BCH2: 0x75F	133-144	0111 0101 1111

User Location: Maritime Protocol with MMSI, Self-Test Message
Full Hex message: FFFED0CC94186186186689DE52AFE0FF0146

ITEM	BITS	VALUE
Error in data: Frame synchronization '0xD0' is incorrect (should be 000101111, i.e. 0x2F)		
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0xD0	16- 24	0 1101 0000
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): EPIRB. Maritime User Protocol	37- 39	010
MMSI/Call sign(last 6 digits MMSI or up to 6 symbols: 999999		
1 char of MMSI/Call Sign: 9	40- 45	00 0011
2 char of MMSI/Call Sign: 9	46- 51	00 0011
3 char of MMSI/Call Sign: 9	52- 57	00 0011
4 char of MMSI/Call Sign: 9	58- 63	00 0011
5 char of MMSI/Call Sign: 9	64- 69	00 0011
6 char of MMSI/Call Sign: 9	70- 75	00 0011
Specific Beacon Number: 0	76- 81	00 1101
Spare: 0	82- 83	00
Auxiliary radio-locating device type: 121.5 MHz	84- 85	01
BCH1: 0x07 794A	86-106	0 0111 0111 1001 0100 1010
Position data source: Internal	107	1
Latitude: Default	108-119	0111 1111 0000
Longitude: Default	120-132	0 1111 1111 0000
BCH2: 0x146	133-144	0001 0100 0110

User Location: Maritime Protocol with MMSI, GNSS Self Test Message
Full Hex message: FFFED0CC94186186186689DE52A59221788C

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 1101 0000
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): EPIRB. Maritime User Protocol	37- 39	010
MMSI/Call sign(last 6 digits MMSI or up to 6 symbols: 999999		
1 char of MMSI/Call Sign: 9	40- 45	00 0011
2 char of MMSI/Call Sign: 9	46- 51	00 0011
3 char of MMSI/Call Sign: 9	52- 57	00 0011
4 char of MMSI/Call Sign: 9	58- 63	00 0011
5 char of MMSI/Call Sign: 9	64- 69	00 0011
6 char of MMSI/Call Sign: 9	70- 75	00 0011
Specific Beacon Number: 0	76- 81	00 1101
Spare: 0	82- 83	00
Auxiliary radio-locating device type: 121.5 MHz	84- 85	01
BCH1: 0x07 794A	86-106	0 0111 0111 1001 0100 1010
Position data source: Internal	107	1
Latitude: N 44° 36' 00"	108-119	0010 1100 1001
Latitude Sign: North	108	0
Latitude Degree: 44	109-115	010 1100
Latitude Minute (4 minute step): 36	116-119	1001
Longitude: E 33° 28' 00"	120-132	0 0010 0001 0111
Longitude Sign: East	120	0
Longitude Degree: 33	121-128	0010 0001
Longitude Minute (4 minute step): 28	129-132	0111
BCH2: 0x88C	133-144	1000 1000 1100

User Location: Maritime Protocol with Radio Call Sign, Location “A”
Full Hex message: FFFE2FCC946EF6F06B268BD3F3A59221788C

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): EPIRB. Maritime User Protocol	37- 39	010
MMSI/Call sign(last 6 digits MMSI or up to 6 symbols: 0XPA02		
1 char of MMSI/Call Sign: 0	40- 45	00 1101
2 char of MMSI/Call Sign: X	46- 51	11 0111
3 char of MMSI/Call Sign: P	52- 57	10 1101
4 char of MMSI/Call Sign: A	58- 63	11 1000
5 char of MMSI/Call Sign: 0	64- 69	00 1101
6 char of MMSI/Call Sign: 2	70- 75	01 1001
Specific Beacon Number: 0	76- 81	00 1101
Spare: 0	82- 83	00
Auxiliary radio-locating device type: 121.5 MHz	84- 85	01
BCH1: 0x0F 4FCE	86-106	0 1111 0100 1111 1100 1110
Position data source: Internal	107	1
Latitude: N 44° 36' 00"	108-119	0010 1100 1001
Latitude Sign: North	108	0
Latitude Degree: 44	109-115	010 1100
Latitude Minute (4 minute step): 36	116-119	1001
Longitude: E 33° 28' 00"	120-132	0 0010 0001 0111
Longitude Sign: East	120	0
Longitude Degree: 33	121-128	0010 0001
Longitude Minute (4 minute step): 28	129-132	0111
BCH2: 0x88C	133-144	1000 1000 1100

User Location: Maritime Protocol with Radio Call Sign, Location “B”
Full Hex message: FFFE2FCC946EF6F06B268BD3F3A59021875F

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): EPIRB. Maritime User Protocol	37- 39	010
MMSI/Call sign(last 6 digits MMSI or up to 6 symbols: 0XPA02		
1 char of MMSI/Call Sign: 0	40- 45	00 1101
2 char of MMSI/Call Sign: X	46- 51	11 0111
3 char of MMSI/Call Sign: P	52- 57	10 1101
4 char of MMSI/Call Sign: A	58- 63	11 1000
5 char of MMSI/Call Sign: 0	64- 69	00 1101
6 char of MMSI/Call Sign: 2	70- 75	01 1001
Specific Beacon Number: 0	76- 81	00 1101
Spare: 0	82- 83	00
Auxiliary radio-locating device type: 121.5 MHz	84- 85	01
BCH1: 0x0F 4FCE	86-106	0 1111 0100 1111 1100 1110
Position data source: Internal	107	1
Latitude: N 44° 32' 00"	108-119	0010 1100 1000
Latitude Sign: North	108	0
Latitude Degree: 44	109-115	010 1100
Latitude Minute (4 minute step): 32	116-119	1000
Longitude: E 33° 32' 00"	120-132	0 0010 0001 1000
Longitude Sign: East	120	0
Longitude Degree: 33	121-128	0010 0001
Longitude Minute (4 minute step): 32	129-132	1000
BCH2: 0x75F	133-144	0111 0101 1111

User Location: Maritime Protocol with Radio Call Sign, Self-Test Message
Full Hex message: FFFED0CC946EF6F06B268BD3F3AFE0FF0146

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0xD0	16- 24	0 1101 0000
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): EPIRB. Maritime User Protocol	37- 39	010
MMSI/Call sign(last 6 digits MMSI or up to 6 symbols: 0XPA02		
1 char of MMSI/Call Sign: 0	40- 45	00 1101
2 char of MMSI/Call Sign: X	46- 51	11 0111
3 char of MMSI/Call Sign: P	52- 57	10 1101
4 char of MMSI/Call Sign: A	58- 63	11 1000
5 char of MMSI/Call Sign: 0	64- 69	00 1101
6 char of MMSI/Call Sign: 2	70- 75	01 1001
Specific Beacon Number: 0	76- 81	00 1101
Spare: 0	82- 83	00
Auxiliary radio-locating device type: 121.5 MHz	84- 85	01
BCH1: 0x0F 4FCE	86-106	0 1111 0100 1111 1100 1110
Position data source: Internal	107	1
Latitude: Default	108-119	0111 1111 0000
Longitude: Default	120-132	0 1111 1111 0000
BCH2: 0x146	133-144	0001 0100 0110

User Location: Maritime Protocol with Radio Call Sign, GNSS Self Test
Full Hex message: FFFED0CC946EF6F06B268BD3F3A59221788C

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 1101 0000
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): EPIRB. Maritime User Protocol	37- 39	010
MMSI/Call sign(last 6 digits MMSI or up to 6 symbols: 0XPA02		
1 char of MMSI/Call Sign: 0	40- 45	00 1101
2 char of MMSI/Call Sign: X	46- 51	11 0111
3 char of MMSI/Call Sign: P	52- 57	10 1101
4 char of MMSI/Call Sign: A	58- 63	11 1000
5 char of MMSI/Call Sign: 0	64- 69	00 1101
6 char of MMSI/Call Sign: 2	70- 75	01 1001
Specific Beacon Number: 0	76- 81	00 1101
Spare: 0	82- 83	00
Auxiliary radio-locating device type: 121.5 MHz	84- 85	01
BCH1: 0x0F 4FCE	86-106	0 1111 0100 1111 1100 1110
Position data source: Internal	107	1
Latitude: N 44° 36' 00"	108-119	0010 1100 1001
Latitude Sign: North	108	0
Latitude Degree: 44	109-115	010 1100
Latitude Minute (4 minute step): 36	116-119	1001
Longitude: E 33° 28' 00"	120-132	0 0010 0001 0111
Longitude Sign: East	120	0
Longitude Degree: 33	121-128	0010 0001
Longitude Minute (4 minute step): 28	129-132	0111
BCH2: 0x88C	133-144	1000 1000 1100

User Location: Radio Call Sign, Location “A”
Full Hex message: FFFE2FCC9C6EF6F005468D0ACC259221788C

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): EPIRB. Radio Call Sign User Protocol	37- 39	110
Call sign(up to 7 symbols with last 3 digits: 0XPA02		
1 char of Call Sign (6 bits): 0	40- 45	00 1101
2 char of Call Sign (6 bits): X	46- 51	11 0111
3 char of Call Sign (6 bits): P	52- 57	10 1101
4 char of Call Sign (6 bits): A	58- 63	11 1000
5 char of Call Sign (4 bits, only digits): 0	64- 67	0000
6 char of Call Sign (4 bits, only digits): 2	68- 71	0010
7 char of Call Sign (4 bits, only digits):	72- 75	1010
Specific Beacon Number: 0	76- 81	00 1101
Spare: 0	82- 83	00
Auxiliary radio-locating device type: 121.5 MHz	84- 85	01
BCH1: 0x14 2B30	86-106	1 0100 0010 1011 0011 0000
Position data source: Internal	107	1
Latitude: N 44° 36' 00"	108-119	0010 1100 1001
Latitude Sign: North	108	0
Latitude Degree: 44	109-115	010 1100
Latitude Minute (4 minute step): 36	116-119	1001
Longitude: E 33° 28' 00"	120-132	0 0010 0001 0111
Longitude Sign: East	120	0
Longitude Degree: 33	121-128	0010 0001
Longitude Minute (4 minute step): 28	129-132	0111
BCH2: 0x88C	133-144	1000 1000 1100

User Location: Radio Call Sign, Location “B”
Full Hex message: FFFE2FCC9C6EF6F005468D0ACC259021875F

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): EPIRB. Radio Call Sign User Protocol	37- 39	110
Call sign(up to 7 symbols with last 3 digits: 0XPA02		
1 char of Call Sign (6 bits): 0	40- 45	00 1101
2 char of Call Sign (6 bits): X	46- 51	11 0111
3 char of Call Sign (6 bits): P	52- 57	10 1101
4 char of Call Sign (6 bits): A	58- 63	11 1000
5 char of Call Sign (4 bits, only digits): 0	64- 67	0000
6 char of Call Sign (4 bits, only digits): 2	68- 71	0010
7 char of Call Sign (4 bits, only digits):	72- 75	1010
Specific Beacon Number: 0	76- 81	00 1101
Spare: 0	82- 83	00
Auxiliary radio-locating device type: 121.5 MHz	84- 85	01
BCH1: 0x14 2B30	86-106	1 0100 0010 1011 0011 0000
Position data source: Internal	107	1
Latitude: N 44° 32' 00"	108-119	0010 1100 1000
Latitude Sign: North	108	0
Latitude Degree: 44	109-115	010 1100
Latitude Minute (4 minute step): 32	116-119	1000
Longitude: E 33° 32' 00"	120-132	0 0010 0001 1000
Longitude Sign: East	120	0
Longitude Degree: 33	121-128	0010 0001
Longitude Minute (4 minute step): 32	129-132	1000
BCH2: 0x75F	133-144	0111 0101 1111

User Location: Radio Call Sign, Self-Test Message
Full Hex message: FFFED0CC9C6EF6F005468D0ACC2FE0FF0146

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0xD0	16- 24	0 1101 0000
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): EPIRB. Radio Call Sign User Protocol	37- 39	110
Call sign(up to 7 symbols with last 3 digits: 0XPA02		
1 char of Call Sign (6 bits): 0	40- 45	00 1101
2 char of Call Sign (6 bits): X	46- 51	11 0111
3 char of Call Sign (6 bits): P	52- 57	10 1101
4 char of Call Sign (6 bits): A	58- 63	11 1000
5 char of Call Sign (4 bits, only digits): 0	64- 67	0000
6 char of Call Sign (4 bits, only digits): 2	68- 71	0010
7 char of Call Sign (4 bits, only digits):	72- 75	1010
Specific Beacon Number: 0	76- 81	00 1101
Spare: 0	82- 83	00
Auxiliary radio-locating device type: 121.5 MHz	84- 85	01
BCH1: 0x14 2B30	86-106	1 0100 0010 1011 0011 0000
Position data source: Internal	107	1
Latitude: Default	108-119	0111 1111 0000
Longitude: Default	120-132	0 1111 1111 0000
BCH2: 0x146	133-144	0001 0100 0110

User Location: Radio Call Sign, GNSS Self Test Message
Full Hex message: FFFED0CC9C6EF6F005468D0ACC259221788C

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 1101 0000
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): EPIRB. Radio Call Sign User Protocol	37- 39	110
Call sign(up to 7 symbols with last 3 digits: 0XPA02		
1 char of Call Sign (6 bits): 0	40- 45	00 1101
2 char of Call Sign (6 bits): X	46- 51	11 0111
3 char of Call Sign (6 bits): P	52- 57	10 1101
4 char of Call Sign (6 bits): A	58- 63	11 1000
5 char of Call Sign (4 bits, only digits): 0	64- 67	0000
6 char of Call Sign (4 bits, only digits): 2	68- 71	0010
7 char of Call Sign (4 bits, only digits):	72- 75	1010
Specific Beacon Number: 0	76- 81	00 1101
Spare: 0	82- 83	00
Auxiliary radio-locating device type: 121.5 MHz	84- 85	01
BCH1: 0x14 2B30	86-106	1 0100 0010 1011 0011 0000
Position data source: Internal	107	1
Latitude: N 44° 36' 00"	108-119	0010 1100 1001
Latitude Sign: North	108	0
Latitude Degree: 44	109-115	010 1100
Latitude Minute (4 minute step): 36	116-119	1001
Longitude: E 33° 28' 00"	120-132	0 0010 0001 0111
Longitude Sign: East	120	0
Longitude Degree: 33	121-128	0010 0001
Longitude Minute (4 minute step): 28	129-132	0111
BCH2: 0x88C	133-144	1000 1000 1100

Serial User Location: Float-Free EPIRB, Location “A”
Full Hex message: FFFE2FCC96A000C6007CEEBD42E59221788C

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Serial User Protocol	37- 39	011
Auxiliary radio-locating device type: Float free EPIRBs with serial identification number	40- 42	010
Cospas-Sarsat Flag: Cospas-Sarsat Certificate number	43	1
Serail Number: 99	44- 63	0000 0000 0000 0110 0011
National use (10 bits, so max value is 0x3FF): 0x0	64- 73	00 0000 0000
Cospas-Sarsat Certificate Number (1-1023): 999	74- 83	11 1110 0111
Auxiliary radio-locating device type: 121.5 MHz	84- 85	01
BCH1: 0x1A F50B	86-106	1 1010 1111 0101 0000 1011
Position data source: Internal	107	1
Latitude: N 44° 36' 00"	108-119	0010 1100 1001
Latitude Sign: North	108	0
Latitude Degree: 44	109-115	010 1100
Latitude Minute (4 minute step): 36	116-119	1001
Longitude: E 33° 28' 00"	120-132	0 0010 0001 0111
Longitude Sign: East	120	0
Longitude Degree: 33	121-128	0010 0001
Longitude Minute (4 minute step): 28	129-132	0111
BCH2: 0x88C	133-144	1000 1000 1100

Serial User Location: Float-Free EPIRB, Location “B”
Full Hex message: FFFE2FCC96A000C6007CEEBD42E59021875F

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Serial User Protocol	37- 39	011
Auxiliary radio-locating device type: Float free EPIRBs with serial identification number	40- 42	010
Cospas-Sarsat Flag: Cospas-Sarsat Certificate number	43	1
Serail Number: 99	44- 63	0000 0000 0000 0110 0011
National use (10 bits, so max value is 0x3FF): 0x0	64- 73	00 0000 0000
Cospas-Sarsat Certificate Number (1-1023): 999	74- 83	11 1110 0111
Auxiliary radio-locating device type: 121.5 MHz	84- 85	01
BCH1: 0x1A F50B	86-106	1 1010 1111 0101 0000 1011
Position data source: Internal	107	1
Latitude: N 44° 32' 00"	108-119	0010 1100 1000
Latitude Sign: North	108	0
Latitude Degree: 44	109-115	010 1100
Latitude Minute (4 minute step): 32	116-119	1000
Longitude: E 33°32' 00"	120-132	0 0010 0001 1000
Longitude Sign: East	120	0
Longitude Degree: 33	121-128	0010 0001
Longitude Minute (4 minute step): 32	129-132	1000
BCH2: 0x75F	133-144	0111 0101 1111

Serial User Location: Float-Free EPIRB, Self-Test Message
Full Hex message: FFFED0CC96A000C6007CEEBD42EFE0FF0146

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0xD0	16- 24	0 1101 0000
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Serial User Protocol	37- 39	011
Auxiliary radio-locating device type: Float free EPIRBs with serial identification number	40- 42	010
Cospas-Sarsat Flag: Cospas-Sarsat Certificate number	43	1
Serail Number: 99	44- 63	0000 0000 0000 0110 0011
National use (10 bits, so max value is 0x3FF): 0x0	64- 73	00 0000 0000
Cospas-Sarsat Certificate Number (1-1023): 999	74- 83	11 1110 0111
Auxiliary radio-locating device type: 121.5 MHz	84- 85	01
BCH1: 0x1A F50B	86-106	1 1010 1111 0101 0000 1011
Position data source: Internal	107	1
Latitude: Default	108-119	0111 1111 0000
Longitude: Default	120-132	0 1111 1111 0000
BCH2: 0x146	133-144	0001 0100 0110

Serial User Location: Float-Free EPIRB, GNSS Self Test Message
Full Hex message: FFFED0CC96A000C6007CEEBD42E59221788C

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 1101 0000
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Serial User Protocol	37- 39	011
Auxiliary radio-locating device type: Float free EPIRBs with serial identification number	40- 42	010
Cospas-Sarsat Flag: Cospas-Sarsat Certificate number	43	1
Serail Number: 99	44- 63	0000 0000 0000 0110 0011
National use (10 bits, so max value is 0x3FF): 0x0	64- 73	00 0000 0000
Cospas-Sarsat Certificate Number (1-1023): 999	74- 83	11 1110 0111
Auxiliary radio-locating device type: 121.5 MHz	84- 85	01
BCH1: 0x1A F50B	86-106	1 1010 1111 0101 0000 1011
Position data source: Internal	107	1
Latitude: N 44° 36' 00"	108-119	0010 1100 1001
Latitude Sign: North	108	0
Latitude Degree: 44	109-115	010 1100
Latitude Minute (4 minute step): 36	116-119	1001
Longitude: E 33° 28' 00"	120-132	0 0010 0001 0111
Longitude Sign: East	120	0
Longitude Degree: 33	121-128	0010 0001
Longitude Minute (4 minute step): 28	129-132	0111
BCH2: 0x88C	133-144	1000 1000 1100

Serial User Location: Non Float-Free EPIRB, Location “A”
Full Hex message: FFFE2FCC972000C6007CEB7FB1659221788C

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Serial User Protocol	37- 39	011
Auxiliary radio-locating device type: Non float free EPIRBs with serial identification number	40- 42	100
Cospas-Sarsat Flag: Cospas-Sarsat Certificate number	43	1
Serail Number: 99	44- 63	0000 0000 0000 0110 0011
National use (10 bits, so max value is 0x3FF): 0x0	64- 73	00 0000 0000
Cospas-Sarsat Certificate Number (1-1023): 999	74- 83	11 1110 0111
Auxiliary radio-locating device type: 121.5 MHz	84- 85	01
BCH1: 0x0D FEC5	86-106	0 1101 1111 1110 1100 0101
Position data source: Internal	107	1
Latitude: N 44°36' 00"	108-119	0010 1100 1001
Latitude Sign: North	108	0
Latitude Degree: 44	109-115	010 1100
Latitude Minute (4 minute step): 36	116-119	1001
Longitude: E 33°28' 00"	120-132	0 0010 0001 0111
Longitude Sign: East	120	0
Longitude Degree: 33	121-128	0010 0001
Longitude Minute (4 minute step): 28	129-132	0111
BCH2: 0x88C	133-144	1000 1000 1100

Serial User Location: Non Float-Free EPIRB, Location “B”
Full Hex message: FFFE2FCC972000C6007CEB7FB1659021875F

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Serial User Protocol	37- 39	011
Auxiliary radio-locating device type: Non float free EPIRBs with serial identification number	40- 42	100
Cospas-Sarsat Flag: Cospas-Sarsat Certificate number	43	1
Serail Number: 99	44- 63	0000 0000 0000 0110 0011
National use (10 bits, so max value is 0x3FF): 0x0	64- 73	00 0000 0000
Cospas-Sarsat Certificate Number (1-1023): 999	74- 83	11 1110 0111
Auxiliary radio-locating device type: 121.5 MHz	84- 85	01
BCH1: 0x0D FEC5	86-106	0 1101 1111 1110 1100 0101
Position data source: Internal	107	1
Latitude: N 44°32' 00"	108-119	0010 1100 1000
Latitude Sign: North	108	0
Latitude Degree: 44	109-115	010 1100
Latitude Minute (4 minute step): 32	116-119	1000
Longitude: E 33°32' 00"	120-132	0 0010 0001 1000
Longitude Sign: East	120	0
Longitude Degree: 33	121-128	0010 0001
Longitude Minute (4 minute step): 32	129-132	1000
BCH2: 0x75F	133-144	0111 0101 1111

Serial User Location: Non Float-Free EPIRB, Self-Test Message
Full Hex message: FFFED0CC972000C6007CEB7FB16FE0FF0146

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0xD0	16- 24	0 1101 0000
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Serial User Protocol	37- 39	011
Auxiliary radio-locating device type: Non float free EPIRBs with serial identification number	40- 42	100
Cospas-Sarsat Flag: Cospas-Sarsat Certificate number	43	1
Serail Number: 99	44- 63	0000 0000 0000 0110 0011
National use (10 bits, so max value is 0x3FF): 0x0	64- 73	00 0000 0000
Cospas-Sarsat Certificate Number (1-1023): 999	74- 83	11 1110 0111
Auxiliary radio-locating device type: 121.5 MHz	84- 85	01
BCH1: 0x0D FEC5	86-106	0 1101 1111 1110 1100 0101
Position data source: Internal	107	1
Latitude: Default	108-119	0111 1111 0000
Longitude: Default	120-132	0 1111 1111 0000
BCH2: 0x146	133-144	0001 0100 0110

Serial User Location: Non Float-Free EPIRB, GNSS Self Test Message
Full Hex message: FFFED0CC972000C6007CEB7FB1659221788C

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 1101 0000
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Serial User Protocol	37- 39	011
Auxiliary radio-locating device type: Non float free EPIRBs with serial identification number	40- 42	100
Cospas-Sarsat Flag: Cospas-Sarsat Certificate number	43	1
Serail Number: 99	44- 63	0000 0000 0000 0110 0011
National use (10 bits, so max value is 0x3FF): 0x0	64- 73	00 0000 0000
Cospas-Sarsat Certificate Number (1-1023): 999	74- 83	11 1110 0111
Auxiliary radio-locating device type: 121.5 MHz	84- 85	01
BCH1: 0x0D FEC5	86-106	0 1101 1111 1110 1100 0101
Position data source: Internal	107	1
Latitude: N 44°36' 00"	108-119	0010 1100 1001
Latitude Sign: North	108	0
Latitude Degree: 44	109-115	010 1100
Latitude Minute (4 minute step): 36	116-119	1001
Longitude: E 33°28' 00"	120-132	0 0010 0001 0111
Longitude Sign: East	120	0
Longitude Degree: 33	121-128	0010 0001
Longitude Minute (4 minute step): 28	129-132	0111
BCH2: 0x88C	133-144	1000 1000 1100

5.8 Navigation System Test

Date of test	01.02.2016-04.02.2016, 09.03.2016
Specification	C/S T.007 – section A.3.8
Beacon Model	MT603FG
Serial number	1410407582
EUT Mod State	0
EUT system configuration during the test, including antenna, external ancillary devices and modes of their operation	The EUT was operated using its own power source (internal battery). The EUT was configured so that the antenna ports were connected to the 50 Ohms test system using coaxial cables.
Navigation device details (model, interface)	Antenova M10478-A2
Measurement Equipment, provided by beacon manufacturer, if any	N/A
Performed by	Vasilev D.V.
Verified by	Sumerkin O.A.
Environmental conditions	Ambient laboratory temperature: 16.9 °C - 24.4 °C Relative air humidity: 49 – 55 %
Deviations from standard test procedures	Homer transmitter worked at 121.65 MHz in the test due to design limitations.
Non-compliances noticed	There were not non-compliances

5.8.1 Position Data Default Values (A.3.8.1)

Test Date: 01.02.16

Test conditions:
- Ambient laboratory temperature: 16.9 °C - 22.2 °C
- Relative air humidity: 50 – 55 %

The time stamp of tests.

Event	Time, UTC+3	Message	Comment
National Location Protocol			
Start of test			BUT was in a shielded room, GNSS signal was not available
Activation EUT	01.02.16 10:44:18		
Received first message	01.02.16 10:45:18	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010	All messages have frame synchronization pattern in normal operation mode. Page No 144
Deactivation	01.02.16 11:15:35		

Decoding Beacon Message
Full Hex message: FFFE2F8C9F0018DFC0FF04F9E4379F3C0010

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long National Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): National Test Location Protocol	37- 40	1111
National ID Number (18 bits, i.e. max=0x3 FFFF): 0x0 0063	41- 58	00 0000 0000 0110 0011
Latitude: Default		
Latitude Base: Default	59- 71	0 1111 1110 0000
Longitude: Default		
Lonitude Base: Default	72- 85	01 1111 1110 0000
BCH1: 0x13 E790	86-106	1 0011 1110 0111 1001 0000
Fixed bits (3 bits = 110): 6	107-109	110
Additional data type: Position Delta	110	1
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-119	100 1111
Longitude Delta: Default	120-126	100 1111
Additional Beacon Identification (6bit, i.e. max value - 0x3F): 0x00	127-132	00 0000
BCH2: 0x010	133-144	0000 0001 0000

Test Date: 03.02.16

Test conditions:
- Ambient laboratory temperature: 16.9 °C
- Relative air humidity: 51 %

The time stamp of tests.

Event	Time, UTC+3	Message	Comment
Standart Location Protocol			
Start of test			BUT was in a shielded room, GNSS signal was not available
Activation EUT	03.02.16 15:31:03		
Received first message	03.02.16 15:32:03	FFFE2F8C9E0000007FDFFA79ED3783E0F66C	All messages contained default position data during the test. Page No 146
Deactivation	03.02.16 16:04:01		

Decoding Beacon Message
Full Hex message: FFFE2F8C9E0000007FDFFA79ED3783E0F66C

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard Test Location Protocol	37- 40	1110
Binary data (24 bits, i.e. max=0xFF FFFF): 0x00 0000	41- 64	0000 0000 0000 0000 0000 0000
Latitude: Default		
Latitude Base: Default	65- 74	01 1111 1111
Longitude: Default		
Lonitude Base: Default	75- 85	011 1111 1111
BCH1: 0x09 E7B4	86-106	0 1001 1110 0111 1011 0100
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-122	10 0000 1111
Longitude Delta: Default	123-132	10 0000 1111
BCH2: 0x66C	133-144	0110 0110 1100

Test Date: 04.02.16

Test conditions:
- Ambient laboratory temperature: 16.9 °C
- Relative air humidity: 51 %

The time stamp of tests.

Event	Time, UTC+3	Message	Comment
User Location Protocol			
Start of test			BUT was in a shielded room, GNSS signal was not available
Activation EUT	04.02.16 16:30:04		
Received first message	04.02.16 16:31:04	FFFE2FCC9E000000000007CDFDEFE0FF0146	All operation messages have default position data during test. Page No 148
Deactivation	04.02.16 17:08:06		

Decoding Beacon Message
Full Hex message: FFFE2FCC9E000000000007CDFDEFE0FF0146

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Test User Protocol	37- 39	111
Binary data (46 bits, i.e. max=0x3FFF FFFF FFFF): 0x0000 0000 0000	40- 85	00 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
BCH1: 0x1F 37F7	86-106	1 1111 0011 0111 1111 0111
Position data source: Internal	107	1
Latitude: Default	108-119	0111 1111 0000
Longitude: Default	120-132	0 1111 1111 0000
BCH2: 0x146	133-144	0001 0100 0110

5.8.2 Position Acquisition Time and Position Accuracy (A.3.8.2)

Test Date: 02.02.16

Beacon is fitted with the internal GPS receiver.
Check beacon to compliance of requirements of A.3.8.2 C/S T.007 was carried out in the points, having known locations:
- point 1 - N 44°35'12.31", E 33°29'16.52"
- point 2 - N 44°31'19.66", E 33°32'59.26"

Test conditions:
- Ambient temperature at open area test site: 6°C - 8°C.
- Relative air humidity: 87 – 88 %.
- Homing transmitter 121.5 MHz operated during the test.
- Tests were conducted with the beacon in the next configurations accordance section 4.5 T.007:
  1. Configuration 5 – Beacon on the water ground plane.
     - The beacon was completely submerged in salt water (composition 5% salt solution by weight) activated while submerged, and allowed to float to the surface under its own buoyancy.
  2. Configuration 7 – Beacon on ground plane.
     - The beacon was placed in the centre of a thin 27 cm diameter c aluminum disc which was placed directly on level ground (dirt) in an area with a good all round view of the sky, in the operational orientation.
  3. Configuration 8 – Beacon above ground plane.
     - The beacon was placed on an electrically insulating support so that its base is 0.45 m above level ground (dirt) in an area with a good all round view of the sky, in the operational orientation.

The test time stamp.

Event	Time, UTC+3	Message	Comment
National Location Protocol, point No 1			
Activation EUT	02.02.16 17:17:04		Configuration 7 - Beacon on ground plane.
Get message with location date	02.02.16 17:18:04	FFFE2F8C9F0018CB24217FF4467716280201	Decoding location: N 44°35'16" E 033°29'20"
Deactivation	02.02.16 17:18:18		
Activation EUT	02.02.16 17:15:27		Configuration 8 - Beacon above ground plane.
Get message with location date	02.02.16 17:16:27	FFFE2F8C9F0018CB24217FF4467716280201	Decoding location: N 44°35'16" E 033°29'20"
Deactivation	02.02.16 17:16:42		
Activation EUT	02.02.16 17:18:35		Configuration 5 - Water ground plane
Get message with location date	02.02.16 17:19:35	FFFE2F8C9F0018CB24217FF4467716280201	Decoding location: N 44°31'20" E 033°33'00"
Deactivation	02.02.16 17:19:49		
National Location Protocol, point No 2			
Activation EUT	02.02.16 14:15:58		Configuration 7 - Beacon on ground plane.
Get message with location date	02.02.16 14:16:58	FFFE2F8C9F0018CB2021829C32F715400449	Decoding location: N 44°31'20" E 033°33'00"
Deactivation	02.02.16 14:17:11		
Activation EUT	02.02.16 14:13:47		Configuration 8 - Beacon above ground plane.
Get message with location date	02.02.16 14:14:47	FFFE2F8C9F0018CB2021829C32F715400449	Decoding location: N 44°31'20" E 033°33'00"
Deactivation	02.02.16 14:14:59		
Activation EUT	02.02.16 14:18:01		Configuration 5 - Water ground plane
Get message with location date	02.02.16 14:19:01	FFFE2F8C9F0018CB20218B2A4A3714400FAA	Decoding location: N 44°31'20" E 033°33'00"
Deactivation	02.02.16 14:19:17		

Performance measurements on accordance requirements item A.3.8.2 T.007 – Position Acquisition Time and Position Accuracy

No	Test Name	C/S T.007 Standard Section	Test procedure description	Obtained results	Comments
1.	Beacon was coded at National Location - Test				
2.	Position Acquwasition Time and Position Accuracy at point No 1	A.3.8.2.1	a. EPIRB was placed on the aluminum dwask (configuration 7). b. Activate the beacon at the location with coordinate: - N 44°35'12.31" - E 33°29'16.52" c. Deactivate the beacon.	Time to Acquire Position: 1 min Encoded location data: - N 44°35'16" - E 33°29'20" Position accuracy 0.137 kilometers	Page No 154
3.	Position Acquwasition Time and Position Accuracy at point No 1	A.3.8.2.1	a. EPIRB was placed above ground plane (configuration 8). b. Activate the beacon at the location with coordinate: - N 44°35'12.31" - E 33°29'16.52" c. Deactivate the beacon.	Time to Acquire Position: 1 min Encoded location data: - N 44°35'16" - E 33°29'20" Position accuracy 0.137 kilometers	Page No 154
4.	Position Acquwasition Time and Position Accuracy at point No 1	A.3.8.2.1	a. EPIRB was placed on the water ground plane (configuration 5). b. Activate the beacon at the location with coordinate: - N 44°35'12.31" - E 33°29'16.52" c. Deactivate the beacon.	Time to Acquire Position: 1 min Encoded location data: - N 44°31'20" - E 33°33'00" Position accuracy 0.137 kilometers	Page No 154
5.	Position Acquwasition Time and Position Accuracy at point No 2	A.3.8.2.2	a. Change location to Point 2. The dwastance between Point 1 and Point 2 was 8.71 km. b. EPIRB was placed on the aluminum dwask (configuration 7). c. Activate the beacon at the location with coordinate: - N 44°31'19.66" - E 33°32'59.26" d. Deactivate the	Time to Acquire Position: 1 min Encoded location data: - N 44°31'20" - E 33°33'00" Position accuracy 0.0194 kilometers	Page No 155

No	Test Name	C/S T.007 Standard Section	Test procedure description	Obtained results	Comments
			beacon.		
6.	Position Acquwasition Time and Position Accuracy at point No 2	A.3.8.2.2	a. EPIRB was placed above ground plane (configuration 8). b. Activate the beacon at the location with coordinate: - N 44°31'19.66" - E 33°32'59.26" c. Deactivate the beacon.	Time to Acquire Position: 1 min Encoded location data: - N 44°31'20" - E 33°33'00" Position accuracy 0.0194 kilometers	Page No 155
7.	Position Acquwasition Time and Position Accuracy at point No 2	A.3.8.2.2	a. EPIRB was placed on the water ground plane (configuration 5). b. Activate the beacon at the location with coordinate: - N 44°31'19.66" - E 33°32'59.26" c. Deactivate the beacon.	Time to Acquire Position: 1 min Encoded location data: - N 44°31'20" - E 033°33'00" Position accuracy 0.0194 kilometers	Page No 156

Position Acquisition Time and Position Accuracy (Internal Navigation Devices)
(Table F-C.5 T.007)

Protocol	Operational Configuration	C/S T.007 Section A.3.8.2.1		C/S T.007 Section A.3.8.2.2	
		Time to Acquire Position (sec)	Location Error in meters	Time to Acquire Position (sec)	Location Error in meters
National Location - Test	Resting on aluminum disk - configuration 7	60	137	60	19.4
		Page No 154		Page No 155	
National Location - Test	Placed above ground plane - configuration 8	60	137	60	19.4
		Page No 154		Page No 155	
National Location - Test	Placed on the water ground plane - configuration 5	60	137	60	19.4
		Page No 154		Page No 156	

Decoding Beacon Message
Test site: Configuration 5– Placed on the water ground plane
Test site: Configuration 7 – Resting on aluminum disk
Test site: Configuration 8– Placed above ground plane
Location: Point “1” – N 44°35'12.31", E 33°29'16.52"

Full Hex message: FFFE2F8C9F0018CB24217FF4467716280201

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long National Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): National Test Location Protocol	37- 40	1111
National ID Number (18 bits, i.e. max=0x3 FFFF): 0x0 0063	41- 58	00 0000 0000 0110 0011
Latitude: N 44° 35' 16"		
Latitude Base Sign: North	59	0
Latitude Base Degree: 44	60- 66	010 1100
Latitude Base Minute (2 minute step): 36	67- 71	1 0010
Longitude: E 33° 29' 20"		
Longitude Base Sign: East	72	0
Longitude Base Degree: 33	73- 80	0010 0001
Longitude Base Minute (2 minute step): 30	81- 85	0 1111
BCH1: 0x1F D119	86-106	1 1111 1101 0001 0001 1001
Fixed bits (3 bits = 110): 6	107-109	110
Additional data type: Position Delta	110	1
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta Sign: -	113	0
Latitude Delta Minute (0..3): 0	114-115	00
Latitude Delta Seconds (4 seconds step): 44	116-119	1011
Longitude Delta Sign: -	120	0
Longitude Delta Minute (0..3): 0	121-122	00
Longitude Delta Seconds (4 seconds step): 40	123-126	1010
Additional Beacon Identification (6bit, i.e. max value - 0x3F): 0x00	127-132	00 0000
BCH2: 0x201	133-144	0010 0000 0001

Decoding Beacon Message
Test site: Configuration 7 – Resting on aluminum disk
Test site: Configuration 8– Placed above ground plane
Location: Point “2” – N 44°31'19.66", E 33°32'59.26"

Full Hex message: FFFE2F8C9F0018CB2021829C32F715400449

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long National Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): National Test Location Protocol	37- 40	1111
National ID Number (18 bits, i.e. max=0x3 FFFF): 0x0 0063	41- 58	00 0000 0000 0110 0011
Latitude: N 44° 31' 20"		
Latitude Base Sign: North	59	0
Latitude Base Degree: 44	60- 66	010 1100
Latitude Base Minute (2 minute step): 32	67- 71	1 0000
Longitude: E 33° 33' 00"		
Longitude Base Sign: East	72	0
Longitude Base Degree: 33	73- 80	0010 0001
Longitude Base Minute (2 minute step): 32	81- 85	1 0000
BCH1: 0x0A 70CB	86-106	0 1010 0111 0000 1100 1011
Fixed bits (3 bits = 110): 6	107-109	110
Additional data type: Position Delta	110	1
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta Sign: -	113	0
Latitude Delta Minute (0..3): 0	114-115	00
Latitude Delta Seconds (4 seconds step): 40	116-119	1010
Longitude Delta Sign: +	120	1
Longitude Delta Minute (0..3): 1	121-122	01
Longitude Delta Seconds (4 seconds step): 00	123-126	0000
Additional Beacon Identification (6bit, i.e. max value - 0x3F): 0x00	127-132	00 0000
BCH2: 0x449	133-144	0100 0100 1001

Decoding Beacon Message
Test site: Configuration 5– Placed on the water ground plane
Location: Point “2” – N 44°31'19.66", E 33°32'59.26"

Full Hex message: FFFE2F8C9F0018CB20218B2A4A3714400FAA

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long National Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): National Test Location Protocol	37- 40	1111
National ID Number (18 bits, i.e. max=0x3 FFFF): 0x0 0063	41- 58	00 0000 0000 0110 0011
Latitude: N 44° 31' 20"		
Latitude Base Sign: North	59	0
Latitude Base Degree: 44	60- 66	010 1100
Latitude Base Minute (2 minute step): 32	67- 71	1 0000
Longitude: E 33° 33' 00"		
Longitude Base Sign: East	72	0
Longitude Base Degree: 33	73- 80	0010 0001
Longitude Base Minute (2 minute step): 34	81- 85	1 0001
BCH1: 0x0C A928	86-106	0 1100 1010 1001 0010 1000
Fixed bits (3 bits = 110): 6	107-109	110
Additional data type: Position Delta	110	1
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta Sign: -	113	0
Latitude Delta Minute (0..3): 0	114-115	00
Latitude Delta Seconds (4 seconds step): 40	116-119	1010
Longitude Delta Sign: -	120	0
Longitude Delta Minute (0..3): 1	121-122	01
Longitude Delta Seconds (4 seconds step): 00	123-126	0000
Additional Beacon Identification (6bit, i.e. max value - 0x3F): 0x00	127-132	00 0000
BCH2: 0xFAA	133-144	1111 1010 1010

The test time stamp.

Event	Time, UTC+3	Message	Comment
Standart Location Protocol, point No 1			
Activation EUT	02.02.16 16:41:57		Configuration 7 - Beacon on ground plane.
Get message with location date	02.02.16 16:43:46	FFFE2F8C9E0000002C84309D97B79540BB89	Decoding location: N 44°35'20" E 033°29'16"
Deactivation	02.02.16 16:44:01		
Activation EUT	02.02.16 16:40:05		Configuration 8 - Beacon above ground plane.
Get message with location date	02.02.16 16:41:05	FFFE2F8C9E0000002C84309D97B79500A39A	Decoding location: N 44°35'16" E 33°29'20"
Deactivation	02.02.16 16:41:21		
Activation EUT	02.02.16 16:44:41		Configuration 5 - Water ground plane
Get message with location date	02.02.16 16:45:41	FFFE2F8C9E0000002C84309D97B79500A39A	Decoding location: N 44°31'20" E 33°33'00"
Deactivation	02.02.16 16:45:56		
Standart Location Protocol, point No 2			
Activation EUT	02.02.16 14:03:28		Configuration 7 - Beacon on ground plane.
Get message with location date	02.02.16 14:04:28	FFFE2F8C9E0000002C84309D97B785630AB0	Decoding location: N 44°31'20" E 33°33'00"
Deactivation	02.02.16 14:04:43		
Activation EUT	02.02.16 14:01:19		Configuration 8 - Beacon above ground plane.
Get message with location date	02.02.16 14:02:19	FFFE2F8C9E0000002C84309D97B785630AB0	Decoding location: N 44°31'20" E 33°33'00"
Deactivation	02.02.16 14:02:36		
Activation EUT	02.02.16 14:05:58		Configuration 5 - Water ground plane
Get message with location date	02.02.16 14:06:58	FFFE2F8C9E0000002C84309D97B785630AB0	Decoding location: N 44°31'20" E 33°33'00"
Deactivation	02.02.16 14:07:10		

Performance measurements on accordance requirements item A.3.8.2 T.007 – Position Acquisition Time and Position Accuracy

No	Test Name	C/S T.007 Standard Section	Test procedure description	Obtained results	Comments
1.	Beacon was coded at Standart Location - Test				
2.	Position Acquwasition Time and Position Accuracy at point No 1	A.3.8.2.1	a. EPIRB was placed on the aluminum dwask (configuration 7). b. Activate the beacon at the location with coordinate: - N 44°35'12.31" - E 33°29'16.52" c. Deactivate the beacon.	Time to Acquire Position: 1 min 49 sec Encoded location data: - N 44°35'20" - E 033°29'16" Position accuracy 0.238 kilometers	Page No 161
3.	Position Acquwasition Time and Position Accuracy at point No 1	A.3.8.2.1	a. EPIRB was placed above ground plane (configuration 8). b. Activate the beacon at the location with coordinate: - N 44°35'12.31" - E 33°29'16.52" c. Deactivate the beacon.	Time to Acquire Position: 1 min Encoded location data: - N 44°35'16" - E 33°29'20" Position accuracy 0.137 kilometers	Page No 162
4.	Position Acquwasition Time and Position Accuracy at point No 1	A.3.8.2.1	a. EPIRB was placed on the water ground plane (configuration 5). b. Activate the beacon at the location with coordinate: - N 44°35'12.31" - E 33°29'16.52" c. Deactivate the beacon.	Time to Acquire Position: 1 min Encoded location data: - N 44°31'20" - E 33°33'00" Position accuracy 0.137 kilometers	Page No 162
5.	Position Acquwasition Time and Position Accuracy at point No 2	A.3.8.2.2	a. Change location to Point 2. The dwastance between Point 1 and Point 2 was 8.71 km. b. EPIRB was placed on the aluminum dwask (configuration 7). c. Activate the beacon at the location with coordinate: - N 44°31'19.66" - E 33°32'59.26" d. Deactivate the	Time to Acquire Position: 1 min Encoded location data: - N 44°31'20" - E 33°33'00" Position accuracy 0.0194 kilometers	Page No 163

No	Test Name	C/S T.007 Standard Section	Test procedure description	Obtained results	Comments
			beacon.		
6.	Position Acquwasition Time and Position Accuracy at point No 2	A.3.8.2.2	a. EPIRB was placed above ground plane (configuration 8). b. Activate the beacon at the location with coordinate: - N 44°31'19.66" - E 33°32'59.26" c. Deactivate the beacon.	Time to Acquire Position: 1 min Encoded location data: - N 44°31'20" - E 33°33'00" Position accuracy 0.0194 kilometers	Page No 163
7.	Position Acquwasition Time and Position Accuracy at point No 2	A.3.8.2.2	a. EPIRB was placed on the water ground plane (configuration 5). b. Activate the beacon at the location with coordinate: - N 44°31'19.66" - E 33°32'59.26" c. Deactivate the beacon.	Time to Acquire Position: 1 min Encoded location data: - N 44°31'20" - E 33°33'00" Position accuracy 0.0194 kilometers	Page No 163

Position Acquisition Time and Position Accuracy (Internal Navigation Devices)
(Table F-C.5 T.007)

Protocol	Operational Configuration	C/S T.007 Section A.3.8.2.1		C/S T.007 Section A.3.8.2.2	
		Time to Acquire Position (sec)	Location Error in meters	Time to Acquire Position (sec)	Location Error in meters
Standart Location - Test	Resting on aluminum disk - configuration 7	109	238	60	19.4
		Page No 161		Page No 163	
Standart Location - Test	Placed above ground plane - configuration 8	60	137	60	19.4
		Page No 162		Page No 163	
Standart Location - Test	Placed on the water ground plane - configuration 5	60	137	60	19.4
		Page No 162		Page No 163	

Decoding Beacon Message
Test site: Configuration 7 – Resting on aluminum disk
Location: Point “1” – N 44°35'12.31", E 33°29'16.52"

Full Hex message: FFFE2F8C9E0000002C84309D97B79540BB89

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard Test Location Protocol	37- 40	1110
Binary data (24 bits, i.e. max=0xFF FFFF): 0x00 0000	41- 64	0000 0000 0000 0000 0000 0000
Latitude: N 44° 35' 20"		
Latitude Base Sign: North	65	0
Latitude Base(15' step): 44° 30'	66- 74	0 1011 0010
Longitude: E 33° 29' 16"		
Longitude Base Sign: East	75	0
Longitude Base (step 15'): 33° 30'	76- 85	00 1000 0110
BCH1: 0x02 765E	86-106	0 0010 0111 0110 0101 1110
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta Sign: +	113	1
Latitude Delta Minute (0..30): 5	114-118	0 0101
Latitude Delta Seconds (4 seconds step): 20	119-122	0101
Longitude Delta Sign: -	123	0
Longitude Delta Minute (0..30): 0	124-128	0 0000
Longitude Delta Seconds (4 seconds step): 44	129-132	1011
BCH2: 0xB89	133-144	1011 1000 1001

Decoding Beacon Message
Test site: Configuration 5– Placed on the water ground plane
Test site: Configuration 8– Placed above ground plane
Location: Point “1” – N 44°35'12.31", E 33°29'16.52"

Full Hex message: FFFE2F8C9E0000002C84309D97B79500A39A

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard Test Location Protocol	37- 40	1110
Binary data (24 bits, i.e. max=0xFF FFFF): 0x00 0000	41- 64	0000 0000 0000 0000 0000 0000
Latitude: N 44° 35' 16"		
Latitude Base Sign: North	65	0
Latitude Base(15' step): 44° 30'	66- 74	0 1011 0010
Longitude: E 33° 29' 20"		
Longitude Base Sign: East	75	0
Longitude Base (step 15'): 33° 30'	76- 85	00 1000 0110
BCH1: 0x02 765E	86-106	0 0010 0111 0110 0101 1110
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta Sign: +	113	1
Latitude Delta Minute (0..30): 5	114-118	0 0101
Latitude Delta Seconds (4 seconds step): 16	119-122	0100
Longitude Delta Sign: -	123	0
Longitude Delta Minute (0..30): 0	124-128	0 0000
Longitude Delta Seconds (4 seconds step): 40	129-132	1010
BCH2: 0x39A	133-144	0011 1001 1010

Decoding Beacon Message
Test site: Configuration 5– Placed on the water ground plane
Test site: Configuration 7 – Resting on aluminum disk
Test site: Configuration 8– Placed above ground plane
Location: Point “2” – N 44°31'19.66", E 33°32'59.26"

Full Hex message: FFFE2F8C9E0000002C84309D97B785630AB0

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard Test Location Protocol	37- 40	1110
Binary data (24 bits, i.e. max=0xFF FFFF): 0x00 0000	41- 64	0000 0000 0000 0000 0000 0000
Latitude: N 44° 31' 20"		
Latitude Base Sign: North	65	0
Latitude Base(15' step): 44° 30'	66- 74	0 1011 0010
Longitude: E 33° 33' 00"		
Longitude Base Sign: East	75	0
Longitude Base (step 15'): 33° 30'	76- 85	00 1000 0110
BCH1: 0x02 765E	86-106	0 0010 0111 0110 0101 1110
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta Sign: +	113	1
Latitude Delta Minute (0..30): 1	114-118	0 0001
Latitude Delta Seconds (4 seconds step): 20	119-122	0101
Longitude Delta Sign: +	123	1
Longitude Delta Minute (0..30): 3	124-128	0 0011
Longitude Delta Seconds (4 seconds step): 00	129-132	0000
BCH2: 0xAB0	133-144	1010 1011 0000

The test time stamp.

Event	Time, UTC+3	Message	Comment
User Location Protocol, point No 1, External GNSS antenna			
Activation EUT	02.02.16 16:18:54		Configuration 7 - Beacon on ground plane.
Get message with location date	02.02.16 16:19:54	FFFE2FCC9E000000000007CDFDE59221788C	Decoding location: N 44°36'00" E 33°28'00"
Deactivation	02.02.16 16:20:10		
Activation EUT	02.02.16 16:16:15		Configuration 8 - Beacon above ground plane.
Get message with location date	02.02.16 16:18:04	FFFE2FCC9E000000000007CDFDE59221788C	Decoding location: N 44°36'00" E 33°28'00"
Deactivation	02.02.16 16:18:20		
Activation EUT	02.02.16 16:20:41		Configuration 5 - Water ground plane.
Get message with location date	02.02.16 16:21:41	FFFE2FCC9E000000000007CDFDE59221788C	Decoding location: N 44°32'00" E 33°32'00"
Deactivation	02.02.16 16:21:57		
User Location Protocol, point No 2			
Activation EUT	02.02.16 14:31:57		Configuration 7 - Beacon on ground plane.
Get message with location date	02.02.16 14:32:57	FFFE2FCC9E000000000007CDFDE59021875F	Decoding location: N 44°32'00" E 33°32'00"
Deactivation	02.02.16 14:33:12		
Activation EUT	02.02.16 14:29:41		Configuration 8 - Beacon above ground plane.
Get message with location date	02.02.16 14:30:41	FFFE2FCC9E000000000007CDFDE59021875F	Decoding location: N 44°32'00" E 33°32'00"
Deactivation	02.02.16 14:30:55		
Activation EUT	02.02.16 14:34:19		Configuration 5 - Water ground plane.
Get message with location date	02.02.16 14:35:19	FFFE2FCC9E000000000007CDFDE59021875F	Decoding location: N 44°32'00" E 33°32'00"
Deactivation	02.02.16 14:35:31		

Performance measurements on accordance requirements item A.3.8.2 T.007 – Position Acquisition Time and Position Accuracy

No	Test Name	C/S T.007 Standard Section	Test procedure description	Obtained results	Comments
1.	Beacon was coded at User Location - Test				
2.	Position Acquwasition Time and Position Accuracy at point No 1	A.3.8.2.1	a. EPIRB was placed on the aluminum dwask (configuration 7). b. Activate the beacon at the location with coordinate: - N 44°35'12.31" - E 33°29'16.52" c. Deactivate the beacon.	Time to Acquire Position: 1 min Encoded location data: - N 44°36'00" - E 33°28'00" Position accuracy 2.235 kilometers	Page No 168
3.	Position Acquwasition Time and Position Accuracy at point No 1	A.3.8.2.1	a. EPIRB was placed above ground plane (configuration 8). b. Activate the beacon at the location with coordinate: - N 44°35'12.31" - E 33°29'16.52" c. Deactivate the beacon.	Time to Acquire Position: 1 min 49 sec Encoded location data: - N 44°36'00" - E 33°28'00" Position accuracy 2.235 kilometers	Page No 168
4.	Position Acquwasition Time and Position Accuracy at point No 1	A.3.8.2.1	a. EPIRB was placed on the water ground plane (configuration 5). b. Activate the beacon at the location with coordinate: - N 44°35'12.31" - E 33°29'16.52" c. Deactivate the beacon.	Time to Acquire Position: 1 min Encoded location data: - N 44°32'00" - E 33°32'00" Position accuracy 2.235 kilometers	Page No 168
5.	Position Acquwasition Time and Position Accuracy at point No 2	A.3.8.2.2	a. Change location to Point 2. The dwastance between Point 1 and Point 2 was 8.71 km. b. EPIRB was placed on the aluminum dwask (configuration 7). c. Activate the beacon at the location with coordinate: - N 44°31'19.66" - E 33°32'59.26" d. Deactivate the	Time to Acquire Position: 1 min Encoded location data: - N 44°32'00" - E 33°32'00" Position accuracy 1.803 kilometers	Page No 169

No	Test Name	C/S T.007 Standard Section	Test procedure description	Obtained results	Comments
			beacon.		
6.	Position Acquwasition Time and Position Accuracy at point No 2	A.3.8.2.2	a. EPIRB was placed above ground plane (configuration 8). b. Activate the beacon at the location with coordinate: - N 44°31'19.66" - E 33°32'59.26" c. Deactivate the beacon.	Time to Acquire Position: 1 min Encoded location data: - N 44°32'00" - E 33°32'00" Position accuracy 1.803 kilometers	Page No 169
7.	Position Acquwasition Time and Position Accuracy at point No 2	A.3.8.2.2	a. EPIRB was placed on the water ground plane (configuration 5). b. Activate the beacon at the location with coordinate: - N 44°31'19.66" - E 33°32'59.26" c. Deactivate the beacon.	Time to Acquire Position: 1 min Encoded location data: - N 44°32'00" - E 33°32'00" Position accuracy 1.803 kilometers	Page No 169

Position Acquisition Time and Position Accuracy (Internal Navigation Devices)
(Table F-C.5 T.007)

Protocol	Operational Configuration	C/S T.007 Section A.3.8.2.1		C/S T.007 Section A.3.8.2.2	
		Time to Acquire Position (sec)	Location Error in meters	Time to Acquire Position (sec)	Location Error in meters
User Location - Test	Resting on aluminum disk - configuration 7	60	2235	60	1803
		Page No 168		Page No 169	
User Location - Test	Placed above ground plane - configuration 8	109	2235	60	1803
		Page No 168		Page No 169	
User Location - Test	Placed on the water ground plane - configuration 5	60	2235	60	1803
		Page No 168		Page No 169	

Decoding Beacon Message
Test site: Configuration 5– Placed on the water ground plane
Test site: Configuration 7 – Resting on aluminum disk
Test site: Configuration 8– Placed above ground plane
Location: Point “1” – N 44°35'12.31", E 33°29'16.52"

Full Hex message: FFFE2FCC9E000000000007CDFDE59221788C

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Test User Protocol	37- 39	111
Binary data (46 bits, i.e. max=0x3FFF FFFF FFFF): 0x0000 0000 0000	40- 85	00 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
BCH1: 0x1F 37F7	86-106	1 1111 0011 0111 1111 0111
Position data source: Internal	107	1
Latitude: N 44° 36' 00"	108-119	0010 1100 1001
Latitude Sign: North	108	0
Latitude Degree: 44	109-115	010 1100
Latitude Minute (4 minute step): 36	116-119	1001
Longitude: E 33° 28' 00"	120-132	0 0010 0001 0111
Longitude Sign: East	120	0
Longitude Degree: 33	121-128	0010 0001
Longitude Minute (4 minute step): 28	129-132	0111
BCH2: 0x88C	133-144	1000 1000 1100

Decoding Beacon Message
Test site: Configuration 5– Placed on the water ground plane
Test site: Configuration 7 – Resting on aluminum disk
Test site: Configuration 8– Placed above ground plane
Location: Point “2” – N 44°31'19.66", E 33°32'59.26"

Full Hex message: FFFE2FCC9E000000000007CDFDE59021875F

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Test User Protocol	37- 39	111
Binary data (46 bits, i.e. max=0x3FFF FFFF FFFF): 0x0000 0000 0000	40- 85	00 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
BCH1: 0x1F 37F7	86-106	1 1111 0011 0111 1111 0111
Position data source: Internal	107	1
Latitude: N 44° 32' 00"	108-119	0010 1100 1000
Latitude Sign: North	108	0
Latitude Degree: 44	109-115	010 1100
Latitude Minute (4 minute step): 32	116-119	1000
Longitude: E 33° 32' 00"	120-132	0 0010 0001 1000
Longitude Sign: East	120	0
Longitude Degree: 33	121-128	0010 0001
Longitude Minute (4 minute step): 32	129-132	1000
BCH2: 0x75F	133-144	0111 0101 1111

5.8.3 Encoded Position Data Update Interval (A.3.8.3)

Test Date: 09.03.16
Protocol: National Test Protocol
Test conditions:
- Ambient temperature: 23.8 °C - 24.4 °C
- Relative air humidity: 49 – 51 %

Test procedure:
The beacon was tested according to T.007 Issue 4 Revision 8 as allowed by T.007 Issue 4 Revision 9, section A.3.8.3 (footnote 1).

The test time stamp.

Event	Time, UTC+3	Message	Comment
National Location Protocol			
Start of test			BUT was placed in Location 1
Activation EUT	09.03.16 16:34:04		
Get message with location date	09.03.16 16:35:04	FFFE2F8C9F0018CB24217FF4467710280500	N 44°35'28" E 033°29'20" Page No 171
Change Location	09.03.16 16:35:44		Start of location change from point 1 to point 2
	09.03.16 16:40:48		Completion of the change of location from point 1 to point 2
Get message with location date	09.03.16 17:04:59	FFFE2F8C9F0018CB22217D950DF79C10039B	N 44°34'56" E 033°29'44" Page No 172
Deactivation	09.03.16 17:05:25		

Decoding Beacon Message
Location:Point “1” – N 44°35'28", E 033°29'20"

Full Hex message: FFFE2F8C9F0018CB24217FF4467710280500

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long National Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): National Test Location Protocol	37- 40	1111
National ID Number (18 bits, i.e. max=0x3 FFFF): 0x0 0063	41- 58	00 0000 0000 0110 0011
Latitude: N 44° 35' 28"		
Latitude Base Sign: North	59	0
Latitude Base Degree: 44	60- 66	010 1100
Latitude Base Minute (2 minute step): 36	67- 71	1 0010
Longitude: E 33° 29' 20"		
Longitude Base Sign: East	72	0
Longitude Base Degree: 33	73- 80	0010 0001
Longitude Base Minute (2 minute step): 30	81- 85	0 1111
BCH1: 0x1F D119	86-106	1 1111 1101 0001 0001 1001
Fixed bits (3 bits = 110): 6	107-109	110
Additional data type: Position Delta	110	1
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta Sign: -	113	0
Latitude Delta Minute (0..3): 0	114-115	00
Latitude Delta Seconds (4 seconds step): 32	116-119	1000
Longitude Delta Sign: -	120	0
Longitude Delta Minute (0..3): 0	121-122	00
Longitude Delta Seconds (4 seconds step): 40	123-126	1010
Additional Beacon Identification (6bit, i.e. max value - 0x3F): 0x00	127-132	00 0000
BCH2: 0x500	133-144	0101 0000 0000

Decoding Beacon Message
Location: Point “2” – N 44°34'56", E 033°29'44"

Full Hex message: FFFE2F8C9F0018CB22217D950DF79C10039B

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long National Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): National Test Location Protocol	37- 40	1111
National ID Number (18 bits, i.e. max=0x3 FFFF): 0x0 0063	41- 58	00 0000 0000 0110 0011
Latitude: N 44° 34' 56"		
Latitude Base Sign: North	59	0
Latitude Base Degree: 44	60- 66	010 1100
Latitude Base Minute (2 minute step): 34	67- 71	1 0001
Longitude: E 33° 29' 44"		
Longitude Base Sign: East	72	0
Longitude Base Degree: 33	73- 80	0010 0001
Longitude Base Minute (2 minute step): 30	81- 85	0 1111
BCH1: 0x16 5437	86-106	1 0110 0101 0100 0011 0111
Fixed bits (3 bits = 110): 6	107-109	110
Additional data type: Position Delta	110	1
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta Sign: +	113	1
Latitude Delta Minute (0..3): 0	114-115	00
Latitude Delta Seconds (4 seconds step): 56	116-119	1110
Longitude Delta Sign: -	120	0
Longitude Delta Minute (0..3): 0	121-122	00
Longitude Delta Seconds (4 seconds step): 16	123-126	0100
Additional Beacon Identification (6bit, i.e. max value - 0x3F): 0x00	127-132	00 0000
BCH2: 0x39B	133-144	0011 1001 1011

Protocol: Standart Test Protocol
Test Date: 09.03.16

The test time stamp.

Event	Time, UTC+3	Message	Comment
Standart Location Protocol			
Start of test			BUT was placed in Location 1
Activation EUT	09.03.16 15:47:04		
Get message with location date	09.03.16 15:48:04	FFFE2F8C9E0000002C84309D97B795C0A1DD	N 44°35'28" E 033°29'20" Page No 174
Change Location	09.03.16 15:48:44		Start of location change from point 1 to point 2
	09.03.16 15:51:47		Completion of the change of location from point 1 to point 2
Get message with location date	09.03.16 16:17:59	FFFE2F8C9E0000002C84309D97B7938043E3	N 44°34'56" E 033°29'44" Page No 175
Deactivation	09.03.16 16:19:15		

Decoding Beacon Message
Location:Point “1” – N 44°35'28", E 033°29'20"

Full Hex message: FFFE2F8C9E0000002C84309D97B795C0A1DD

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard Test Location Protocol	37- 40	1110
Binary data (24 bits, i.e. max=0xFF FFFF): 0x00 0000	41- 64	0000 0000 0000 0000 0000 0000
Latitude: N 44° 35' 28"		
Latitude Base Sign: North	65	0
Latitude Base(15' step): 44° 30'	66- 74	0 1011 0010
Longitude: E 33° 29' 20"		
Longitude Base Sign: East	75	0
Longitude Base (step 15'): 33° 30'	76- 85	00 1000 0110
BCH1: 0x02 765E	86-106	0 0010 0111 0110 0101 1110
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta Sign: +	113	1
Latitude Delta Minute (0..30): 5	114-118	0 0101
Latitude Delta Seconds (4 seconds step): 28	119-122	0111
Longitude Delta Sign: -	123	0
Longitude Delta Minute (0..30): 0	124-128	0 0000
Longitude Delta Seconds (4 seconds step): 40	129-132	1010
BCH2: 0x1DD	133-144	0001 1101 1101

Decoding Beacon Message
Location: Point “2” – N 44°34'56", E 033°29'44"

Full Hex message: FFFE2F8C9E0000002C84309D97B7938043E3

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard Test Location Protocol	37- 40	1110
Binary data (24 bits, i.e. max=0xFF FFFF): 0x00 0000	41- 64	0000 0000 0000 0000 0000 0000
Latitude: N 44° 34' 56"		
Latitude Base Sign: North	65	0
Latitude Base(15' step): 44° 30'	66- 74	0 1011 0010
Longitude: E 33° 29' 44"		
Longitude Base Sign: East	75	0
Longitude Base (step 15'): 33° 30'	76- 85	00 1000 0110
BCH1: 0x02 765E	86-106	0 0010 0111 0110 0101 1110
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta Sign: +	113	1
Latitude Delta Minute (0..30): 4	114-118	0 0100
Latitude Delta Seconds (4 seconds step): 56	119-122	1110
Longitude Delta Sign: -	123	0
Longitude Delta Minute (0..30): 0	124-128	0 0000
Longitude Delta Seconds (4 seconds step): 16	129-132	0100
BCH2: 0x3E3	133-144	0011 1110 0011

Protocol: User Test Protocol
Test Date: 09.03.16

The test time stamp.

Event	Time, UTC+3	Message	Comment
User Location Protocol			
Start of test			BUT was placed in Location 1
Activation EUT	09.03.16 14:45:01		
Get message with location date	09.03.16 14:46:01	FFFE2FCC9E000000000007CDFDE590219266	N 44°32'00" E 033°36'00" Page No 177
Change Location	09.03.16 14:46:41		Start of location change from point 1 to point 2
	09.03.16 14:56:44		Completion of the change of location from point 1 to point 2
Get message with location date	09.03.16 15:15:55	FFFE2FCC9E000000000007CDFDE59021875F	N 44°32'00" E 033°32'00" Page No 178
Deactivation	09.03.16 15:20:50		

Decoding Beacon Message
Location:Point “1” – N 44°32'00", E 033°36'00"

Full Hex message: FFFE2FCC9E000000000007CDFDE590219266

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Test User Protocol	37- 39	111
Binary data (46 bits, i.e. max=0x3FFF FFFF FFFF): 0x0000 0000 0000	40- 85	00 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
BCH1: 0x1F 37F7	86-106	1 1111 0011 0111 1111 0111
Position data source: Internal	107	1
Latitude: N 44° 32' 00"	108-119	0010 1100 1000
Latitude Sign: North	108	0
Latitude Degree: 44	109-115	010 1100
Latitude Minute (4 minute step): 32	116-119	1000
Longitude: E 33° 36' 00"	120-132	0 0010 0001 1001
Longitude Sign: East	120	0
Longitude Degree: 33	121-128	0010 0001
Longitude Minute (4 minute step): 36	129-132	1001
BCH2: 0x266	133-144	0010 0110 0110

Decoding Beacon Message
Location: Point “2” – N 44°32'00", E 033°32'00"

Full Hex message: FFFE2FCC9E000000000007CDFDE59021875F

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Test User Protocol	37- 39	111
Binary data (46 bits, i.e. max=0x3FFF FFFF FFFF): 0x0000 0000 0000	40- 85	00 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
BCH1: 0x1F 37F7	86-106	1 1111 0011 0111 1111 0111
Position data source: Internal	107	1
Latitude: N 44° 32' 00"	108-119	0010 1100 1000
Latitude Sign: North	108	0
Latitude Degree: 44	109-115	010 1100
Latitude Minute (4 minute step): 32	116-119	1000
Longitude: E 33° 32' 00"	120-132	0 0010 0001 1000
Longitude Sign: East	120	0
Longitude Degree: 33	121-128	0010 0001
Longitude Minute (4 minute step): 32	129-132	1000
BCH2: 0x75F	133-144	0111 0101 1111

5.8.4 Position Clearance after Deactivation (A.3.8.4)

Protocol: Standard Test Protocol
Test Date: 09.03.16

The test time stamp.

Event	Time, UTC+3	Message	Comment
Standart Location Protocol			
Reactivation EUT	09.03.16 16:19:22		BUT was reactivated after test A.3.8.3, with no navigation signal or navigation data input
Get operating message with location date	09.03.16 16:20:22	FFFE2F8C9E0000007FDFFA79ED3783E0F66C	Message location: default Page No 180
Deactivation	09.03.16 16:20:34		

Decoding Beacon Message

Full Hex message: FFFE2F8C9E0000007FDFFA79ED3783E0F66C

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard Test Location Protocol	37- 40	1110
Binary data (24 bits, i.e. max=0xFF FFFF): 0x00 0000	41- 64	0000 0000 0000 0000 0000 0000
Latitude: Default		
Latitude Base: Default	65- 74	01 1111 1111
Longitude: Default		
Lonitude Base: Default	75- 85	011 1111 1111
BCH1: 0x09 E7B4	86-106	0 1001 1110 0111 1011 0100
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-122	10 0000 1111
Longitude Delta: Default	123-132	10 0000 1111
BCH2: 0x66C	133-144	0110 0110 1100

Protocol: National Test Protocol
Test Date: 09.03.16

The test time stamp.

Event	Time, UTC+3	Message	Comment
National Location Protocol			
Reactivation EUT	09.03.16 17:05:35		BUT was reactivated after test A.3.8.3, with no navigation signal or navigation data input
Get operating message with location date	09.03.16 17:06:35	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010	Message location: default Page No 182
Deactivation	09.03.16 17:06:47		

Decoding Beacon Message

Full Hex message: FFFE2F8C9F0018DFC0FF04F9E4379F3C0010

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long National Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): National Test Location Protocol	37- 40	1111
National ID Number (18 bits, i.e. max=0x3 FFFF): 0x0 0063	41- 58	00 0000 0000 0110 0011
Latitude: Default		
Latitude Base: Default	59- 71	0 1111 1110 0000
Longitude: Default		
Lonitude Base: Default	72- 85	01 1111 1110 0000
BCH1: 0x13 E790	86-106	1 0011 1110 0111 1001 0000
Fixed bits (3 bits = 110): 6	107-109	110
Additional data type: Position Delta	110	1
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-119	100 1111
Longitude Delta: Default	120-126	100 1111
Additional Beacon Identification (6bit, i.e. max value - 0x3F): 0x00	127-132	00 0000
BCH2: 0x010	133-144	0000 0001 0000

Protocol: User Test Protocol
Test Date: 09.03.16

The test time stamp.

Event	Time, UTC+3	Message	Comment
User Location Protocol			
Reactivation EUT	09.03.16 15:21:00		BUT was reactivated after test A.3.8.3, with no navigation signal or navigation data input
Get operating message with location date	09.03.16 15:22:00	FFFE2FCC9E000000000007CDFDEFE0FF0146	Message location: default Page No 184
Deactivation	09.03.16 15:22:11		

Decoding Beacon Message

Full Hex message: FFFE2FCC9E000000000007CDFDEFE0FF0146

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Test User Protocol	37- 39	111
Binary data (46 bits, i.e. max=0x3FFF FFFF FFFF): 0x0000 0000 0000	40- 85	00 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
BCH1: 0x1F 37F7	86-106	1 1111 0011 0111 1111 0111
Position data source: Internal	107	1
Latitude: Default	108-119	0111 1111 0000
Longitude: Default	120-132	0 1111 1111 0000
BCH2: 0x146	133-144	0001 0100 0110

5.8.5 Last Valid Position (A.3.8.6)

Protocol: Standard Location Protocol
Test Date: 01.02.16

The test time stamp.

Event	Time, UTC+3	Message	Comment
Standart Location Protocol			
Start of test			BUT was placed in Location 1
Activation EUT	01.02.16 16:06:10		
Get message with location date	01.02.16 16:07:10	FFFE2F8C9E0000002C84309D97B79500A39A	N 44°35'16" E 033°29'20" Page No 186
Navigation input removal	01.02.16 16:08:15		
The next message after navigation input removal	01.02.16 16:08:50	FFFE2F8C9E0000002C84309D97B79500A39A	N 44°35'16" E 033°29'20" Page No 186
Received last message with encoded position	01.02.16 20:06:02	FFFE2F8C9E0000002C84309D97B79500A39A	N 44°35'16" E 033°29'20" Page No 186
Received first message with default position	01.02.16 20:06:52	FFFE2F8C9E0000007FDFFA79ED3783E0F66C	default Page No 187
Deactivation	01.02.16 20:07:28		

Time of change coordinates on coordinates by default was 3 hours 59 minute 42 seconds equal 239 minutes 42 seconds.

Decoding Beacon Message

Full Hex message: FFFE2F8C9E0000002C84309D97B79500A39A

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard Test Location Protocol	37- 40	1110
Binary data (24 bits, i.e. max=0xFF FFFF): 0x00 0000	41- 64	0000 0000 0000 0000 0000 0000
Latitude: N 44° 35' 16"		
Latitude Base Sign: North	65	0
Latitude Base(15' step): 44° 30'	66- 74	0 1011 0010
Longitude: E 33° 29' 20"		
Longitude Base Sign: East	75	0
Longitude Base (step 15'): 33° 30'	76- 85	00 1000 0110
BCH1: 0x02 765E	86-106	0 0010 0111 0110 0101 1110
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta Sign: +	113	1
Latitude Delta Minute (0..30): 5	114-118	0 0101
Latitude Delta Seconds (4 seconds step): 16	119-122	0100
Longitude Delta Sign: -	123	0
Longitude Delta Minute (0..30): 0	124-128	0 0000
Longitude Delta Seconds (4 seconds step): 40	129-132	1010
BCH2: 0x39A	133-144	0011 1001 1010

Decoding Beacon Message

Full Hex message: FFFE2F8C9E0000007FDFFA79ED3783E0F66C

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long Standard Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Standard Test Location Protocol	37- 40	1110
Binary data (24 bits, i.e. max=0xFF FFFF): 0x00 0000	41- 64	0000 0000 0000 0000 0000 0000
Latitude: Default		
Latitude Base: Default	65- 74	01 1111 1111
Longitude: Default		
Lonitude Base: Default	75- 85	011 1111 1111
BCH1: 0x09 E7B4	86-106	0 1001 1110 0111 1011 0100
Fixed bits (4 bits = 1101): 0xD	107-110	1101
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-122	10 0000 1111
Longitude Delta: Default	123-132	10 0000 1111
BCH2: 0x66C	133-144	0110 0110 1100

Protocol: National Location Protocol
Test Date: 01.02.16

The test time stamp.

Event	Time, UTC+3	Message	Comment
National Location Protocol			
Start of test			BUT was placed in Location 1
Activation EUT	01.02.16 11:22:00		
Get message with location date	01.02.16 11:23:00	FFFE2F8C9F0018CB24217FF4467716240E03	N 44°35'16" E 033°29'24" Page No 189
Navigation input removal	01.02.16 11:24:05		
The next message after navigation input removal	01.02.16 11:27:09	FFFE2F8C9F0018CB24217FF4467716240E03	N 44°35'16" E 033°29'24" Page No 189
Received last message with encoded position	01.02.16 15:21:51	FFFE2F8C9F0018CB24217FF4467716240E03	N 44°35'16" E 033°29'24" Page No 189
Received first message with default position	01.02.16 15:22:41	FFFE2F8C9F0018DFC0FF04F9E4379F3C0010	default Page No 190
Deactivation	01.02.16 15:23:17		

Time of change coordinates on coordinates by default was 3 hours 59 minute 41 seconds equal 239 minutes 41 seconds.

Decoding Beacon Message

Full Hex message: FFFE2F8C9F0018CB24217FF4467716240E03

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long National Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): National Test Location Protocol	37- 40	1111
National ID Number (18 bits, i.e. max=0x3 FFFF): 0x0 0063	41- 58	00 0000 0000 0110 0011
Latitude: N 44° 35' 16"		
Latitude Base Sign: North	59	0
Latitude Base Degree: 44	60- 66	010 1100
Latitude Base Minute (2 minute step): 36	67- 71	1 0010
Longitude: E 33° 29' 24"		
Longitude Base Sign: East	72	0
Longitude Base Degree: 33	73- 80	0010 0001
Longitude Base Minute (2 minute step): 30	81- 85	0 1111
BCH1: 0x1F D119	86-106	1 1111 1101 0001 0001 1001
Fixed bits (3 bits = 110): 6	107-109	110
Additional data type: Position Delta	110	1
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta Sign: -	113	0
Latitude Delta Minute (0..3): 0	114-115	00
Latitude Delta Seconds (4 seconds step): 44	116-119	1011
Longitude Delta Sign: -	120	0
Longitude Delta Minute (0..3): 0	121-122	00
Longitude Delta Seconds (4 seconds step): 36	123-126	1001
Additional Beacon Identification (6bit, i.e. max value - 0x3F): 0x00	127-132	00 0000
BCH2: 0xE03	133-144	1110 0000 0011

Decoding Beacon Message

Full Hex message: FFFE2F8C9F0018DFC0FF04F9E4379F3C0010

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: Long National Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: Standard/National Protocol	26	0
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): National Test Location Protocol	37- 40	1111
National ID Number (18 bits, i.e. max=0x3 FFFF): 0x0 0063	41- 58	00 0000 0000 0110 0011
Latitude: Default		
Latitude Base: Default	59- 71	0 1111 1110 0000
Longitude: Default		
Lonitude Base: Default	72- 85	01 1111 1110 0000
BCH1: 0x13 E790	86-106	1 0011 1110 0111 1001 0000
Fixed bits (3 bits = 110): 6	107-109	110
Additional data type: Position Delta	110	1
Position data source: Internal	111	1
Auxiliary Radio Locating Device: 121.5 MHz Radio Locating Device Included	112	1
Latitude Delta: Default	113-119	100 1111
Longitude Delta: Default	120-126	100 1111
Additional Beacon Identification (6bit, i.e. max value - 0x3F): 0x00	127-132	00 0000
BCH2: 0x010	133-144	0000 0001 0000

Protocol: User Location Protocol
Test Date: 02.02.16

The test time stamp.

Event	Time, UTC+3	Message	Comment
User Location Protocol			
Start of test			BUT was placed in Location 1
Activation EUT	02.02.16 08:30:04		
Get message with location date	02.02.16 08:31:04	FFFE2FCC9E000000000007CDFDE59221788C	N 44°36'00" E 033°28'00" Page No 192
Navigation input removal	02.02.16 08:32:09		
The next message after navigation input removal	02.02.16 08:33:35	FFFE2FCC9E000000000007CDFDE59221788C	N 44°36'00" E 033°28'00" Page No 192
Received last message with encoded position	02.02.16 12:29:55	FFFE2FCC9E000000000007CDFDE59221788C	N 44°36'00" E 033°28'00" Page No 192
Received first message with default position	02.02.16 12:30:46	FFFE2FCC9E000000000007CDFDEFE0FF0146	default Page No 193
Deactivation	02.02.16 12:31:22		

Time of change coordinates on coordinates by default was 3 hours 59 minute 42 seconds equal 239 minutes 42 seconds.

Decoding Beacon Message

Full Hex message: FFFE2FCC9E000000000007CDFDE59221788C

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Test User Protocol	37- 39	111
Binary data (46 bits, i.e. max=0x3FFF FFFF FFFF): 0x0000 0000 0000	40- 85	00 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
BCH1: 0x1F 37F7	86-106	1 1111 0011 0111 1111 0111
Position data source: Internal	107	1
Latitude: N 44° 36' 00"	108-119	0010 1100 1001
Latitude Sign: North	108	0
Latitude Degree: 44	109-115	010 1100
Latitude Minute (4 minute step): 36	116-119	1001
Longitude: E 33° 28' 00"	120-132	0 0010 0001 0111
Longitude Sign: East	120	0
Longitude Degree: 33	121-128	0010 0001
Longitude Minute (4 minute step): 28	129-132	0111
BCH2: 0x88C	133-144	1000 1000 1100

Decoding Beacon Message

Full Hex message: FFFE2FCC9E000000000007CDFDEFE0FF0146

ITEM	BITS	VALUE
Bit synchronization: 0x7FFF	1- 15	111 1111 1111 1111
Frame synchronization: 0x2F	16- 24	0 0010 1111
Protocol: User-Location Protocol		
Format Flag: Long Message	25	1
Protocol Flag: User Protocol	26	1
Country Code: 201 - Albania	27- 36	00 1100 1001
Identification type (protocol code): Test User Protocol	37- 39	111
Binary data (46 bits, i.e. max=0x3FFF FFFF FFFF): 0x0000 0000 0000	40- 85	00 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
BCH1: 0x1F 37F7	86-106	1 1111 0011 0111 1111 0111
Position data source: Internal	107	1
Latitude: Default	108-119	0111 1111 0000
Longitude: Default	120-132	0 1111 1111 0000
BCH2: 0x146	133-144	0001 0100 0110

5.8.6 Position Data Encoding (A.3.8.7)

Date of Test	27-03-2016,28-03-2016
Specification	C/S T.007 – section A.2.5
Beacon Model	MT603G
EUT Mod State	1
Serial Number	99
EUT system configuration during the test, including antenna, external ancillary devices and modes of their operation	The EUT was fitted with a 50 Ohm attenuator to the 406.04MHz transmitter via coaxial cable which was then connected to a WS Technologies BT100S Beacon Tester. The 121 MHz Transmitter was disabled.
Performed by	K Wilson-Elswood
Environmental conditions	Ambient Temperature 22°C
Deviations from standard test procedures	Standard Location Protocol as tested with Serial number 9999
Non-compliances noticed	No non-compliances

This test was carried out by the manufacturer.
The results are provided in the manufacturer's report as per Appendix C to Annex F (see page 372).

5.9 Satellite Qualitative Test

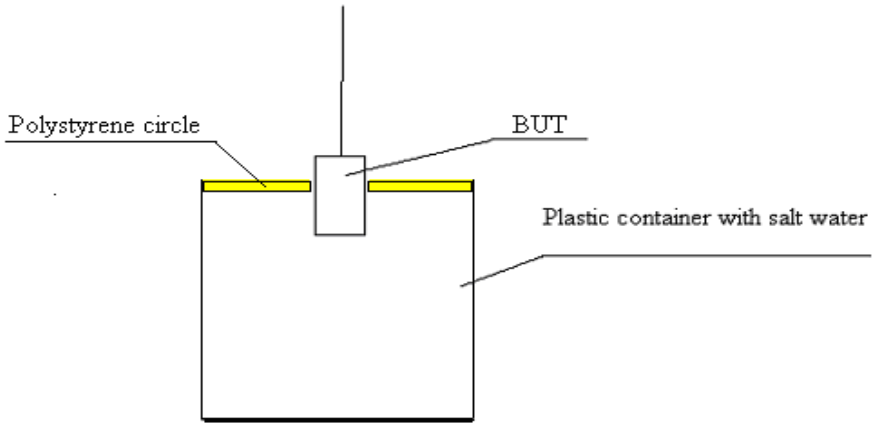
Date of test	24.02.2016-25.02.2016
Specification	C/S T.007 – section A.2.5
Beacon Model	MT603FG
Serial number	97MT400ANT
EUT Mod State	0
EUT system configuration, including ancillary devices and modes of their operation:	The EUT was a fully packaged beacon, similar to the proposed production beacons equipped with its proper antenna
Beacon Antenna	Integral
Environmental conditions	Ambient temperature: 5-13 °C Relative air humidity: 54-100 %
Deviations from standard test procedures	There were no deviations from standard test procedures
Non-compliances noticed	There were not non-compliances

5.9.1 Test Configuration 5 "Water" Ground Plane

Date of the Test: February 25. 2016
Time of the Test: 04:50 UTC – 15:40 UTC

Test conditions:

- Ambient temperature at open testing area: 5-10 °C
- Relative air humidity: 97-100 %
- Atmosphere pressure: 736-737 mm/Hg
- The duration of the satellite test: 10 hours 50 minutes.
- The homing transmitter not operated.
- Actual Location: N 44º35'12.3"; E 33º29'16.6".
- Data provided by CMC
- Beacon was completely submerged in salt water [composition 5% salt solution by weight, activated while submerged, and floating to the surface under its own buoyancy.
- Beacon was maintained at or near the centre of the container for the duration of the test that was provided by a polystyrene radio transparent circle, floating on the surface of water, the free swimming of beacon in water was provided by the central opening.
- Container holding the salt water was placed in an area with a good all round view of the sky.
- Container by a diameter 58 cm and depth by a 66 cm is made from a non-conductive material (PVC plastic) and there is 42 cm of salt water under the base of the beacon when it is floating in the container and 22 cm of salt water between the beacon and the sides of the container.
- Beacon is submerged in a container with water at floating-line.



Beacon coding

- Beacon is coded with Standard Location – Test protocol
- Country code is Russia
- Message content 1 – 144 bits: FFFE3FD11E0000000000007DA82FE0FF0146
- Beacon identification number (15-digit ID): A23C00000000000

APPENDIX A TO ANNEX F

SATELLITE QUALITATIVE TEST SUMMARY REPORT

Date of the Test: February 25. 2016

Time of the Test: 04:50 UTC – 15:40 UTC

Beacon Model: MT603FG

Beacon 15 Hex ID: A23C00000000000

Actual location of the test beacon: Latitude N 44º35'12.3"; Longitude: E 33º29'16.6".

Beacon test configuration: floating in water (configuration 5 section 4.5 C/S T.007)

Satellite ID	Satellite Pass Number	Time of Closest Approach (TCA)	Cross Track Angle	15 Hex ID Provided by LUT	Doppler location	Location Error (km)
S10	55478	5:30:17	14.1	A23C00000000000	N44°35.2 E33°29.61	0.440
S11	48524	5:31:36	24.4	A23C00000000000	N44°34.7 E33°29.84	N/A
S07	92489	6:10:59	20.6	A23C00000000000	N44°35.58 E33°29.55	0.783
S13	17838	6:25:04	15.1	A23C00000000000	N44°35.13 E33°29.54	0.375
S10	55479	7:09:02	27.6	A23C00000000000	N/A	N/A
S11	48525	7:12:59	6.5	A23C00000000000	N44°35.11 E33°29.42	0.258
S13	17839	8:05:39	2.7	A23C00000000000	N44°35.08 E33°29.6	0.486
S12	36321	8:46:09	26.7	N/A	N/A	N/A
S11	48526	8:52:51	10.7	A23C00000000000	N44°35.15 E33°29.66	0.516
S13	17840	9:44:45	18.7	A23C00000000000	N44°34.99 E33°29.33	0.404
S12	36322	10:24:54	12.7	A23C00000000000	N44°35.18 E33°29.17	0.148
S11	48527	10:31:12	25.2	A23C00000000000	N44°35.28 E33°28.21	N/A
S10	55482	11:59:24	26.4	N/A	N/A	N/A
S12	36323	12:05:11	4.3	A23C00000000000	N44°35.57 E33°29.56	0.773
S07	92493	12:36:12	22.0	A23C00000000000	N44°34.93 E33°29.54	N/A
S10	55483	13:38:06	12.4	A23C00000000000	N44°35.14 E33°29.13	0.228
S12	36324	13:47:00	22.4	A23C00000000000	N44°35.41 E33°29.54	N/A
S07	92494	14:14:39	6.7	A23C00000000000	N44°35.3 E33°29.02	0.382
S10	55484	15:18:23	4.6	A23C00000000000	N44°35.5 E33°29.74	0.820

$$\text{Ratio of successful solutions} = \frac{\text{number of Doppler solutions within 5 km with } 1^{o} < CTA < 21^{o}}{\text{number of satellite passes over test duration with } 1^{o} < CTA < 21^{o}} \times 100\ \%$$

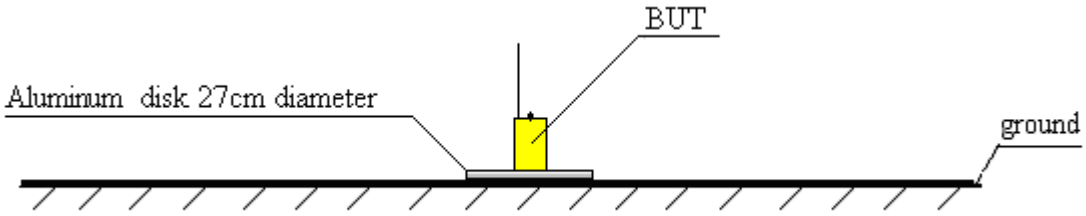
$$\text{Ratio of successful solutions} = \frac{12}{12} \times 100\% = 100\ \%$$

5.9.2 Test Configuration 7 Beacon on Ground Plane

Date of the Test: February 24, 2016
Time of the Test: 6:20 UTC – 16:40 UTC

Test conditions:

- Ambient temperature at open testing area: 9-13 °C
- Relative air humidity: 54-71 %
- Atmosphere pressure: 736-737 mm/Hg
- The duration of the satellite test: 10 hours 20 minutes.
- The homing transmitter not operated.
- Actual Location: N 44º35'12.3"; E 33º29'16.6".
- Data provided by CMC
- Beacon was placed in the vertical orientation described in the manufacturer's instruction.
- Beacon was placed in the area with a good all round view of the sky.
- Beacon was placed in the centre of a thin 27 cm diameter aluminum disc which was placed directly on level dry ground (dirt). Configuration 7 Section 4.5 C/S T.007.



Beacon coding

- Beacon is coded with Standard Location – Test protocol
- Country code is Russia
- Message content 1 – 144 bits: FFFE3FD11E0000000000007DA82FE0FF0146
- Beacon identification number (15-digit ID): A23C00000000000

APPENDIX A TO ANNEX F

SATELLITE QUALITATIVE TEST SUMMARY REPORT

Date of the Test: February 24, 2016

Time of the Test: 6:20 UTC – 16:40 UTC

Beacon Model: MT603FG

Beacon 15 Hex ID: A23C00000000000

Actual location of the test beacon: Latitude N 44º35'12.3"; Longitude: E 33º29'16.6"

Beacon test configuration: beacon operated on ground plane (configuration 7 section 4.5 C/S T.007)

Satellite ID	Satellite Pass Number	Time of Closest Approach (TCA)	Cross Track Angle	15 Hex ID Provided by LUT	Doppler location	Location Error (km)
S07	92475	6:35:18	23.9	A23C00000000000	N44°35.24 E33°30.56	N/A
S13	17824	6:46:01	11.4	A23C00000000000	N44°35.55 E33°29.02	0.723
S11	48511	7:33:45	2.8	A23C00000000000	N44°35.12 E33°29.4	0.227
S13	17825	8:26:17	6.2	A23C00000000000	N44°35.48 E33°29.7	0.756
S11	48512	9:13:19	14.0	A23C00000000000	N44°35.24 E33°29.5	0.302
S13	17826	10:05:04	21.6	A23C00000000000	N44°35.21 E33°29.45	N/A
S12	36308	10:36:07	10.9	A23C00000000000	N44°35.15 E33°28.97	0.418
S11	48513	10:51:19	27.6	A23C00000000000	N44°35.3 E33°29.4	N/A
S10	55468	12:07:28	25.0	A23C00000000000	N/A	N/A
S12	36309	12:16:34	6.3	A23C00000000000	N44°35.32 E33°29.34	0.229
S07	92479	13:00:34	18.5	A23C00000000000	N44°34.75 E33°29.18	0.852
S10	55469	13:49:33	10.6	A23C00000000000	N44°35.12 E33°28.93	0.484
S12	36310	13:58:35	24.4	A23C00000000000	N44°35.32 E33°29.35	N/A
S07	92480	14:39:23	2.5	A23C00000000000	N44°35.2 E33°28.61	0.881
S10	55470	15:30:00	6.6	A23C00000000000	N44°35.42 E33°29.74	0.730
S07	0	16:19:40	15.2	A23C00000000000	N44°35.19 E33°29.81	0.705

$$\text{Ratio of successful solutions} = \frac{\text{number of Doppler solutions within 5 km with } 1° < \text{CTA} < 21°}{\text{number of satellite passes over test duration with } 1° < \text{CTA} < 21°} \times 100\ \%$$

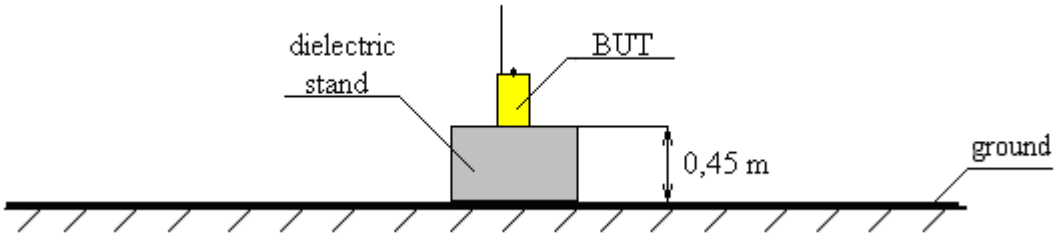
$$\text{Ratio of successful solutions} = \frac{11}{11} \times 100\% = 100\ \%$$

5.9.3 Test Configuration 8 Beacon above Ground Plane

Date of the Test: February 24-25, 2016
Time of the Test: 16:53 UTC – 04:42 UTC

Test conditions:

- Ambient temperature at open testing area: 5-10 ºC
- Relative air humidity: 97-100 %
- Atmosphere pressure: 736-737 mm/Hg
- The duration of the satellite test: 11 hours 35 minutes.
- The homing transmitter not operated.
- Actual Location: N 44º35'12.3"; E 33º29'16.6".
- Data provided by CMC
- Beacon was placed in the vertical orientation described in the manufacturer's instructions.
- Beacon was placed in an area with a good all round view of the sky.
- Beacon was placed on a wooden electrically insulating support so that its base is 0.45m above level dry ground. Configuration 8 Section 4.5 C/S T.007



Beacon coding

- Beacon is coded with Standard Location – Test protocol
- Country code is Russia
- Message content 1 – 144 bits: FFFE3FD11E0000000000007DA82FE0FF0146
- Beacon identification number (15-digit ID): A23C00000000000

APPENDIX A TO ANNEX F

SATELLITE QUALITATIVE TEST SUMMARY REPORT

Date of the Test: February 24-25, 2016

Time of the Test: 16:53 UTC – 04:42 UTC

Beacon Model: MT603FG

Beacon 15 Hex ID: A23C00000000000

Actual location of the test beacon: Latitude N 44º35'12.3"; Longitude: E 33º29'16.6".

Beacon test configuration: beacon operated above ground plane (configuration 8 section 4.5 C/S T.007)

Satellite ID	Satellite Pass Number	Time of Closest Approach (TCA)	Cross Track Angle	15 Hex ID Provided by LUT	Doppler location	Location Error (km)
S10	55471	17:12:00	24.7	A23C00000000000	N44°35.42 E33°29.38	N/A
S11	46094	17:18:03	13.8	A23C00000000000	N44°35.17 E33°28.98	0.397
S13	17831	18:10:13	5.4	A23C00000000000	N44°35.24 E33°28.99	0.384
S11	15408	18:57:38	3.0	A23C00000000000	N44°35.62 E33°29.78	1.016
S13	46095	19:50:33	12.2	A23C00000000000	N44°35.55 E33°29.53	0.721
S11	15409	20:38:42	21.0	A23C00000000000	N44°35.35 E33°29.4	0.314
S12	33908	22:55:08	20.8	A23C00000000000	N44°35.12 E33°29.62	0.480
S12	46096	0:36:48	2.7	A23C00000000000	N44°35.3 E33°29.32	0.185
S10	15410	2:08:32	20.7	A23C00000000000	N44°35.3 E33°29.63	0.499
S12	33909	2:16:59	14.1	A23C00000000000	N44°35.29 E33°29.33	0.172
S07	33910	2:52:19	12.6	A23C00000000000	N44°35.06 E33°29.51	0.409
S10	90057	3:50:09	2.7	A23C00000000000	N44°35.08 E33°29.24	0.236
S12	33911	3:55:35	27.6	A23C00000000000	N44°36.67 E33°31.25	N/A
S07	53070	4:32:23	5.0	A23C00000000000	N44°35.23 E33°29.77	0.653

$$\text{Ratio of successful solutions} = \frac{\text{number of Doppler solutions within 5 km with } 1^o < CTA < 21^o}{\text{number of satellite passes over test duration with } 1^o < CTA < 21^o} \times 100\ \%$$

$$\text{Ratio of successful solutions} = \frac{12}{12} \times 100\% = 100\ \%$$

5.10 Photographs

Fig. 5.10.1 — General view of test site for navigation test, point 1(Configuration 5 – Water ground plane).

Fig. 5.10.2 — General view of test site for navigation test, point 1 (Configuration 7 – Beacon on ground plan).

Fig. 5.10.3 — General view of test site for navigation test, point 1 (Configuration 8 - Beacon above ground plane).

Fig. 5.10.4 — General view of test site during satellite qualitative test at configuration 5 (section 4.5 C/S T.007).

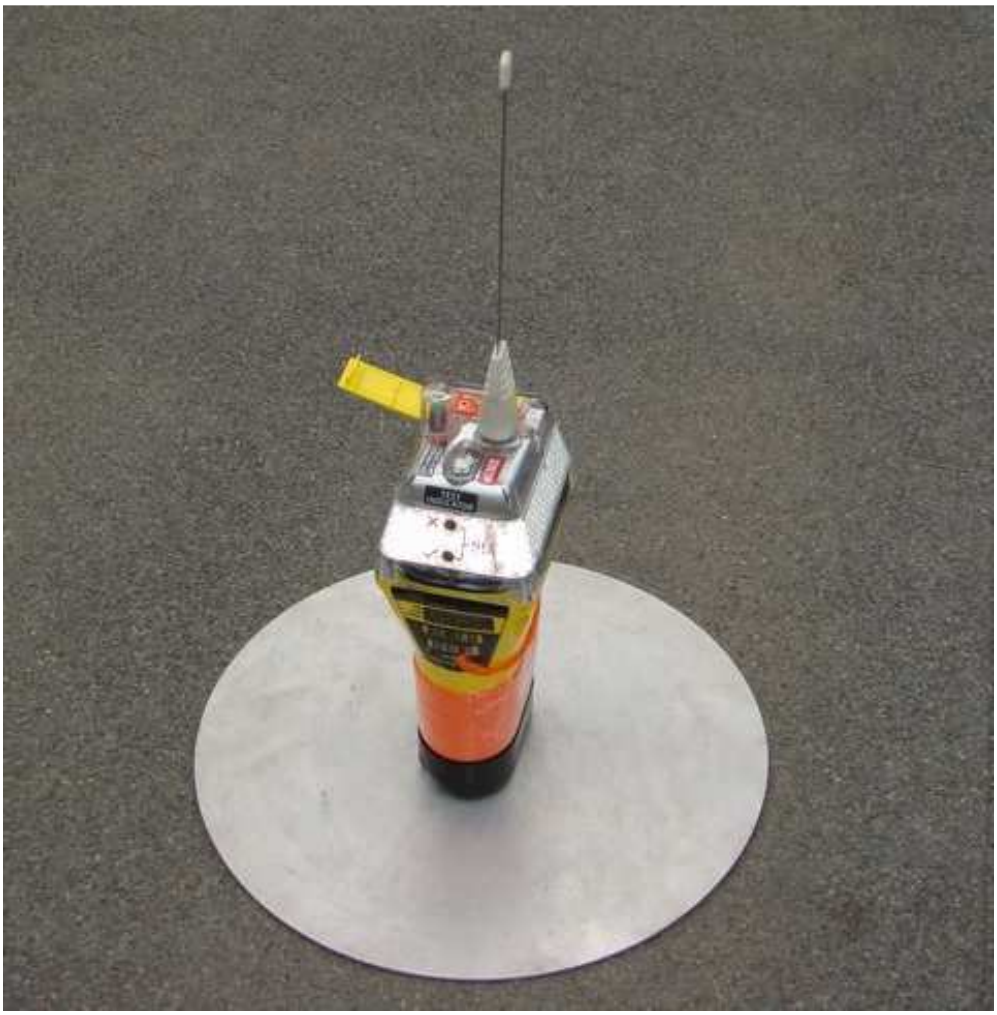


Fig. 5.10.5 — General view of test site during satellite qualitative test at configuration 7 (section 4.5 C/S T.007).

Fig 5.10.6— General view of test site during satellite qualitative test at configuration 8 (section 4.5 C/S T.007).

Fig 5.10.7 — General view of antenna test place at configuration 1 (section 4.5 C/S T.007) (beacon operated on «water» ground plane).

Fig 5.10.8 — General view of antenna test place at configuration 4 (section 4.5 C/S T.007) (beacon operating above ground plane).

5.11 Test Equipment

TEST EQUIPMENT USED

No.	Name of test equipment	Type, model	ser. No	Calibration due
1.	Beacon tester	BT-611	1005	06.2016
2.	Spectrum analyzer	FSH8	105763	11.2016
3.	Battery charger and analyser	UBA5	10225	02.2018
4.	Climatic chamber	GTH 408-70-CP-AR-LN2	MAA1212-004	12.2016
5.	Climatic chamber	NZ-350/75	163	12.2017
6.	Antenna	FCC-4	587A	09.2016
7.	Antenna mast	ATR 2	101208	n/a
8.	Ground plane	Ug	102282	n/a
9.	Multimetr	FLUKE -189	89750179	02.2017
10.	Oscilloscope	TDS-3052	B011258	02.2017
11.	Hygrometer	ВИТ-2	B931	09.2016
12.	Thetmometer	Gradient-2002	078	12.2016
13.	RFAM	Ternovnik MO	No.1	n/a

TEST FACILITY ACCURACY AND OPTIONAL EQUIPMENT

No.	Parameter	Test facility accuracy
1.	Repetition Time	± 0.01 sec
2.	Total (Transmission Time)	± 1.0 ms
3.	CW Preamble	± 1.0 ms
4.	Bit Rate	± 0.6 bit/sec
5.	Nominal Frequency	± 100 Hz
6.	Frequency Stability	$< 1 \times 10^{-10}$
7.	Transmitted Power	± 0.5 dB
8.	Spurious Power Level	± 2 dB
9.	Carrier Rise Time	± 0.5 ms
10.	Modulation Rise	± 25 μs
11.	Modulation Symmetry	< 0.01
12.	Phase Modulation	± 0.04 rad
13.	Voltage	0.1%
14.	Current value	2%
15.	Ambient temperature (near beacon) various	± 2°C
16.	Antenna Measurement	± 3 dB

ANNEX A
Technical Data Submitted by Beacon Manufacturer

Index

Application Form (Annex G)

ANNEX G

APPLICATION FOR A COSPAS-SARSAT 406 MHz BEACON TYPE APPROVAL CERTIFICATE

G.1 INFORMATION PROVIDED BY THE BEACON MANUFACTURER

Beacon Manufacturer and Beacon Model

Beacon Manufacturer	Standard Communications Pty Ltd
Beacon Model Name	MT603G
Additional Beacon Model Names	MT603FG

Beacon Type and Operational Configurations

Beacon Type	**Beacon used while:**	**Tick where appropriate**
EPIRB Float Free	Floating in water or on deck or in a safety raft	X
EPIRB Non-Float Free (automatic and manual activation)	Floating in water or on deck or in a safety raft	X
EPIRB Non-Float Free (manual activation only)	Floating in water or on deck or in a safety raft	
EPIRB Float Free with VDR	Floating in water or on deck or in a safety raft	
PLB	On ground and above ground	
	On ground and above ground and floating in water	
ELT Survival	On ground and above ground	
	On ground and above ground and floating in water	
ELT Auto Fixed	Fixed ELT with aircraft external antenna	
ELT Auto Portable	In aircraft with an external antenna	
	On ground, above ground, or in a safety raft with an integrated antenna	
ELT Auto Deployable	Deployable ELT with attached antenna	
Other (specify)		

Beacon Characteristics

Characteristic	Specification
Operating frequency	406.04 MHz
Operating temperature range	Tmin = -20C Tmax= +55C
Temperature, at which minimum duration of continuous operation is expected	-20C
Operating lifetime	48 hours
Beacon power supply type (internal non-rechargeable, internal re-chargeable, external, combined, other)	Internal Battery, non-rechargable
External power supply parameters (AC/DC and nominal voltage)	N/A
Is external power supply needed to energise the beacon or its ancillary devices in any of operational modes (N/A or Yes or No)	N/A
Battery cell chemistry	LiSO2
Battery cell model name, cell size, number of cells in a battery pack, and details of the battery pack electrical configuration	LO26SX, D size , 2 Cells in series
Battery cell manufacturer	SAFT
Battery pack manufacturer and part number	Standard Comms., 97MT400BAT
Beacon manufacturers declared maximum allowed cell shelf-life (from date of cell manufacture to date of battery pack installation in the beacon)	1 years
Declared beacon battery replacement period (from date of installation in the beacon to expiry date marked on the beacon)	7 years
Oscillator type (e.g. OCXO, MCXO, TCXO)	TCXO
Oscillator manufacturer	RAKON Ltd.
Oscillator model name/ part number	E5344LF
Oscillator satisfies long-term frequency stability requirements (Yes or No)	YES
Antenna type: Integral or Other (e.g. External, Detachable – specify type)	Integral
Antenna manufacturer	Standard Communications Pty Ltd
Antenna part name and part number	97MT400ANT
Antenna cable assembly min/max RF- losses at 406 MHz, if applicable	N/A
Navigation device type (Internal, External or None)	Internal
Features in beacon that prevent degradation to 406 MHz signal or beacon lifetime	

Characteristic	**Specification**
resulting from a failure of navigation device or failure to acquire position data (Yes, No, or N/A)	Yes
Features in beacon that ensure erroneous position data is not encoded into the beacon message (Yes, No or N/A)	Yes
Navigation device capable of supporting global coverage (Yes, No or N/A)	Yes
Encoded position update capability (Yes, No, N/A) and	Yes
Encoded position update interval value (range)	30~240 min
For Internal Navigation Devices	
– Geodetic reference system (WGS 84 or GTRF)	WGS 84
– GNSS receiver cold start forced at every beacon activation (Yes or No)	Yes
– Navigation device manufacturer	Antenova
– Navigation device model name and part Number	M10478-A2
– Internal navigation device antenna type(integrated, internal, external, passive/active) , manufacturer and model	Internal, passive, Maruwa MWSL1300G
– GNSS system supported (e.g. GPS, GLONASS, Galileo)	GPS
For External Navigation Devices	
– Data protocol for GNSS receiver to beacon interface	N/A
– Physical interface for beacon to navigation device	N/A
– Electrical interface for beacon to navigation device	N/A
– Part number of the external navigation interface device (if applicable)	N/A
– Navigation device model and manufacturer (if beacon designed to use specific devices)	N/A

Self-Test Mode Characteristics:	Self-Test Mode	Optional GNSS Self-test Mode
– Activated by a separate switch/ separate switch position (Yes or No)	Yes	Yes
– Self-test/GNSS self-test mode switch automatically returns to normal position when released (Yes or No)	Yes	Yes
– Self-test/ GNSS self-test activation can cause an operational mode transmission (Yes or No)	No	No
– Results in transmission of a single self-test burst only, regardless of how long the self-test activation mechanism is applied (Yes or No)	Yes	Yes
– Results of self-test/ GNSS self-test are indicated by (provide details, e.g. Pass / Fail indicator light, strobe light, etc.)	Visual & Audio	Visual & Audio
– The content of the encoded position data fields of the self-test message has default values	Yes	N/A
– Performs an internal check and indicates that RF-power is being emitted at 406 MHz and 121.5 MHz, if beacon includes a 121.5 Hz homer (Yes or No)	Yes	No
– Self-test results in transmission of a signal other than at 406 MHz (Yes & details or No)	Yes, 121 unmodulated	No
– Self-test can be activated directly at beacon (Yes or No)	Yes	Yes
– List of Items checked by self-test	406 & 121.5 Power, GPS Module, F/W checksum	GPS Module Rf path and data output.
– Self-test/ GNSS self-test 406 MHz burst duration (440 or 520 ms)	520ms	520ms
– Self-test message length format flag in bit 25, (“0” or “1”)	1	1
– Maximum duration of a self-test mode, sec	8.25sec	130.2sec
– Maximum recommended number of self-tests during battery pack replacement period	120 recommended	N/A
– Distinct indication of self-test start (Yes or No)	Yes	Yes
– Indication of self-test results(Yes or No)	Yes	Yes
– Distinct indication of insufficient battery capacity (Yes or No)	No	No
– Automatic termination of self-test mode immediately after completion of the self-test cycle (Yes or No)	Yes	Yes
– Maximum number of GNSS Self Tests (beacons with internal navigation devices only)	N/A	12

Self-Test Mode Characteristics:	Self-Test Mode	Optional GNSS Self-test Mode
– GNSS Self-test results in transmission of a single burst, irrespectively of the test result (Yes or No)	N/A	Yes
– Maximum number of self-tests during battery pack replacement period	120 recommended	N/A
– Self-test/ GNSS self-test can be activated from beacon remote activation points (Yes & details or No)	No	No
– List all methods of Self-test mode and GNSS Self-test modes activation. Provide details on a separate sheet to describe	Manual only. Button press activation	Manual only. Button press activation

Message Coding Protocols:	(x)	Tick the boxes below against the intended protocol options
User Protocol (tick where appropriate)		Maritime with MMSI
		Maritime with Radio Call Sign
		EPIRB Float Free with Serial Number
		EPIRB Non Float Free with Serial Number
		Radio Call Sign
		Aviation
		ELT with Serial Number
		ELT with Aircraft Operator and Serial Number
		ELT with Aircraft 24-bit Address
		PLB with Serial Number
		National (Short Message Format)
	X	National (Long Message Format)
Standard Location Protocol (tick where appropriate)	X	EPIRB with MMSI
	X	EPIRB with Serial Number
		ELT with 24-bit Address
		ELT with Aircraft Operator Designator
		ELT with Serial Number
		PLB with Serial Number
National Location Protocol (tick where appropriate)	X	National Location: EPIRB
		National Location: ELT
		National Location: PLB

RLS Location Protocol (tick where appropriate) [1]		EPIRB
		ELT
		PLB
User Location Protocol (tick where appropriate)	X	Maritime with MMSI
	X	Maritime with Radio Call Sign
	X	EPIRB Float Free with Serial Number
	X	EPIRB Non Float Free with Serial Number
	X	Radio Call Sign
		Aviation
		ELT with Serial Number
		ELT with Aircraft Operator and Serial Number
		ELT with Aircraft 24-bit Address
		PLB with Serial Number
Beacon includes a homer transmitter(s) (Yes or No) - homer transmitter(s) frequency - homer transmitter(s) power		 121.5 MHz 14 ± 0.5 dBm
– homer transmitter(s) duty cycle – duty cycle of homer swept tone		>96 % 34 %
Beacon includes a high intensity flashing light (e.g. Strobe)		Yes or No Yes
- light intensity		0.75 cd
- flash rate		20 flashes per minute
Beacon transmission repetition period satisfies C/S T.001 requirement that two beacon's repetition periods are not synchronised closer than a few seconds over 5 minute period, and the time intervals between transmissions are randomly distributed on the interval 47.5 to 52.5 seconds (Yes or No)		Yes
Other ancillary devices (e.g. voice transceiver, remote control, external audio and light indicators, external activation device). List details on a separate sheet if insufficient space to describe.		None
Beacon includes automatic activation mechanism (Yes or No). Specify type of automatic beacon activation mechanism		Yes. (Conductive Water Switch)
Beacon includes features and functions not listed above, related or non-related to 406 MHz (Yes or No) List features and use a separate sheet if insufficient space		No

[1] RLS protocols will be effective as of 1 November 2015. The use of RLS-enabled beacons will be regulated by national administrations.

Beacon model hardware part number (P/N) and version	MT603G
Beacon model software/firmware P/N, version, date of issue/releases	OS0021 ver 1.00 (8/12/2014)
Beacon model printed circuit board P/N and version	Part No. 580438 v3
Known non-compliances with C/S T,001 requirements(Yes or No) If Yes, provide details (or use a separate sheet if insufficient space)	No
Beacon Manufacturer Point of Contact (POC) for this Type Approval application:	Name and Job Title: Kevan Wilson-Elswood Phone: +61 2 8867 6000 E-mail: kelswood@gme.net.au

Dated: 30/11/15 Signed: .....

Kevan Wilson-Elswood, Technical Compliance Manager

(Name, Position and Signature of Beacon Manufacturer Representative)

(Continued on Next Page)

Quality Assurance Plan (Annex L)