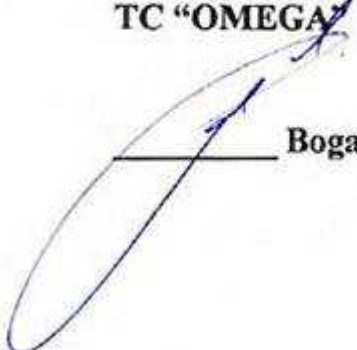


# TESTING CENTER «OMEGA»

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**

**Date of Issue : February 01, 2018**

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test facility:</b>         | TESTING CENTER «OMEGA»<br>P.O.B. No.37, Sevastopol, 299053,<br>Phone: +7 8692 537 072<br>Fax: +7 8692 469 679                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Accreditations:</b>        | COSPAS-SARSAT Secretariat Reference No. CS497/F530 dated 21/09/1994<br><hr/> National Accreditation Agency of Ukraine<br>Certificate of accreditation for compliance DSTU ISO 17025:2006<br>No. 2H339 valid until 17.05.2019<br><hr/> Letter of FCC acceptance #181479 dated July 24, 2014<br><hr/> IC registration of 3/10m OATS #8780A-1 dated May 29, 2013<br><hr/> IC registration of 3m alternative test site #8780A-2 dated May 29, 2013<br><hr/> Letter of USCG Acceptance for testing EPIRBs #16714/161.011/OMEGA<br>dated February 7, 2008<br><hr/> |
| <b>Report on:</b>             | Emergency Position Indicating Radio Beacon (EPIRB)<br>model MT603FG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Prepared for:</b>          | <u>Beacon Manufacturer:</u><br>Standard Communications Pty Ltd<br>17 Gibbon Road, Winston Hills, NSW 2153, Australia<br><u>Manufacturer representative:</u><br>Dr. Zeljko Beljic<br>Engineering Team Leader - Beacons<br>Telephone number: +61 (0)2 8867 6062<br>zbeljic@gme.net.au                                                                                                                                                                                                                                                                          |
| <b>Prepared by:</b>           | <hr/> V. Kovalenko<br>Department manager                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Date of Issue:</b>         | February 01, 2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Submitted for testing:</b> | August 03, 2015                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Dates of testing:</b>      | Start of tests: January 27, 2016<br>End of tests: December 27, 2017                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

*The results of this report shall be applied only to the tested samples  
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**History of the Report Issue/revisions**

| <b>Report Nr – Issue Nr.<br/>or Revision Nr.</b> | <b>Date of Issue</b> | <b>Reasons for re-issue</b>                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16/116 Issue 1                                   | April 08, 2016       | The initial issue.                                                                                                                                                                                                                                                                                                                                                                                       |
| 16/116 - Issue 2                                 | June 10, 2016        | Additional documents added.                                                                                                                                                                                                                                                                                                                                                                              |
| 16/116 - Issue 3                                 | May 30, 2017         | Application form (Annex G) was corrected<br>Beacon Manuals (item 5(e)) were replaced.<br>Marketing brochures (item 5(f)) were replaced.<br>Beacon quality assurance plan (Annex L) was replaced.<br>Technical data for TCXO (item 5 (i-iii)) was added.<br>GNSS receiver operating cycle (item 5(n)) was corrected.<br>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: <ul style="list-style-type: none"><li>• Verification of the transmitter's characteristics 121.5 MHz at ambient, minimum and maximum temperatures and lifetime test;</li><li>• Verification of the coding of the National User Protocol with the change of GNSS location data.</li></ul>                                                  |
| 16/116 - Issue 5                                 | February 01, 2018    | Minor correction of Annex G.1                                                                                                                                                                                                                                                                                                                                                                            |

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## 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.

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



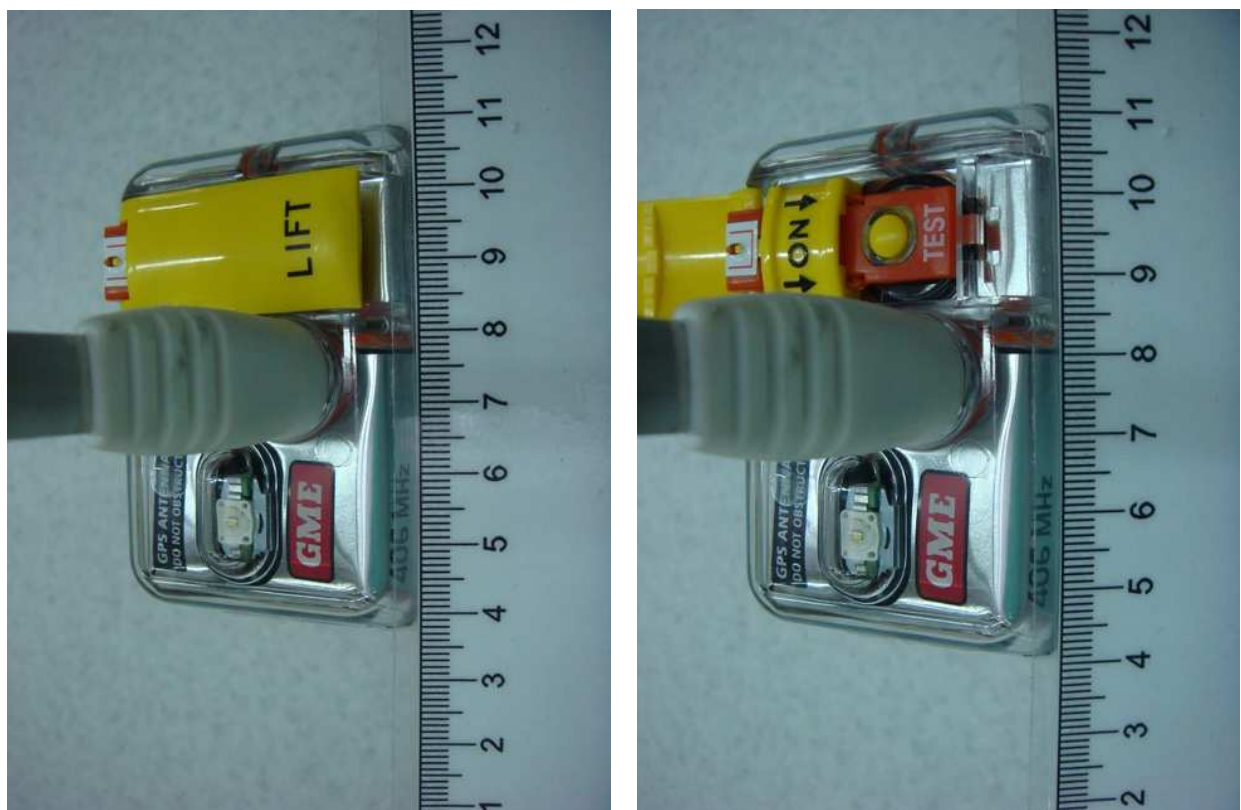
**Figure 3.1** – General view of MT603FG (s/n 1410407582).



**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

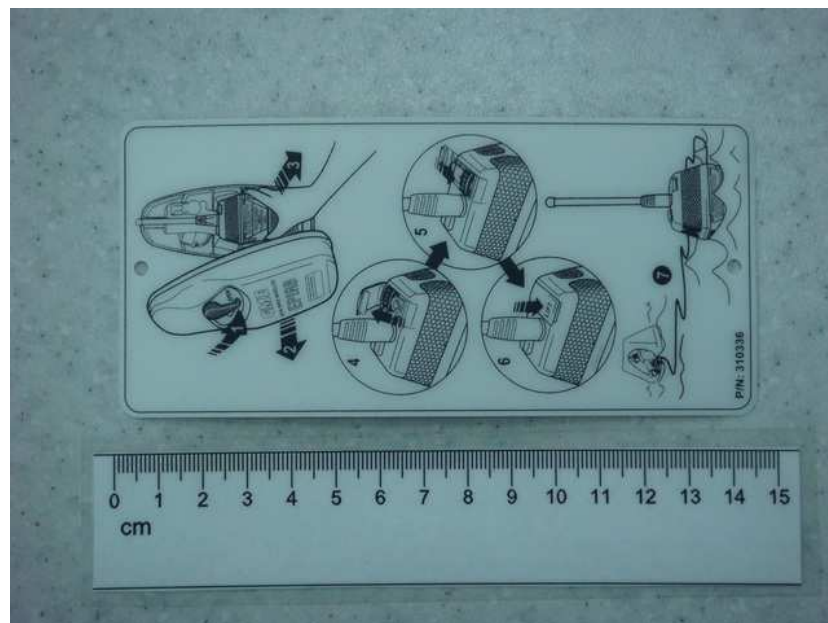
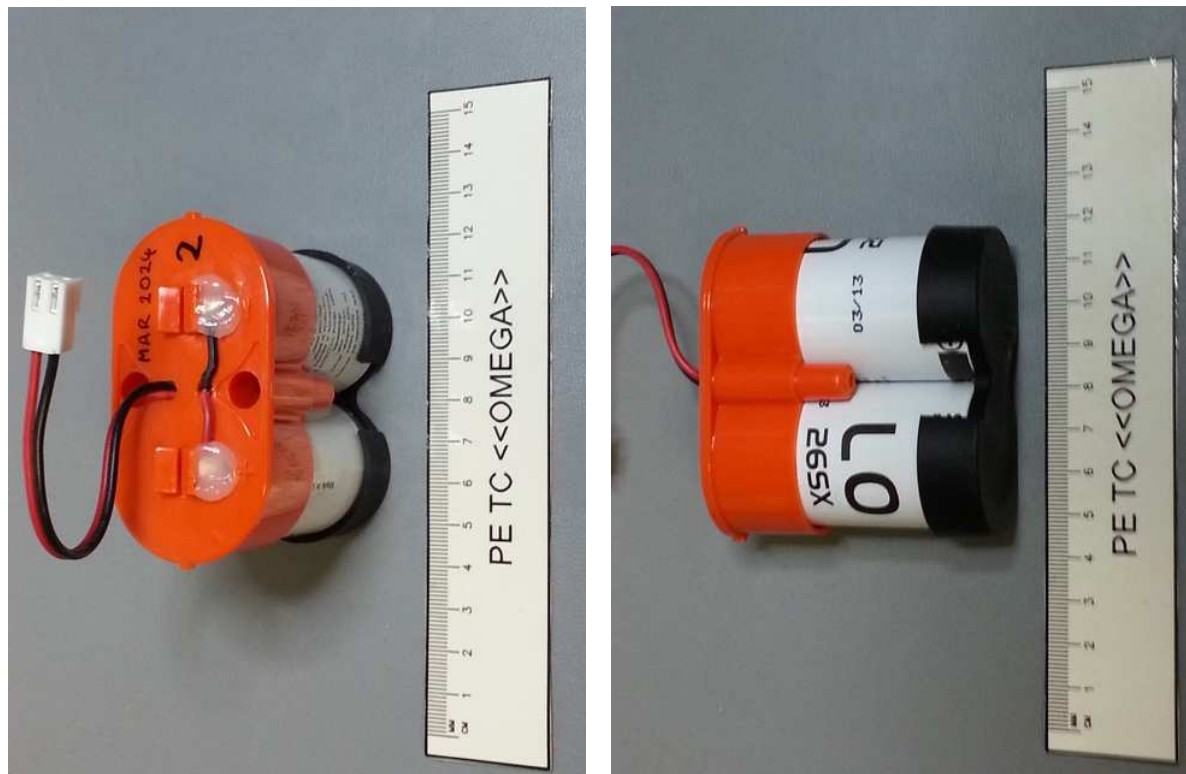


Figure 3.5 – The view of MT603FG labels on the auto-release housing (s/n 1410407582).



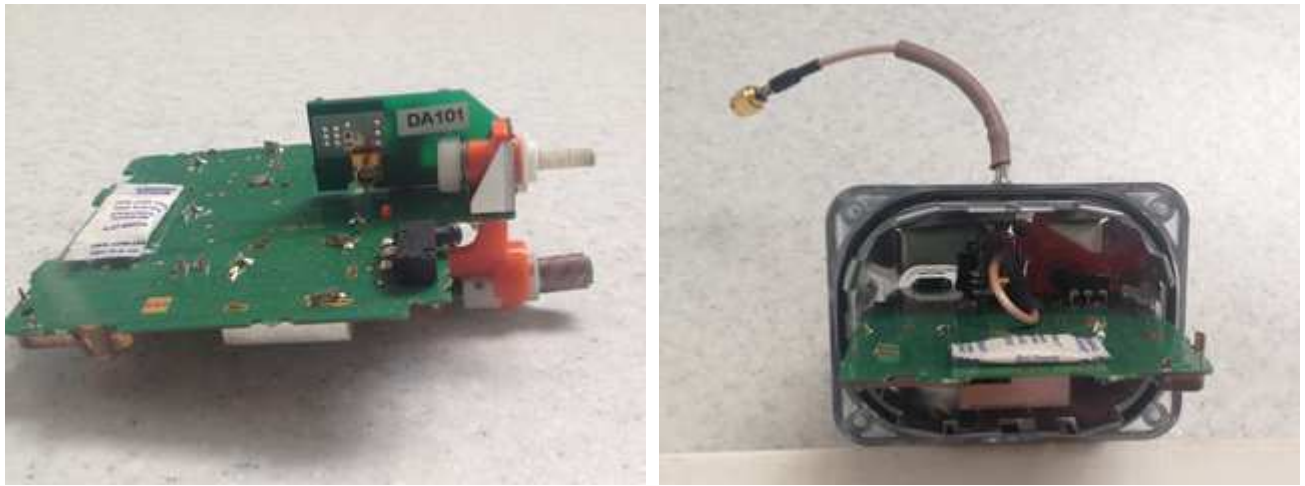
**Figure 3.6** – The view of MT603FG labels (s/n 1410407582).



**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 without 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

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C/S T.007 – Issue 4 – Rev. 9  
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TYPE APPROVAL CERTIFICATE****G.1 INFORMATION PROVIDED BY THE BEACON MANUFACTURER****Beacon Manufacturer and Beacon Model**

|                                      |                                 |
|--------------------------------------|---------------------------------|
| <b>Beacon Manufacturer</b>           | Standard Communications Pty Ltd |
| <b>Beacon Model Name</b>             | MT603G                          |
| <b>Additional Beacon Model Names</b> | MT603FG                         |

**Beacon Type and Operational Configurations**

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

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October 2014**Beacon Characteristics**

| Characteristic                                                                                                                                   | Specification                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| Operating frequency                                                                                                                              | <u>406.04</u> MHz                                             |
| Operating temperature range                                                                                                                      | T <sub>min</sub> = <u>-20C</u> T <sub>max</sub> = <u>+55C</u> |
| Temperature, at which minimum duration of continuous operation is expected                                                                       | <u>-20C</u>                                                   |
| Operating lifetime                                                                                                                               | <u>48</u> hours                                               |
| Beacon power supply type (internal non-rechargeable, internal re-chargeable, external, combined, other)                                          | Internal Battery, non-rechargeable                            |
| 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                                                                                                                           | LiSO <sub>2</sub>                                             |
| 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) | <u>1</u> years                                                |
| Declared beacon battery replacement period (from date of installation in the beacon to expiry date marked on the beacon)                         | <u>7</u> 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                                                                 |                                                               |

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| 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                                 |

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| 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,<br>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                                  |

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| Self-Test Mode Characteristics:                                                                                           | Self-Test Mode                                                 | Optional GNSS Self-test Mode                 |
|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------|
| – GNSS Self-test results in transmission of a single burst, irrespective 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         |
| <b>Message Coding Protocols:</b>                                                                                          | (x) Tick the boxes below against the intended protocol options |                                              |
| User Protocol (tick where appropriate)                                                                                    | <input type="checkbox"/>                                       | Maritime with MMSI                           |
|                                                                                                                           | <input type="checkbox"/>                                       | Maritime with Radio Call Sign                |
|                                                                                                                           | <input type="checkbox"/>                                       | EPIRB Float Free with Serial Number          |
|                                                                                                                           | <input type="checkbox"/>                                       | EPIRB Non Float Free with Serial Number      |
|                                                                                                                           | <input type="checkbox"/>                                       | Radio Call Sign                              |
|                                                                                                                           | <input type="checkbox"/>                                       | Aviation                                     |
|                                                                                                                           | <input type="checkbox"/>                                       | ELT with Serial Number                       |
|                                                                                                                           | <input type="checkbox"/>                                       | ELT with Aircraft Operator and Serial Number |
|                                                                                                                           | <input type="checkbox"/>                                       | ELT with Aircraft 24-bit Address             |
|                                                                                                                           | <input type="checkbox"/>                                       | PLB with Serial Number                       |
|                                                                                                                           | <input type="checkbox"/>                                       | National (Short Message Format)              |
|                                                                                                                           | <input checked="" type="checkbox"/>                            | National (Long Message Format)               |
| Standard Location Protocol (tick where appropriate)                                                                       | <input checked="" type="checkbox"/>                            | EPIRB with MMSI                              |
|                                                                                                                           | <input checked="" type="checkbox"/>                            | EPIRB with Serial Number                     |
|                                                                                                                           | <input type="checkbox"/>                                       | ELT with 24-bit Address                      |
|                                                                                                                           | <input type="checkbox"/>                                       | ELT with Aircraft Operator Designator        |
|                                                                                                                           | <input type="checkbox"/>                                       | ELT with Serial Number                       |
| National Location Protocol (tick where appropriate)                                                                       | <input type="checkbox"/>                                       | PLB with Serial Number                       |
|                                                                                                                           | <input checked="" type="checkbox"/>                            | National Location: EPIRB                     |
|                                                                                                                           | <input type="checkbox"/>                                       | National Location: ELT                       |
|                                                                                                                           | <input type="checkbox"/>                                       | National Location: PLB                       |

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|                                                                                                                                                                                                                                                                                                        |                                       |                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|----------------------------------------------|
| RLS Location Protocol (tick where appropriate) <sup>1</sup>                                                                                                                                                                                                                                            | <input type="checkbox"/>              | EPIRB                                        |
|                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/>              | ELT                                          |
|                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/>              | PLB                                          |
| User Location Protocol (tick where appropriate)                                                                                                                                                                                                                                                        | <input checked="" type="checkbox"/>   | Maritime with MMSI                           |
|                                                                                                                                                                                                                                                                                                        | <input checked="" type="checkbox"/>   | Maritime with Radio Call Sign                |
|                                                                                                                                                                                                                                                                                                        | <input checked="" type="checkbox"/>   | EPIRB Float Free with Serial Number          |
|                                                                                                                                                                                                                                                                                                        | <input checked="" type="checkbox"/>   | EPIRB Non Float Free with Serial Number      |
|                                                                                                                                                                                                                                                                                                        | <input checked="" type="checkbox"/>   | Radio Call Sign                              |
|                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/>              | Aviation                                     |
|                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/>              | ELT with Serial Number                       |
|                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/>              | ELT with Aircraft Operator and Serial Number |
|                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/>              | ELT with Aircraft 24-bit Address             |
| <input type="checkbox"/>                                                                                                                                                                                                                                                                               | PLB with Serial Number                |                                              |
| Beacon includes a homer transmitter(s) (Yes or No)                                                                                                                                                                                                                                                     |                                       |                                              |
| - homer transmitter(s) frequency                                                                                                                                                                                                                                                                       | <u>121.5</u> MHz                      |                                              |
| - homer transmitter(s) power                                                                                                                                                                                                                                                                           | <u>14 ± 0.5</u> dBm                   |                                              |
| - homer transmitter(s) duty cycle                                                                                                                                                                                                                                                                      | <u>&gt;96</u> %                       |                                              |
| - duty cycle of homer swept tone                                                                                                                                                                                                                                                                       | <u>34</u> %                           |                                              |
| Beacon includes a high intensity flashing light (e.g. Strobe)                                                                                                                                                                                                                                          | Yes or No                             | <b>Yes</b>                                   |
| - light intensity                                                                                                                                                                                                                                                                                      | <u>0.75</u> cd                        |                                              |
| - flash rate                                                                                                                                                                                                                                                                                           | <u>20</u> 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) | <b>Yes</b>                            |                                              |
| 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.                                                                                                 | <b>None</b>                           |                                              |
| Beacon includes automatic activation mechanism (Yes or No). Specify type of automatic beacon activation mechanism                                                                                                                                                                                      | <b>Yes. (Conductive Water Switch)</b> |                                              |
| Beacon includes features and functions not listed above, related or non-related to 406 MHz (Yes or No)<br><br>List features and use a separate sheet if insufficient space                                                                                                                             | <b>No</b>                             |                                              |

<sup>1</sup>

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

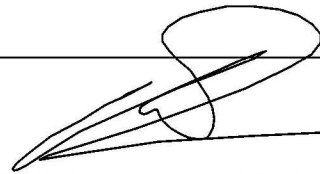
G - 7

C/S T.007 – Issue 4 – Rev. 9  
October 2014

|                                                                                                                                         |                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| 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)<br>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<br>Phone: +61 2 8867 6000<br>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

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**Date of Submission for Testing:** August 03, 2015

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**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<br>(Mod State) | Date of Implementation | Reasons for<br>modification | Description of<br>modification,<br>HW/FW P/Ns,<br>SW version/release after<br>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 <sub>min</sub><br>(-20°C) | T <sub>amb</sub><br>(20 °C) | T <sub>max</sub><br>(55 °C) |                  |
| <b>29-Jan-16, 18-Dec-17, 19-Dec-17, MT603FG, S/N 1410407582, Mode State 0</b> |                           |                |                             |                             |                             | Pass Section 5.2 |
| <b>1. Transmitter Power Output</b>                                            |                           |                |                             |                             |                             |                  |
| – 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                  | √ <sup>1</sup> | √                           | √                           | √                           |                  |
| <b>29-Jan-16, MT603FG, S/N 1410407582, Mode State 0</b>                       |                           |                |                             |                             |                             | Pass Section 5.2 |
| <b>2. Digital Message</b>                                                     |                           |                |                             |                             |                             |                  |
|                                                                               | <b>Bits number</b>        |                |                             |                             |                             |                  |
| – 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                         |                  |
| <b>29-Jan-16, MT603FG, S/N 1410407582, Mode State 0</b>                       |                           |                |                             |                             |                             | Pass Section 5.2 |
| <b>3. Digital Message Generator</b>                                           |                           |                |                             |                             |                             |                  |
| – repetition rate T <sub>R</sub> :                                            |                           |                |                             |                             |                             |                  |
| • average T <sub>R</sub>                                                      | 48.5-51.5                 | sec            | 50.35                       | 49.96                       | 49.96                       |                  |
| • min T <sub>R</sub>                                                          | 47.5≤T <sub>R</sub> ≤48.0 | sec            | 47.59                       | 47.77                       | 47.79                       |                  |
| • max T <sub>R</sub>                                                          | 52.0≤T <sub>R</sub> ≤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 <sub>b</sub>                                                          | ≥396                      | bit/sec        | 399.59                      | 399.90                      | 399.84                      |                  |
| • max f <sub>b</sub>                                                          | ≤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 <sub>1</sub>                                                         | ≥158.4                    | ms             | 160.15                      | 159.83                      | 159.85                      |                  |
| 2. max T <sub>1</sub>                                                         | ≤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 <sub>min</sub><br>(-20°C) | T <sub>amb</sub><br>(20 °C) | T <sub>max</sub><br>(55 °C) |                     |
| <b>29-Jan-16, MT603FG, S/N 1410407582, Mode State 0</b>       |                              |         |                             |                             |                             | Pass<br>Section 5.2 |
| <b>4. Modulation</b>                                          |                              |         |                             |                             |                             |                     |
| – biphas-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                        | √       | √                           | √                           | √                           |                     |
| <b>29-Jan-16, MT603FG, S/N 1410407582, Mode State 0</b>       |                              |         |                             |                             |                             | Pass<br>Section 5.2 |
| <b>5. 406 MHz Transmitted Frequency</b>                       |                              |         |                             |                             |                             |                     |
| – nominal value                                               | 406.039 - 406.041            | MHz     | 406.039971                  | 406.039966 to 406.039967    | 406.039926                  |                     |
| – short-term stability                                        | ≤2×10 <sup>-9</sup>          | /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) ×10 <sup>-9</sup> | /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          | ≤3×10 <sup>-9</sup>          |         | 1.27E-09 to 1.57E-09        | 1.62E-10 to 5.27E-10        | 1.85E-10 to 3.52E-10        |                     |
| <b>29-Jan-16, MT603FG, S/N 1410407582, Mode State 0</b>       |                              |         |                             |                             |                             | Pass                |
| <b>6. Spurious Emissions into 50 Ohms (406.0 – 406.1 MHz)</b> | C/S T.001 mask               | √       | Section 5.2.3               | Section 5.2.1               | Section 5.2.2               |                     |
| <b>29-Jan-16, MT603FG, S/N 1410407582, Mode State 0</b>       |                              |         |                             |                             |                             | Pass<br>Section 5.2 |
| <b>7. 406 MHz VSWR Check</b>                                  |                              |         |                             |                             |                             |                     |
| – 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 <sub>min</sub><br>(-20 °C) | T <sub>amb</sub><br>(20 °C) | T <sub>max</sub><br>(55 °C) |                      |
| <b>29-Jan-16, MT603FG,<br/>S/N 1410407582,<br/>Mode State 0</b>                                                        |                                                                   |           |                              |                             |                             |                      |
| <b>8 (a). Self-test Mode</b>                                                                                           |                                                                   |           |                              |                             |                             | Pass<br>Section 5.2  |
| – frame sync                                                                                                           | “011010000”                                                       | √         | √                            | √                           | √                           |                      |
| – format flag                                                                                                          | 1/0                                                               | bit value | 1                            | 1                           | 1                           |                      |
| – radiated burst                                                                                                       | ≤440/520<br>(±1%)                                                 | ms        | 520.40                       | 520.45                      | 520.25                      |                      |
| – default position data (if applicable)                                                                                | must be correct                                                   | √         | √                            | √                           | √                           |                      |
| – description provided                                                                                                 |                                                                   | √         | √                            | √                           | √                           | Annex A,<br>page 240 |
| – design data provided on protection against repetitive self-test mode transmissions                                   |                                                                   | √         | √                            | √                           | √                           | Annex A,<br>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 <sup>(1)</sup>                                                  | 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, irrespective of the switch position | √         | √                            | √                           | √                           |                      |

<sup>1</sup>only mandatory to new beacon models submitted for type approval testing after 1 November 2015.

|                                                                                                                                                                                                         |                                                                                   |                      |                      |                      |                      |                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------|----------------------|----------------------|----------------------|---------------------|
| <b>29-Jan-16, MT603FG,<br/>S/N 1410407582,<br/>Mode State 0</b>                                                                                                                                         |                                                                                   |                      |                      |                      |                      |                     |
| <b>8 (b). GNSS Self-Test Mode<br/>(if applicable)</b>                                                                                                                                                   |                                                                                   |                      |                      |                      |                      | Pass<br>Section 5.2 |
| – frame sync                                                                                                                                                                                            | “011010000”                                                                       | $\sqrt{\phantom{x}}$ | -                    | -                    | -                    |                     |
| – format flag                                                                                                                                                                                           | 1                                                                                 | bit value            | -                    | -                    | -                    |                     |
| – radiated burst duration                                                                                                                                                                               | $\leq 520 (+1\%)$                                                                 | ms                   | -                    | -                    | -                    |                     |
| – position data (if applicable)                                                                                                                                                                         | must be within 500m (or 5.25km for User Location Protocol) of the actual position | $\sqrt{\phantom{x}}$ | $\sqrt{\phantom{x}}$ | $\sqrt{\phantom{x}}$ | $\sqrt{\phantom{x}}$ |                     |
| – design data showing how GNSS Self-Test is limited in number of transmissions and duration                                                                                                             | must be provided                                                                  | $\sqrt{\phantom{x}}$ | $\sqrt{\phantom{x}}$ | $\sqrt{\phantom{x}}$ | $\sqrt{\phantom{x}}$ | Annex A, page 335   |
| – single burst verification (if applicable)                                                                                                                                                             | must be one burst                                                                 | $\sqrt{\phantom{x}}$ | $\sqrt{\phantom{x}}$ | $\sqrt{\phantom{x}}$ | $\sqrt{\phantom{x}}$ |                     |
| – 121.5 MHz RF power (if applicable)                                                                                                                                                                    | verify that RF power is emitted                                                   | $\sqrt{\phantom{x}}$ | $\sqrt{\phantom{x}}$ | $\sqrt{\phantom{x}}$ | $\sqrt{\phantom{x}}$ |                     |
| – 406 MHz RF power (if applicable)                                                                                                                                                                      | verify that RF power is emitted                                                   | $\sqrt{\phantom{x}}$ | $\sqrt{\phantom{x}}$ | $\sqrt{\phantom{x}}$ | $\sqrt{\phantom{x}}$ |                     |
| – 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                                                                  | $\sqrt{\phantom{x}}$ | -                    | $\sqrt{\phantom{x}}$ | -                    | 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                                                                  | $\sqrt{\phantom{x}}$ | -                    | $\sqrt{\phantom{x}}$ | -                    | Annex A, page 242   |

| Parameters to be Measured                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Range of Specification                                                                                                                                  | Units                                                   | Test Results                                                                                                                                                                                                                                                                   | Comments            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| <b>28-Jan-16, MT603FG, S/N 1410407582, Mode State 0</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                         |                                                         |                                                                                                                                                                                                                                                                                |                     |
| <b>9. Thermal Shock</b> <ul style="list-style-type: none"> <li>soak temperature</li> <li>measurement temperature</li> <li>the following parameters are to be met within 15 minutes of beacon turn on and maintained for 2 hours:</li> </ul>                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                         | °C<br>°C                                                | $T_{\text{soak}} = 55\text{ °C}$<br>$T_{\text{meas}} = 25\text{ °C}$                                                                                                                                                                                                           | Pass<br>Section 5.3 |
| <ul style="list-style-type: none"> <li>transmit frequency nominal value</li> <li>transmit frequency short-term stability</li> <li>transmit frequency medium-term stability slope</li> <li>transmit frequency medium-term stability residual frequency variation</li> <li>transmitter power output (min and max)</li> <li>digital message</li> </ul>                                                                                                                                                                                                                          | 406.039 - 406.041<br>$\leq 2 \times 10^{-9}$<br>$(-2 \text{ to } +2) \times 10^{-9}$<br>$\leq 3 \times 10^{-9}$<br>35-39<br>Correct                     | MHz<br>/100 ms<br>/min<br><br>dBm<br>√                  | 406.039969 to 406.039980<br>3.18E-10 to 4.58E-10<br>-1.51E-10 to 1.31E-09<br>1.93E-10 to 1.85E-09<br>36.57 to 36.58<br>√                                                                                                                                                       |                     |
| <b>15-Feb-16 - 18-Feb-16, MT603FG, S/N 1410407582, Mode State 0</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                         |                                                         |                                                                                                                                                                                                                                                                                |                     |
| <b>10. Operating Lifetime at Minimum Temperature</b> <ul style="list-style-type: none"> <li>duration</li> <li>transmit frequency nominal value</li> <li>transmit frequency short-term stability</li> <li>transmit frequency medium-term stability slope</li> <li>transmit frequency medium-term stability residual frequency variation</li> <li>transmit power output (min and max)</li> <li><math>P_{\text{TEOL}}</math> = minimum transmitter power output observed during lifetime at minimum temperature</li> <li>digital message</li> </ul>                             | >24<br>406.039 - 406.041<br>$\leq 2 \times 10^{-9}$<br>$(-1 \text{ to } +1) \times 10^{-9}$<br>$\leq 3 \times 10^{-9}$<br>35-39<br>35-39<br><br>Correct | hrs<br>MHz<br>/100ms<br>/min<br><br>dBm<br>dBm<br><br>√ | 77:39:27 hours at $T_{\text{min}} = -20\text{ °C}$<br>406.039949 - 406.039957<br>2.77E-11 to 1.26E-10<br>-1.71E-10 to 1.76E-10<br>7.82E-11 to 7.42E-10<br>36.30 to 36.47<br>36.30 minimum observed during first 48 hours<br>36.30 minimum observed after 48 hours of test<br>√ | Pass<br>Section 5.4 |
| <b>20-Dec-17 - 22-Dec-17, MT603FG, S/N 1410407582, Mode State 0</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                         |                                                         |                                                                                                                                                                                                                                                                                |                     |
| <ul style="list-style-type: none"> <li>homer transmitter continuous operation during the lifetime test<sup>1</sup></li> <li>homer frequency <ul style="list-style-type: none"> <li>at the beginning of the test</li> <li>at the end of the test</li> </ul> </li> <li>homer peak power level <ul style="list-style-type: none"> <li>at the beginning of the test</li> <li>at the end of the test</li> </ul> </li> <li>homer transmitter duty cycle <ul style="list-style-type: none"> <li>at the beginning of the test</li> <li>at the end of the test</li> </ul> </li> </ul> |                                                                                                                                                         | Hours<br><br>MHz<br>MHz<br><br>dBm<br>dBm<br><br>%<br>% | 78:30:00<br><br>121.650158<br>121.650158<br><br>14.4<br>14.6<br><br>96.25<br>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                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| <b>27-Jan-16 - 29-Jan-16, MT603FG, S/N 1410407582, Mode State 0</b><br><b>11. Temperature Gradient (5°C/hr)</b><br><br><b>Up Ramp</b><br>– transmit frequency nominal value<br>– transmit frequency short-term stability<br>– transmit frequency medium-term stability:<br>• slope (A to B, C+15 to D)<br>• slope (B to C+15)<br>– residual frequency variation<br>– transmitter power output (min and max)<br>– digital message<br><b>Down ramp</b><br>– transmit frequency nominal value<br>– transmit frequency short-term stability<br>– transmit frequency medium-term stability:<br>• slope (C to D and E+15 to F)<br>• slope (D to E+15)<br>– residual frequency variation<br>– transmitter power output (min and max)<br>– digital message | 406.039 - 406.041<br>$\leq 2 \times 10^{-9}$<br>$(-1 \text{ to } +1) \times 10^{-9}$<br>$(-2 \text{ to } +2) \times 10^{-9}$<br>$\leq 3 \times 10^{-9}$<br>35-39<br>Correct<br>406.039 - 406.041<br>$\leq 2 \times 10^{-9}$<br>$(-1 \text{ to } +1) \times 10^{-9}$<br>$(-2 \text{ to } +2) \times 10^{-9}$<br>$\leq 3 \times 10^{-9}$<br>35-39<br>correct | MHz<br>/100ms<br>/min<br>/min<br>dBm<br>✓<br>MHz<br>/100ms<br>/min<br>/min<br>dBm<br>✓ | 406.039923 to 406.039986<br>1.05E-10 to 6.21E-10<br>-2.33E-10 to 5.53E-10<br>-1.02E-09 to 1.01E-09<br>1.11E-10 to 1.85E-09<br>36.45 to 36.64<br>✓<br>406.039924 to 406.039990<br>8.21E-11 to 3.04E-10<br>-6.76E-10 to 1.01E-10<br>-6.28E-10 to 1.05E-09<br>1.71E-10 to 1.24E-09<br>36.47 to 37.16<br>✓ | Pass<br>Section 5.5<br><br>The battery replacement was required therefore two separate tests were performed. |
| <b>17-Mar-16, MT603FG, S/N 1410407582, Mode State 0</b><br><b>12. Oscillator Aging</b><br>– 5-year carrier nominal frequency variation<br>– MTS analysis (if applicable)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | C/S T.001<br>Must demonstrate compliance                                                                                                                                                                                                                                                                                                                   | Hz<br>✓                                                                                | 1218 (±3 ppm by 10 years)<br><b>Fail</b> <sup>1</sup>                                                                                                                                                                                                                                                  | Pass<br>Annex A page 281<br>Fail (Pass with MU applicable) Section 5.6                                       |
| <b>MT603, S/N 1410407582, Mode State 0</b><br><b>13. Protection Against Continuous Transmission description provided</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <45                                                                                                                                                                                                                                                                                                                                                        | sec                                                                                    | ✓                                                                                                                                                                                                                                                                                                      | Annex A page 307                                                                                             |

<sup>1</sup> 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                   |
|--------------------------------------------------------------------------------|----------------------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| <b>01-Feb-16 - 04-Feb-16, 09-Mar-16, MT603FG, S/N 1410407582, Mode State 0</b> |                                                                |       |                                                                                                                                                                       | Pass<br>Section 5.10       |
| 14. Satellite Qualitative Test<br>(results provided)                           | 15 Hex ID provided by LUT and position within 5 km 80% of time | √     | √<br>The received digital message corresponds to the encoded radio beacon ID. Received messages with coordinates are determined (successfully located by satellites). |                            |
| Configuration 5<br>“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<br>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<br>Beacon above ground plane                                   | 15 Hex ID provided by LUT and position within 5 km 80% of time | √     | 24.02.16 - 25.02.16<br>12 satellite passes with ratio of successful solutions – 100 % and location error 0.172 .. 1.016 km                                            | Section 5.10.3             |
| <b>19-Feb-16, MT603FG, S/N 1410407582, Mode State 0</b>                        |                                                                |       |                                                                                                                                                                       | Pass<br>Section 5.7        |
| <b>15.2 Antenna Characteristics</b>                                            |                                                                |       |                                                                                                                                                                       | Section 5.7.1              |
| – polarization                                                                 | linear or RHCP                                                 |       | linear                                                                                                                                                                | Test configuration 1.      |
| – VSWR                                                                         | ≤1.5                                                           |       | N/A                                                                                                                                                                   | (Fig: B.4)                 |
| – EIRP <sub>LOSS</sub>                                                         |                                                                | dB    | 0.16                                                                                                                                                                  | “Water” ground plane.      |
| – EIRP <sub>maxEOL</sub>                                                       | ≤43                                                            | dBm   | 41.57                                                                                                                                                                 |                            |
| – EIRP <sub>minEOL</sub>                                                       | ≥32                                                            | dBm   | 32.92                                                                                                                                                                 |                            |
| <b>15.3 Antenna Characteristics</b>                                            |                                                                |       |                                                                                                                                                                       | Section 5.7.2              |
| – polarization                                                                 | linear or RHCP                                                 |       | linear                                                                                                                                                                | Test configuration 4.      |
| – VSWR                                                                         | ≤1.5                                                           |       | N/A                                                                                                                                                                   | (Fig: B.5)                 |
| – EIRP <sub>LOSS</sub>                                                         |                                                                | dB    | 0.16                                                                                                                                                                  | Beacon above ground plane. |
| – EIRP <sub>maxEOL</sub>                                                       | ≤43                                                            | dBm   | 37.3                                                                                                                                                                  |                            |
| – EIRP <sub>minEOL</sub>                                                       | ≥30                                                            | dBm   | 33                                                                                                                                                                    |                            |

| Parameters to be Measured                                                                 | Range of Specification                        | Units | Test Results                                                                                                                        | Comments                                                                                                       |
|-------------------------------------------------------------------------------------------|-----------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>18-Mar-16, 26-Dec-17, MT603FG,<br/>S/N 1410407582, Mode State 0</b>                    |                                               |       |                                                                                                                                     | Pass<br>Section 5.8                                                                                            |
| <b>16. Beacon Coding Software</b>                                                         |                                               |       |                                                                                                                                     |                                                                                                                |
| – sample message provided for each coding option of the applicable coding types           | correct                                       | √     | √                                                                                                                                   | Per<br>Table<br>F- D.1/D.2/ D.3                                                                                |
| – sample self-test message provided for each coding option of the applicable coding types | correct                                       | √     | √                                                                                                                                   | Per<br>Table<br>F- D.1/D.2/ D.3                                                                                |
| <b>25-Jan-16, MT603FG,<br/>S/N 1410407582, Mode State 0</b>                               |                                               |       |                                                                                                                                     |                                                                                                                |
| <b>17. Navigation System</b>                                                              |                                               |       |                                                                                                                                     | Pass<br>Section 5.9                                                                                            |
| – position data default values                                                            | correct                                       | √     | √                                                                                                                                   | Test per A.3.8.1                                                                                               |
| – position acquisition time                                                               | <10 (int.nav)<br>< 1 (ext.nav)                | min   | Configuration 7<br>1 min - NLP<br>1 min 49 sec - SLP<br>1 min - ULP<br>Configuration 8<br>1 min - NLP<br>1 min - SLP<br>1 min - ULP | Test per A.3.8.2<br>Results per<br>Tables F-C.5 or<br>F-C.5                                                    |
| – position accuracy                                                                       | C/S T.001                                     | m     | Configuration 7<br>41.9 - NLP<br>41.9 – SLP<br>41.9 – ULP<br>Configuration 8<br>41.9 - NLP<br>41.9 – SLP<br>41.9 – ULP              | Test per A.3.8.2<br>Results per<br>Tables F-C.5 or<br>F-C.5                                                    |
| – encoded position data update interval                                                   | >5                                            | min   | 29min 55sec - NLP<br>29min 55sec – SLP<br>29min 54sec – SLP                                                                         | Test per A.3.8.3                                                                                               |
| – internal navigation device update intervals                                             | as per C/S T.001,<br>section 4.5.5.4          | √     |                                                                                                                                     | Include results<br>from 0 to 2, 2 to<br>6 and more than<br>6 hours, in a<br>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)<br><20 min (EPIRB/PLB)         | √     | N/A                                                                                                                                 | Test per A.3.8.5                                                                                               |
| – stored position cleared within interval                                                 | 1.0-1.5 min (ELT)<br>20-30 min<br>(EPIRB/PLB) |       | N/A                                                                                                                                 |                                                                                                                |
| – position data encoding                                                                  | correct                                       | √     | √                                                                                                                                   | Test per A.3.8.7<br>The tests were<br>performed by the<br>beacon<br>manufacturer (see<br>Annex A, page<br>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 | Test per A.3.8.6 |
| – default position data transmitted after 240(±5) minutes without valid position data            | correct                | √     | 239 min 41 sec – NLP |                  |
| – information provided on protection against erroneous position encoding into the beacon message |                        | √     | 239 min 42 sec - ULP |                  |
|                                                                                                  |                        |       | √                    | Annex A page 318 |
|                                                                                                  |                        |       | √                    |                  |

## 5.2 Electrical and Functional Tests at Constant Temperature

|                                                                                    |                                                                                                                                                                                                          |
|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Date of test                                                                       | 29.01.2016 ( $T_{amb}$ ), 18.12.2017 <sup>1</sup> ( $T_{amb}$ ),<br>28.01.2016 ( $T_{max}$ ), 18.12.2017 <sup>1</sup> ( $T_{max}$ ),<br>27.01.2016 ( $T_{min}$ ), 19.12.2017 <sup>1</sup> ( $T_{min}$ ), |
| 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).<br>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<br>Relative air humidity: 45-52 %                                                                                                                               |
| Beacon environment temperature during test                                         | $T_{amb} = 20^{\circ}\text{C}$<br>$T_{max} = 55^{\circ}\text{C}$<br>$T_{min} = -20^{\circ}\text{C}$                                                                                                      |
| 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)

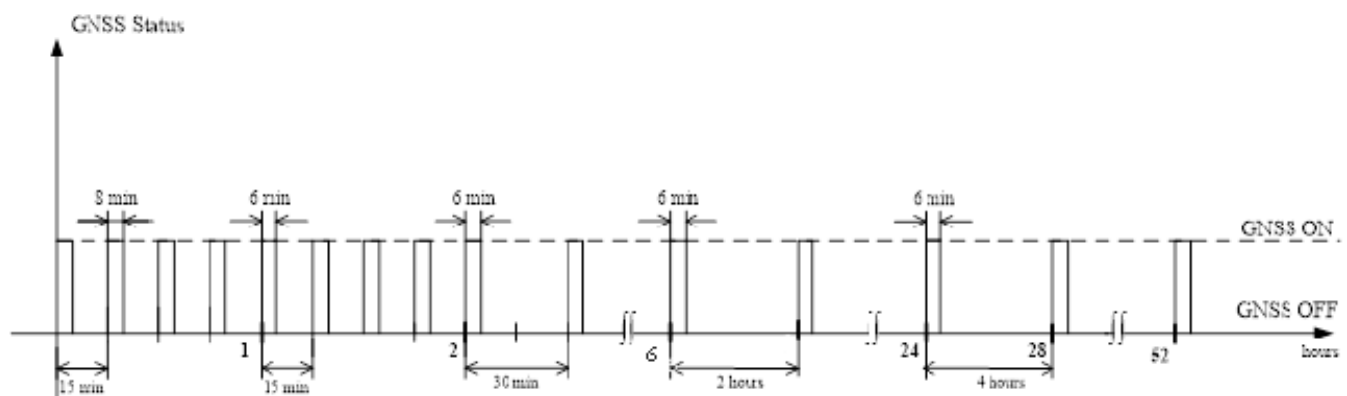


Figure 5.2.1 – The beacon working cycle during measurements

### The list of parameters

| Parameter tested                                                  | Operating temperature |       |        |
|-------------------------------------------------------------------|-----------------------|-------|--------|
|                                                                   | 20 °C                 | 55 °C | -20 °C |
| <b>Transmitter power output</b>                                   |                       |       |        |
| 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     |
| <b>Messages</b>                                                   |                       |       |        |
| Message contents                                                  | 36                    | 47    | 57     |
| <b>Digital message generator</b>                                  |                       |       |        |
| 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     |
| <b>Modulation</b>                                                 |                       |       |        |
| 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     |
| <b>Transmitted frequency</b>                                      |                       |       |        |
| Nominal value                                                     | 34                    | 45    | 55     |
| Medium /short term frequency stability                            | 34                    | 45    | 55     |
| Maximum and minimum value during operating                        | 34                    | 45    | 55     |
| <b>Spurious emissions</b>                                         |                       |       |        |
| Spurious emissions                                                | 39                    | 50    | 60     |
| <b>VSWR test</b>                                                  |                       |       |        |
| Transmitter nominal frequency                                     | 40                    | 51    | 61     |
| Digital message content                                           | 41                    | 52    | 62     |
| The modulation parameters                                         | 40                    | 51    | 61     |
| <b>Self-test mode</b>                                             |                       |       |        |
| 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 <sup>1</sup> |                    |                                       |             |            |            |
| 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)

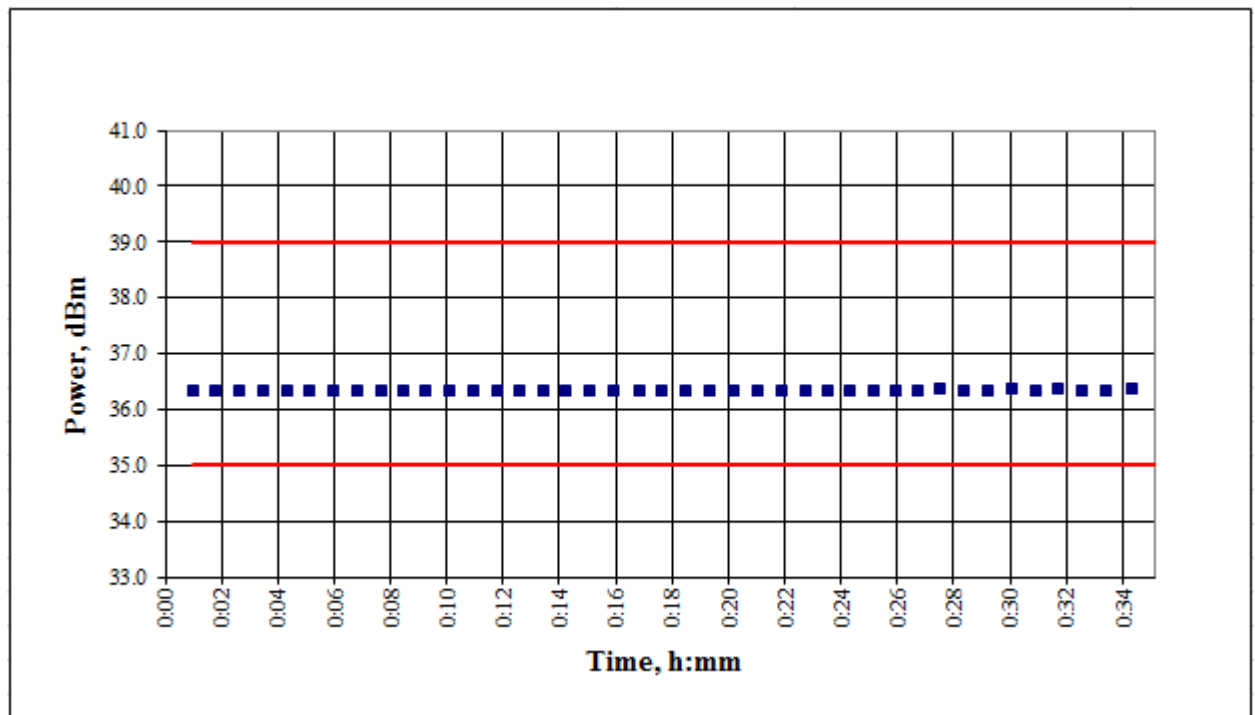


Figure 5.2.1.1 – Transmitter power during test

## • Transmitter Power Output Rise Time (A.3.2.2.2)

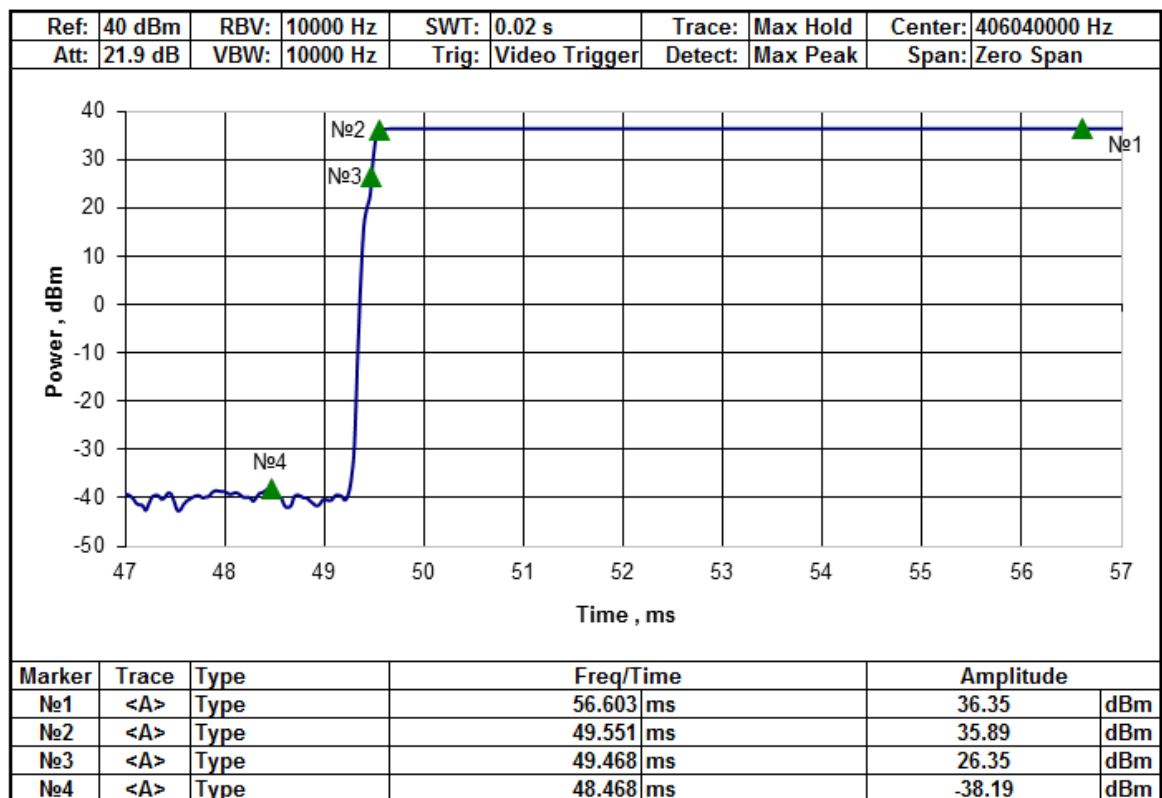


Figure 5.2.1.2 – Transmitter power output rise

**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                                                        |         |                               |
| Longitude 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<br>till the first operation burst |
| 1 <sup>st</sup> measurement | 60.10                                                                  |
| 2 <sup>d</sup> measurement  | 59.90                                                                  |
| 3 <sup>d</sup> measurement  | 59.90                                                                  |
| <b>Minimum value</b>        | <b>59.90</b>                                                           |
| <b>Maximum value</b>        | <b>60.10</b>                                                           |

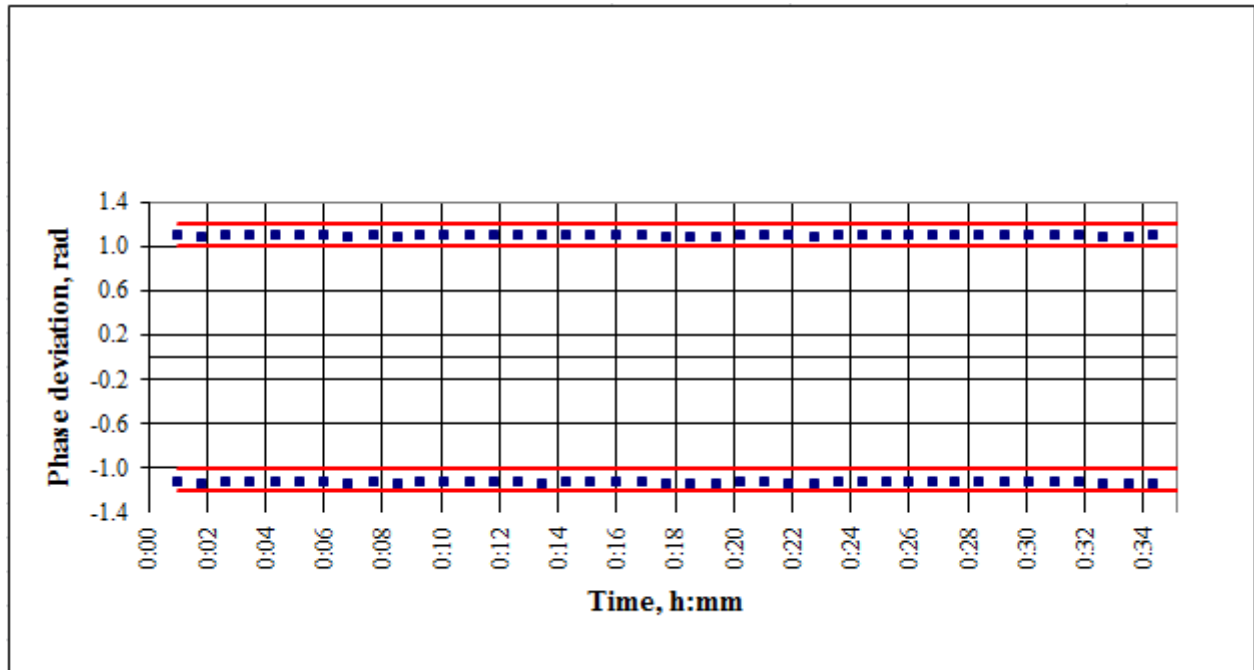
**d) Data Encoding and Modulation (according to C/S T.007 – section A.3.2.3)**

Figure 5.2.1.3 – Modulation index

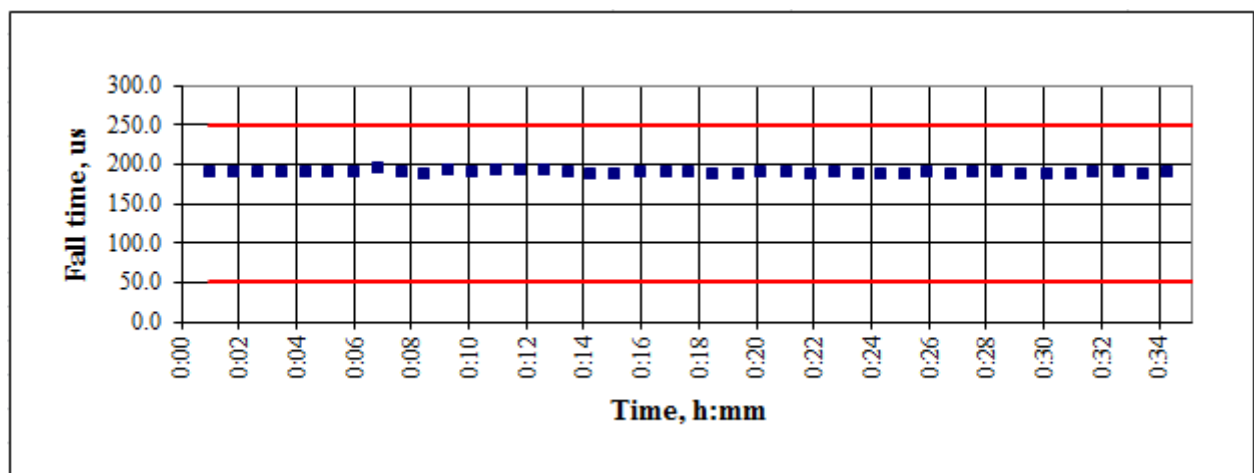
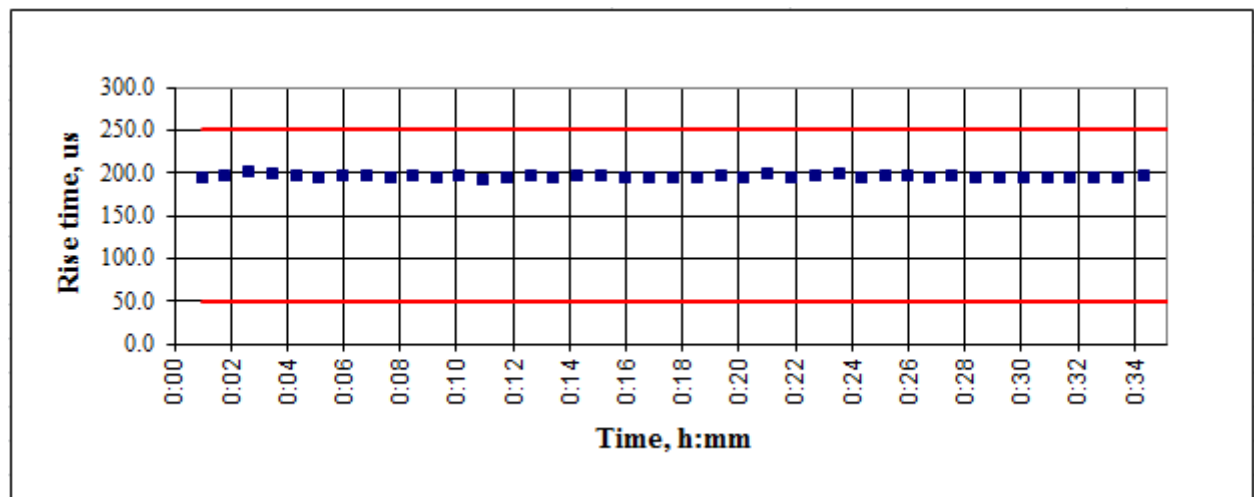


Figure 5.2.1.4 – Modulation rise and fall times

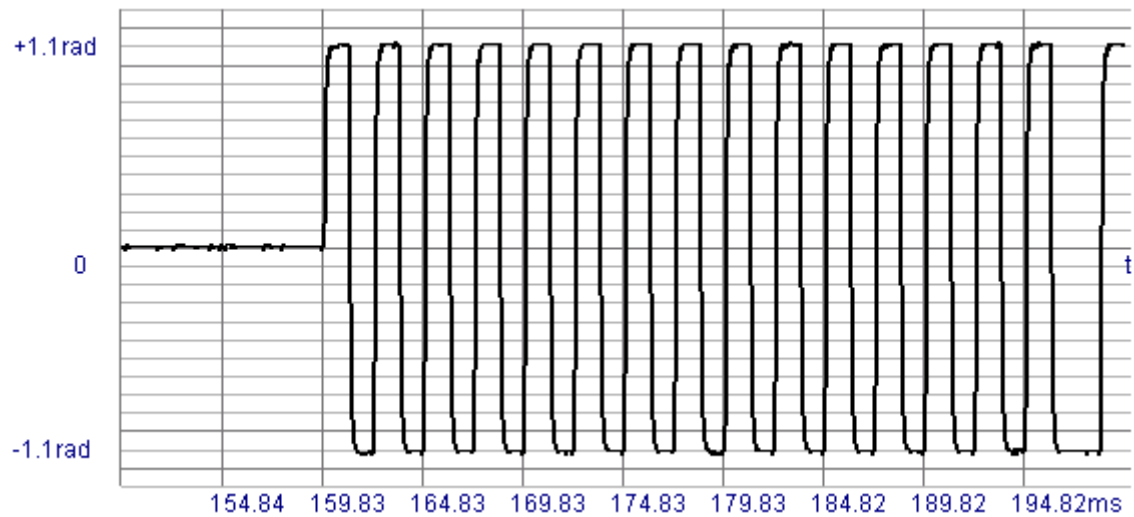


Figure 5.2.1.5 – Modulation symmetry of the bi-phase demodulated signal

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

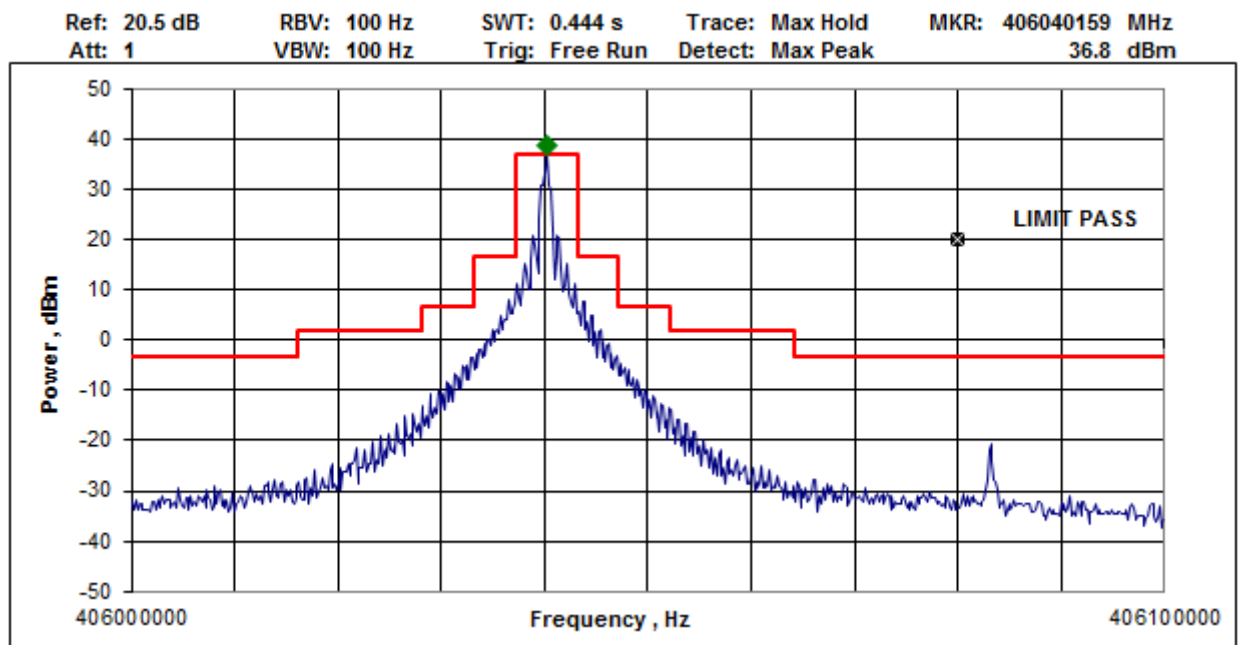


Figure 5.2.1.6 – Spurious output.

**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 5 minutes. 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)

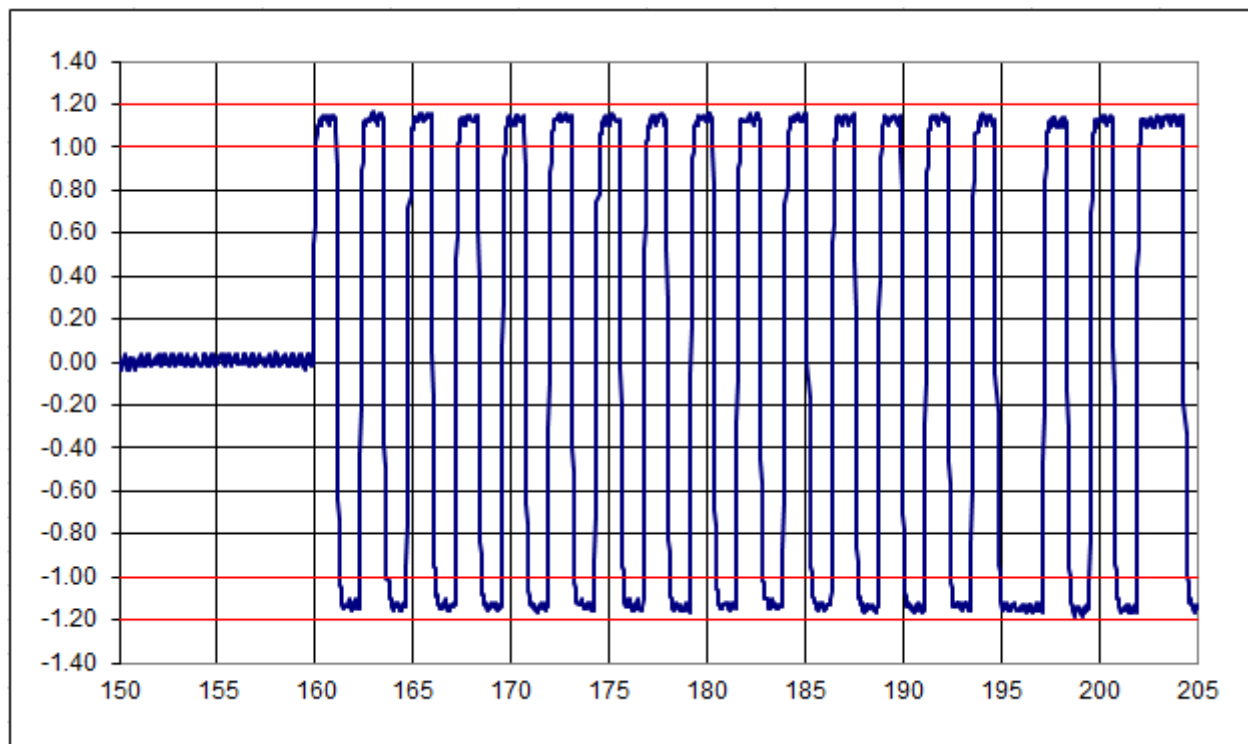


Figure 5.2.1.7 – Modulation symmetry of the bi-phase demodulated signal

- **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                                                        |         |                               |
| Longitude 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                          |                                          |             |             |
|----------------------------------|------------------------------------------|-------------|-------------|
| <b>Contents (full)</b>           | : 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     |
| <b>Frequency, MHz</b>            | 406.039                                  | 406.041     | 406.039967  |
| <b>Power, dBm</b>                | 35                                       | 39          | 36.32       |
| <b>Total burst duration, ms</b>  | 514.80                                   | 525.20      | 520.45      |
| 121.5 MHz Transmitter Parameters |                                          |             |             |
| <b>Carrier Frequency, Hz</b>     |                                          | 121649850   |             |
| <b>Power, dBm</b>                |                                          | 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  | FF FED08C9E0000007FDFFA79ED3783E0F66C |

## 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                                                        |         |                               |
| Longitude 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<br>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 <sup>1</sup> |                                         |                          |             |            |            |
| 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)

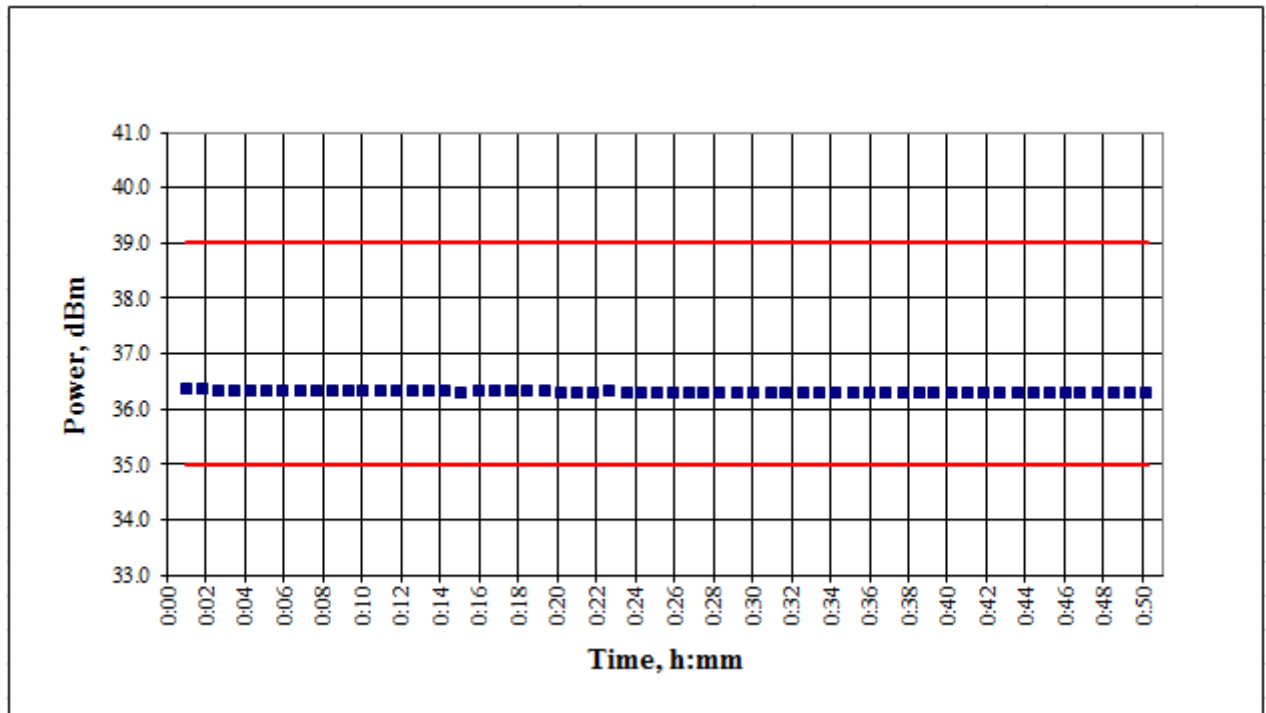


Figure 5.2.2.1 – Transmitter power during test

- Transmitter Power Output Rise Time (A.3.2.2.2)

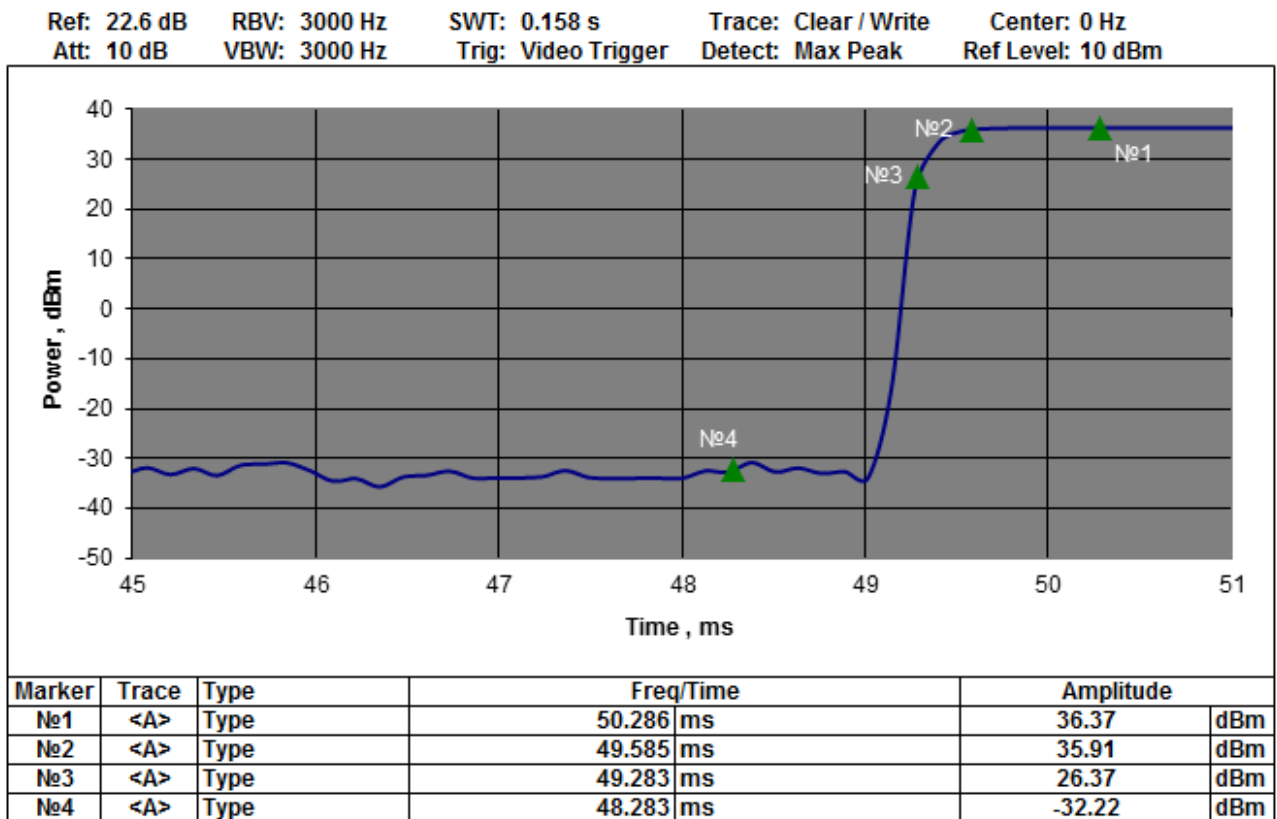


Figure 5.2.2.2 – Transmitter power output rise

**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                                                        |         |                               |
| Longitude 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   |          |
| <b>Average repetition period, s</b>  | 48.50  | 51.50 | 49.96    |
| <b>Minimum repetition period ,s</b>  | 47.5   | 48.0  | 47.79    |
| <b>Maximum repetition period ,s</b>  | 52.0   | 52.5  | 52.44    |
| <b>Standard deviation</b>            | 0.5    | 2.0   | 1.23     |
| <b>Differences of Rep. period, s</b> | 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<br>till the first (operating) burst |
| 1 <sup>st</sup> measurement | 60.00                                                                    |
| 2 <sup>d</sup> measurement  | 59.80                                                                    |
| 3 <sup>d</sup> measurement  | 60.10                                                                    |
| <b>Minimum value</b>        | <b>59.80</b>                                                             |
| <b>Maximum value</b>        | <b>60.10</b>                                                             |

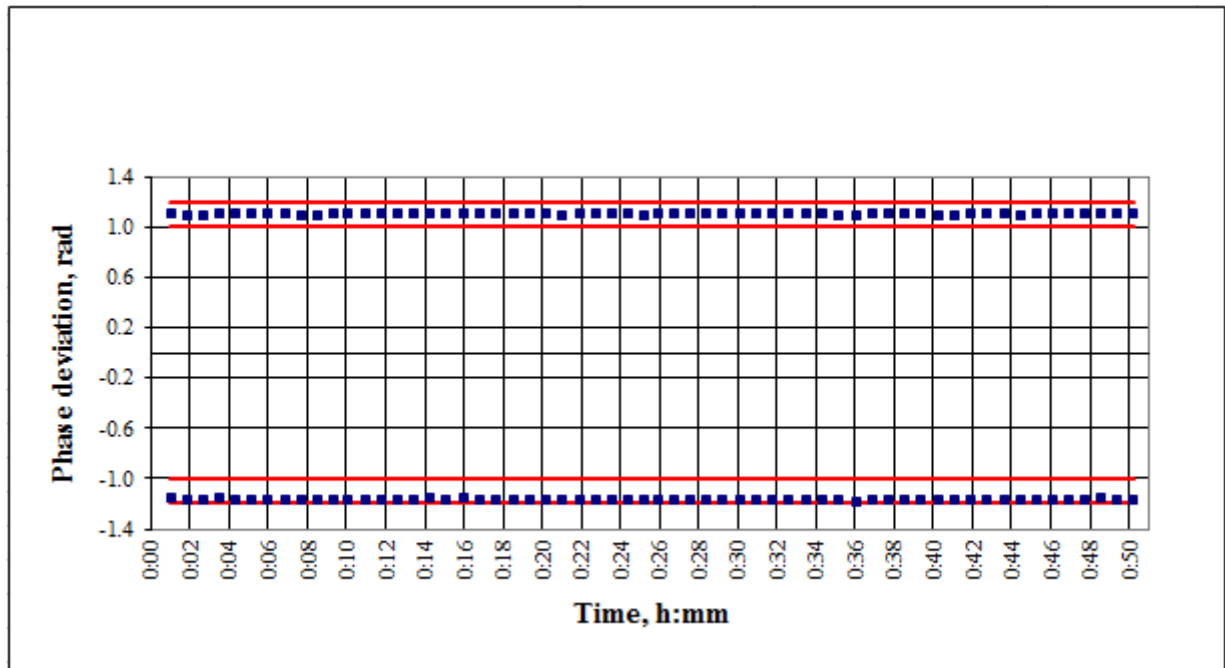
**d) Data Encoding and Modulation (according to C/S T.007 – section A.3.2.3)**

Figure 5.2.2.3 – Modulation index

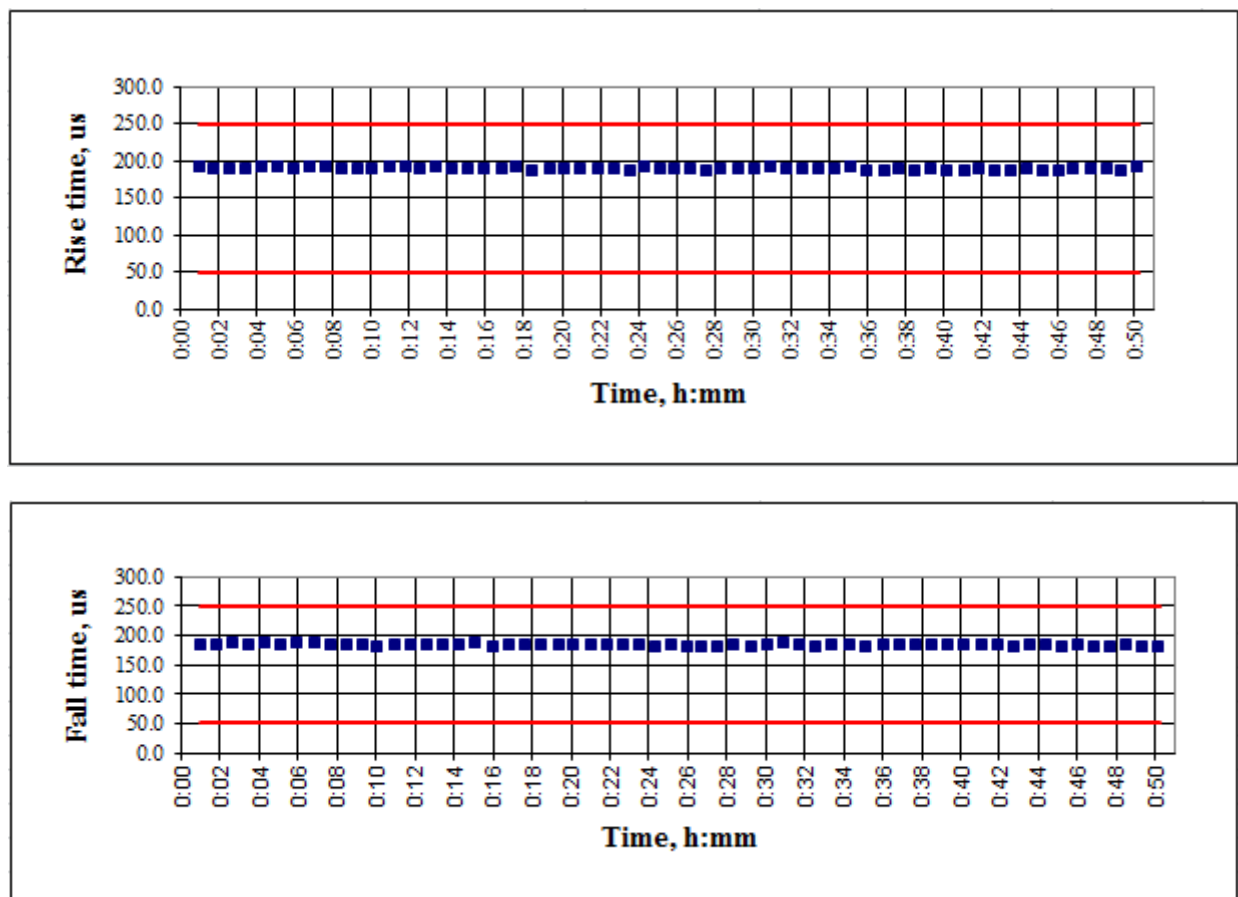


Figure 5.2.2.4 – Modulation rise and fall times

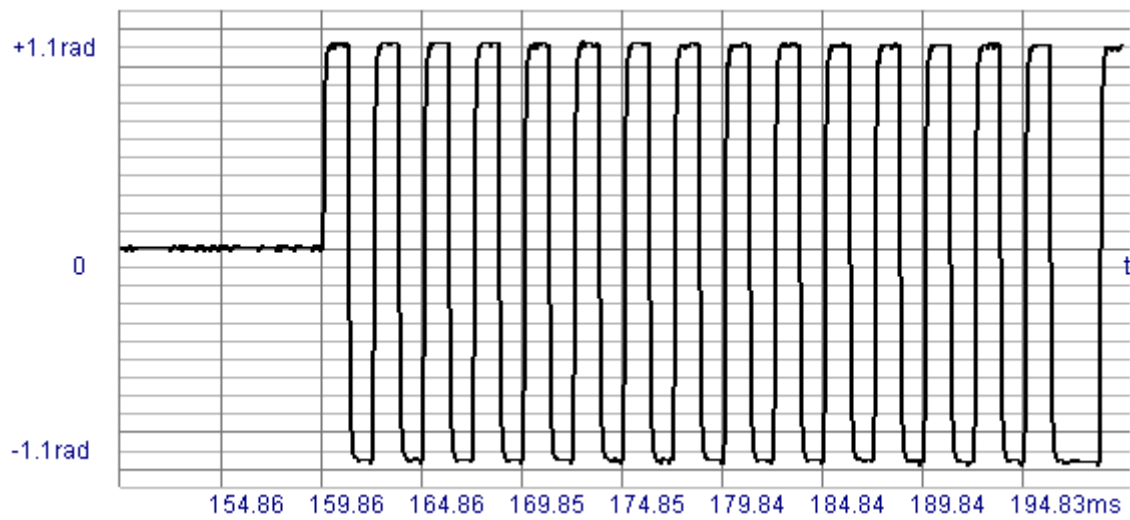


Figure 5.2.2.5 – Modulation symmetry of the bi-phase demodulated signal

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

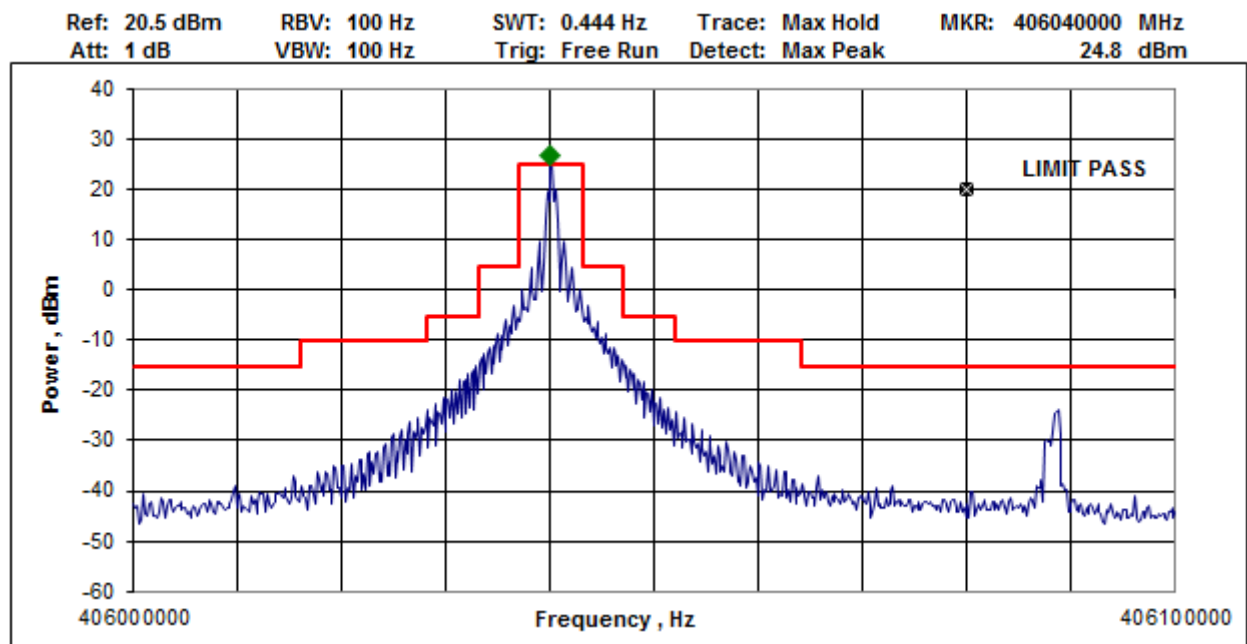


Figure 5.2.2.6 – Spurious output.

# 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 5 minutes. 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)

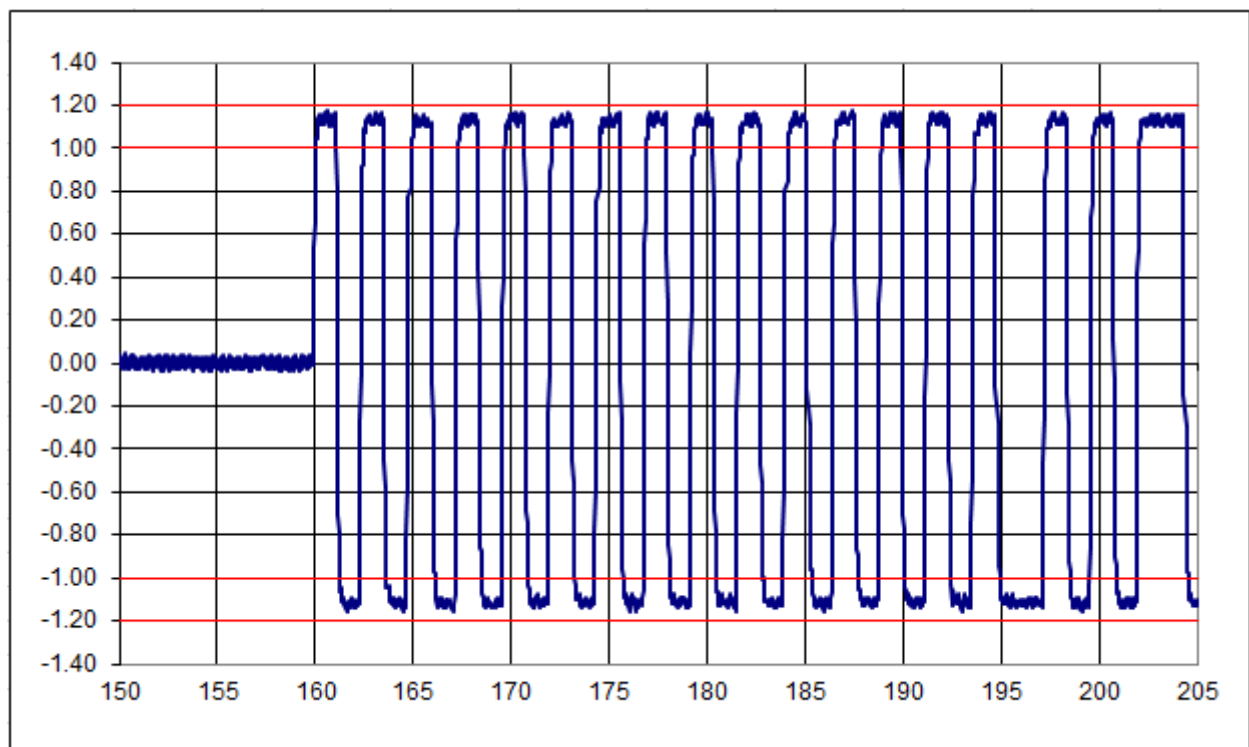


Figure 5.2.2.7 – Modulation symmetry of the bi-phase demodulated signal

- **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                                                        |         |                               |
| Longitude 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                          |                                          |             |             |
|----------------------------------|------------------------------------------|-------------|-------------|
| <b>Contents (full)</b>           | :FF FED0 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     |
| <b>Frequency, MHz</b>            | 406.039                                  | 406.041     | 406.039926  |
| <b>Power, dBm</b>                | 35                                       | 39          | 36.33       |
| <b>Total burst duration, ms</b>  | 514.80                                   | 525.20      | 520.25      |
| 121.5 MHz Transmitter Parameters |                                          |             |             |
| <b>Carrier Frequency, Hz</b>     | 121648983                                |             |             |
| <b>Power, dBm</b>                | 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  | FF FED08C9E0000007FDFFA79ED3783E0F66C |

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                                                        |         |                               |
| Longitude 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 <sup>1</sup> |                    |                          |             |            |            |
| 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)

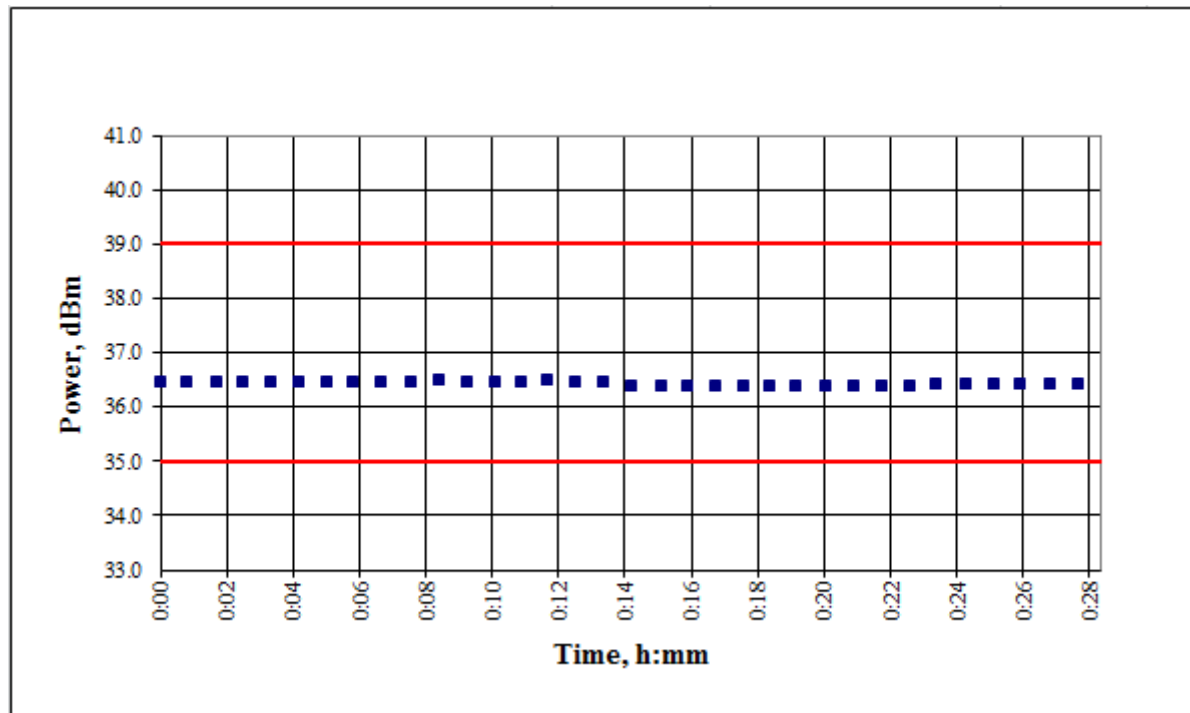


Figure 5.2.3.1 – Transmitter power during test

- Transmitter Power Output Rise Time (A.3.2.2.2)

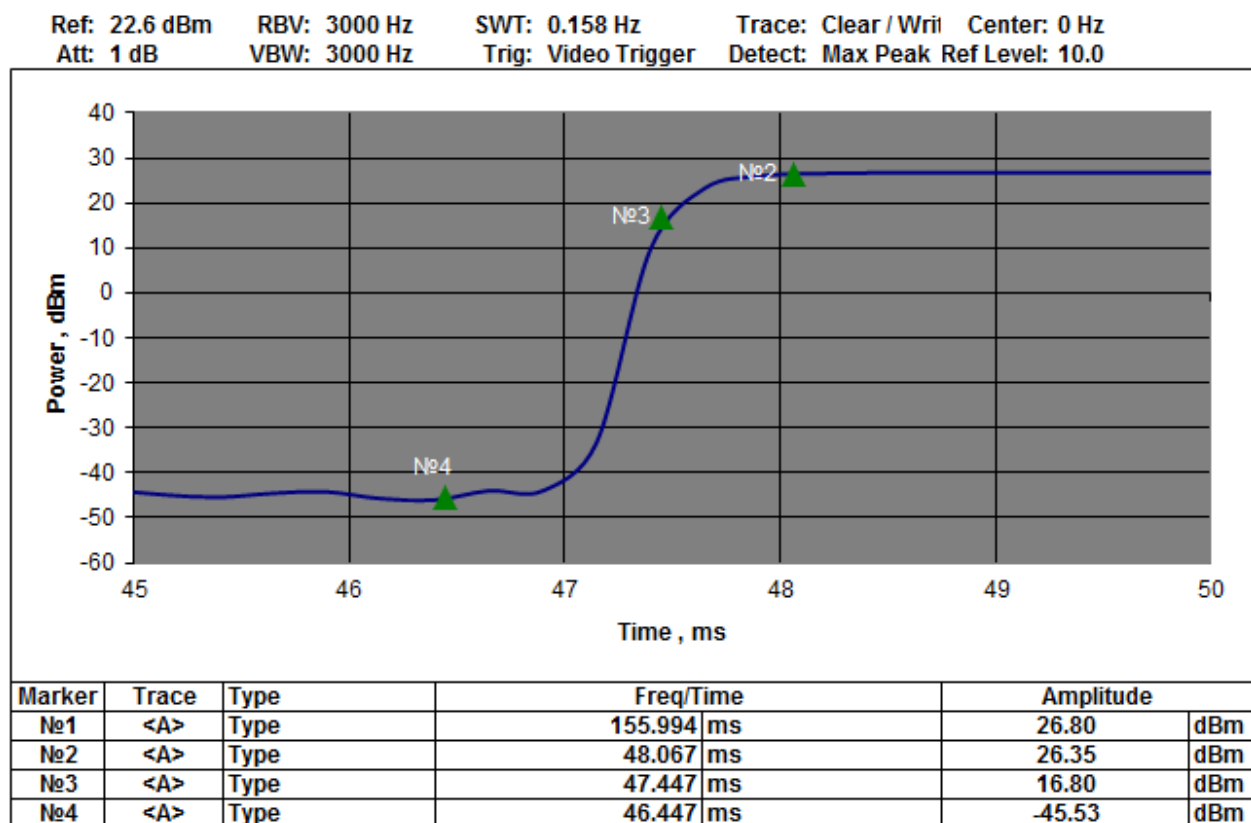


Figure 5.2.3.2 – Transmitter power output rise

**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                                                        |         |                               |
| Longitude 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<br>till the first (operating) burst |
| 1 <sup>st</sup> measurement | 60.10                                                                    |
| 2 <sup>d</sup> measurement  | 60.20                                                                    |
| 3 <sup>d</sup> measurement  | 59.90                                                                    |
| Minimum value               | 59.90                                                                    |
| Maximum value               | 60.20                                                                    |

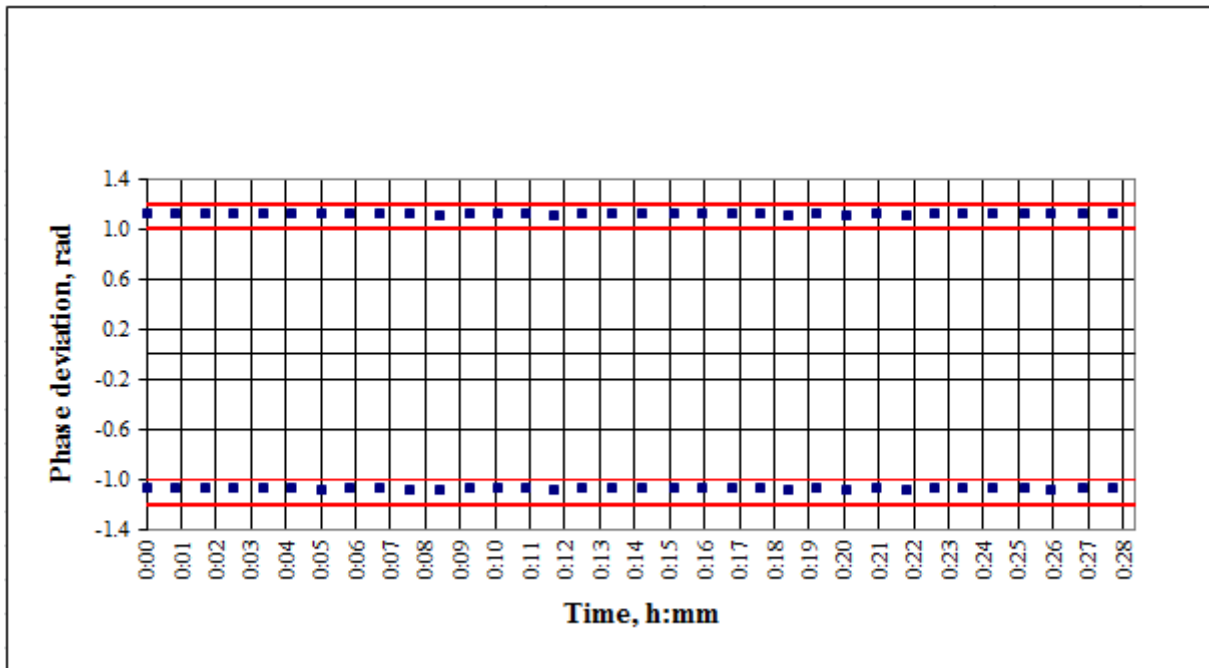
**d) Data Encoding and Modulation (according to C/S T.007 – section A.3.2.3)**

Figure 5.2.3.3 – Modulation index

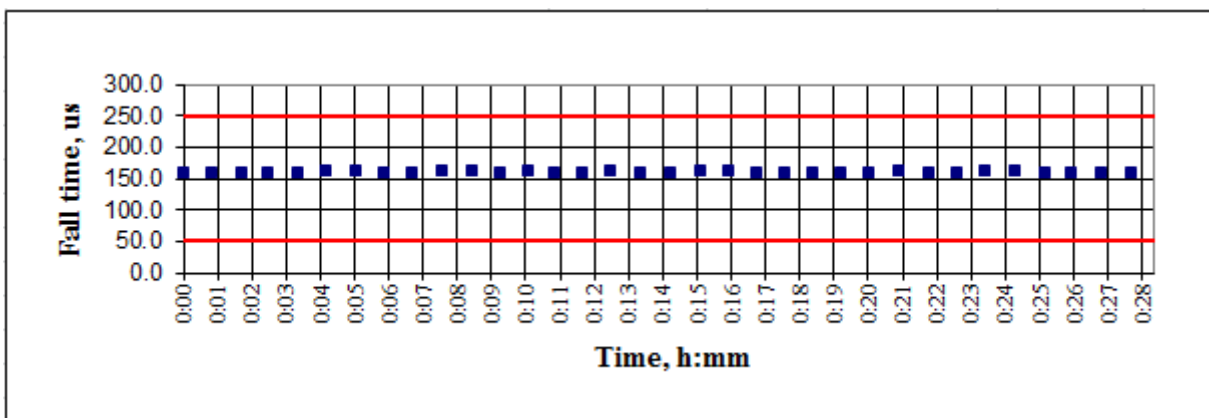
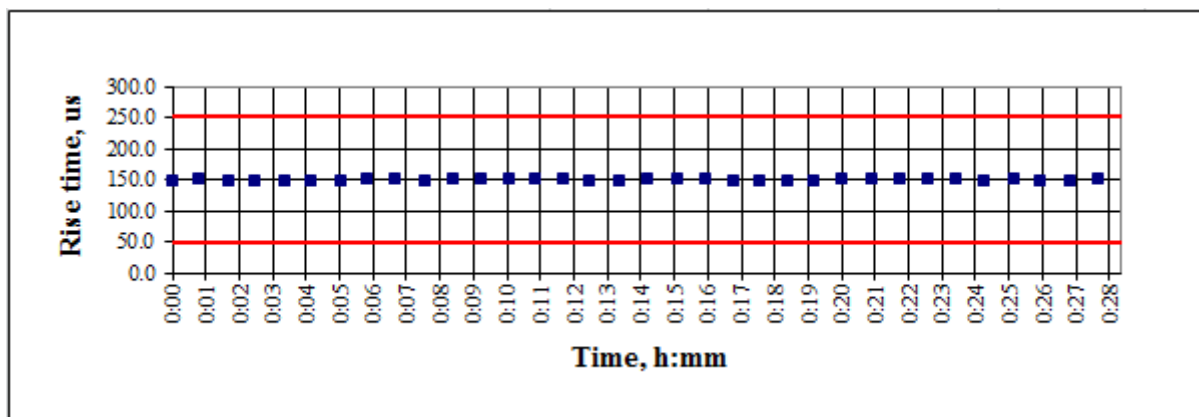


Figure 5.2.3.4– Modulation rise and fall times

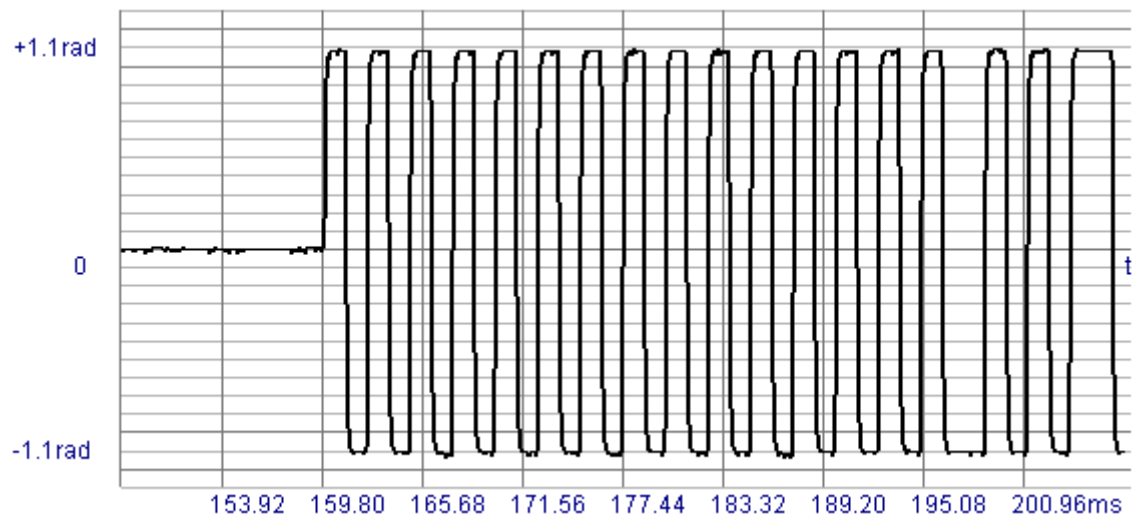


Figure 5.2.3.5– Modulation symmetry of the bi-phase demodulated signal

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

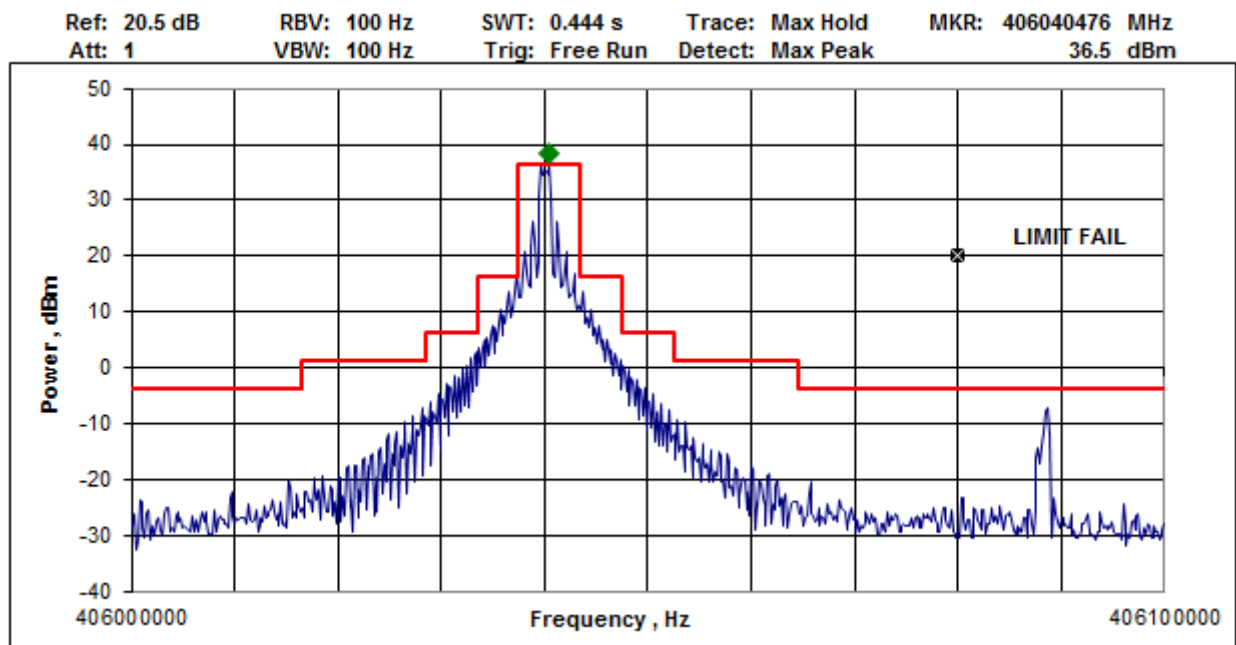


Figure 5.2.3.6 – Spurious output.

# **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 5 minutes. 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 |
| +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)

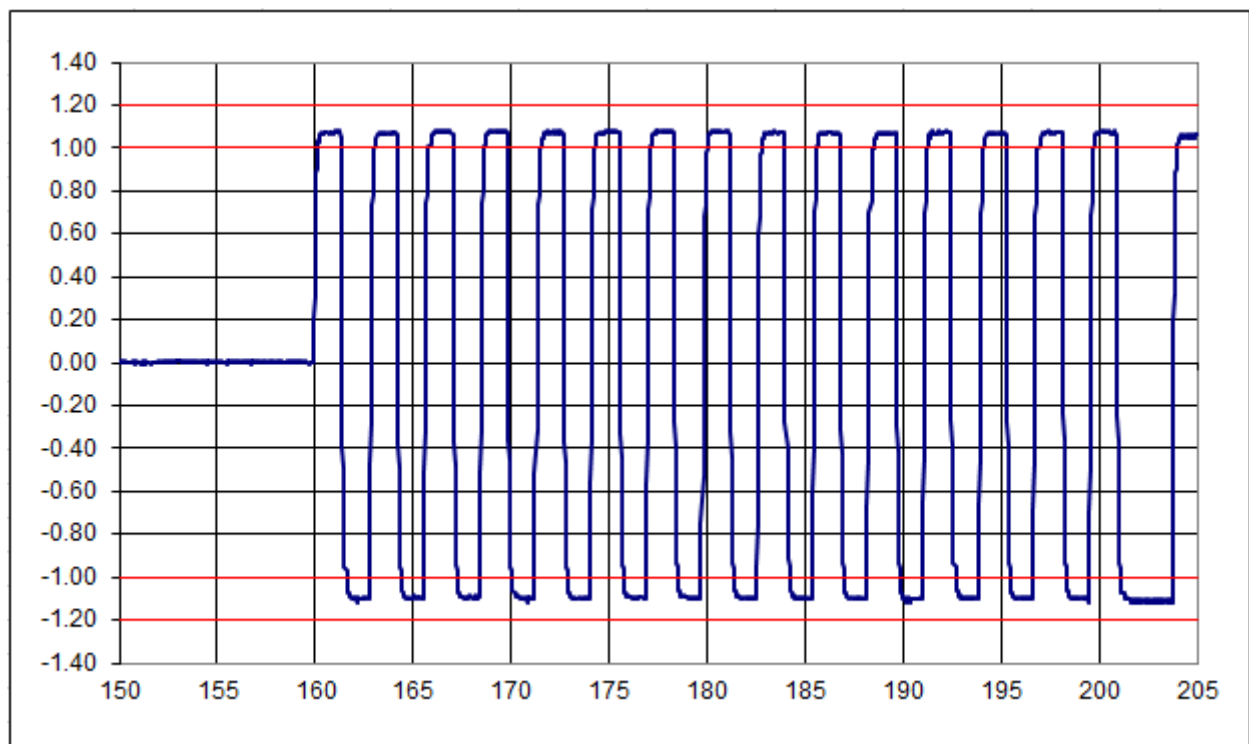


Figure 5.2.3.7– Modulation symmetry of the bi-phase demodulated signal

- **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                                                        |         |                               |
| Longitude 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                                                        |         |                               |
| Longitude 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).<br>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<br>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. |
|------------------------------------------------------------|----------|
| <b>Transmission frequency 406 MHz</b>                      |          |
| Nominal frequency value                                    | 67       |
| Short and average frequency stability                      | 67       |
| Maximum and minimum frequency stability values during test | 66       |
| <b>Transmitter power output</b>                            |          |
| Diagram of power output values during test                 | 68       |
| Maximum and minimum power output values during test        | 66       |
| <b>Message</b>                                             |          |
| 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 temperature during the additional test on 18.12.17 – 19.12.17 in accordance with the requirements of CSS (see pp. 34, 45, 55)

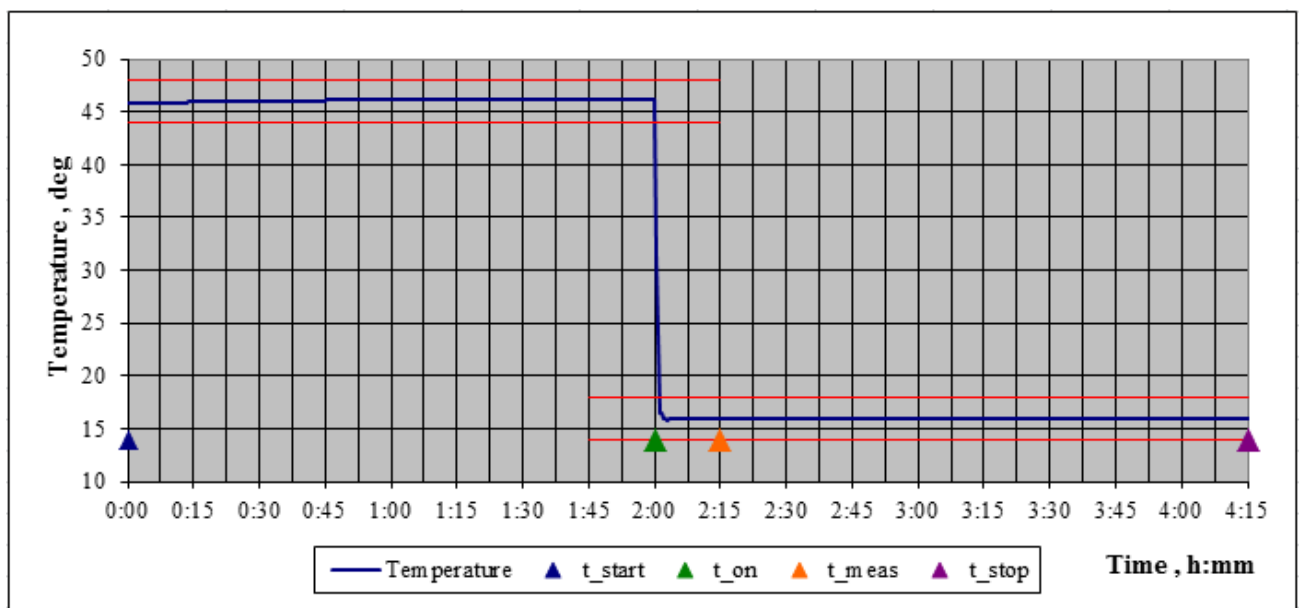


Figure 5.3.1 - Temperature During The Test

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

- Nominal Value (A.3.2.1.1)**

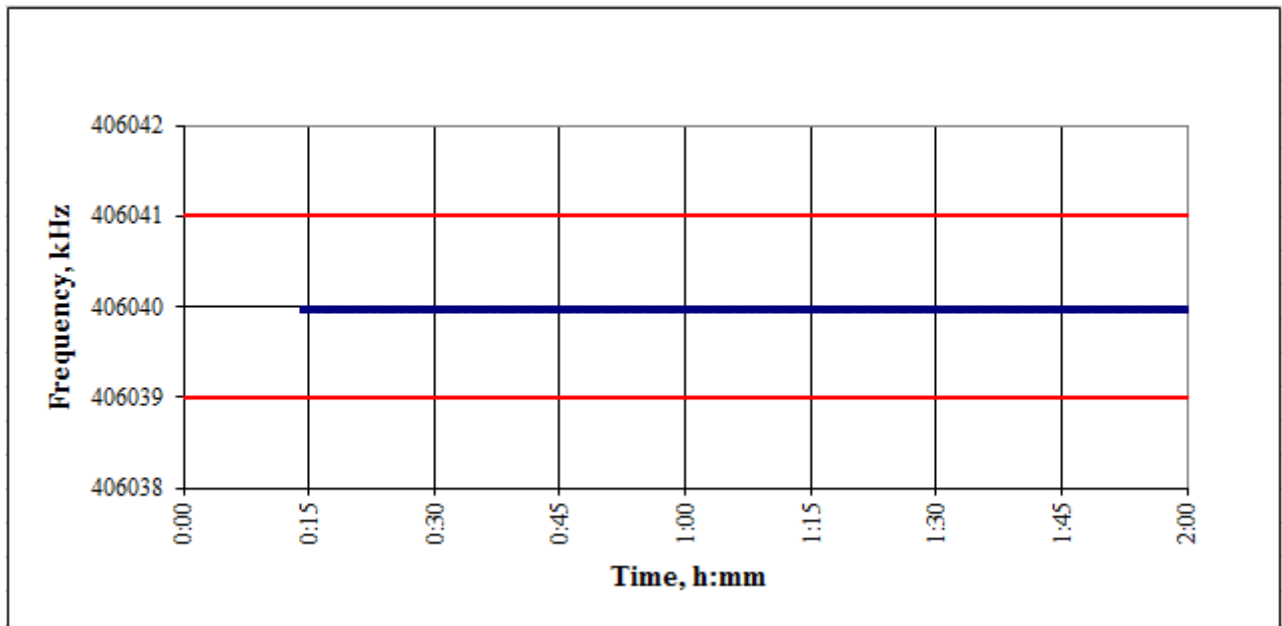


Figure 5.3.2 – Nominal Value of frequency

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

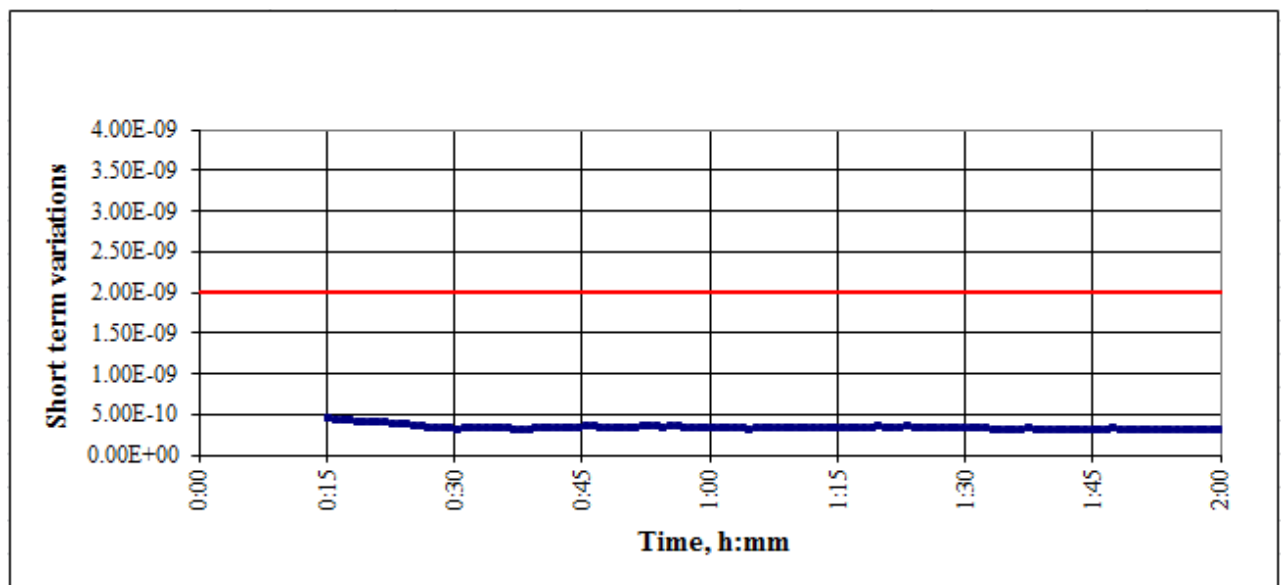


Figure 5.3.3 – Short-Term Stability

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

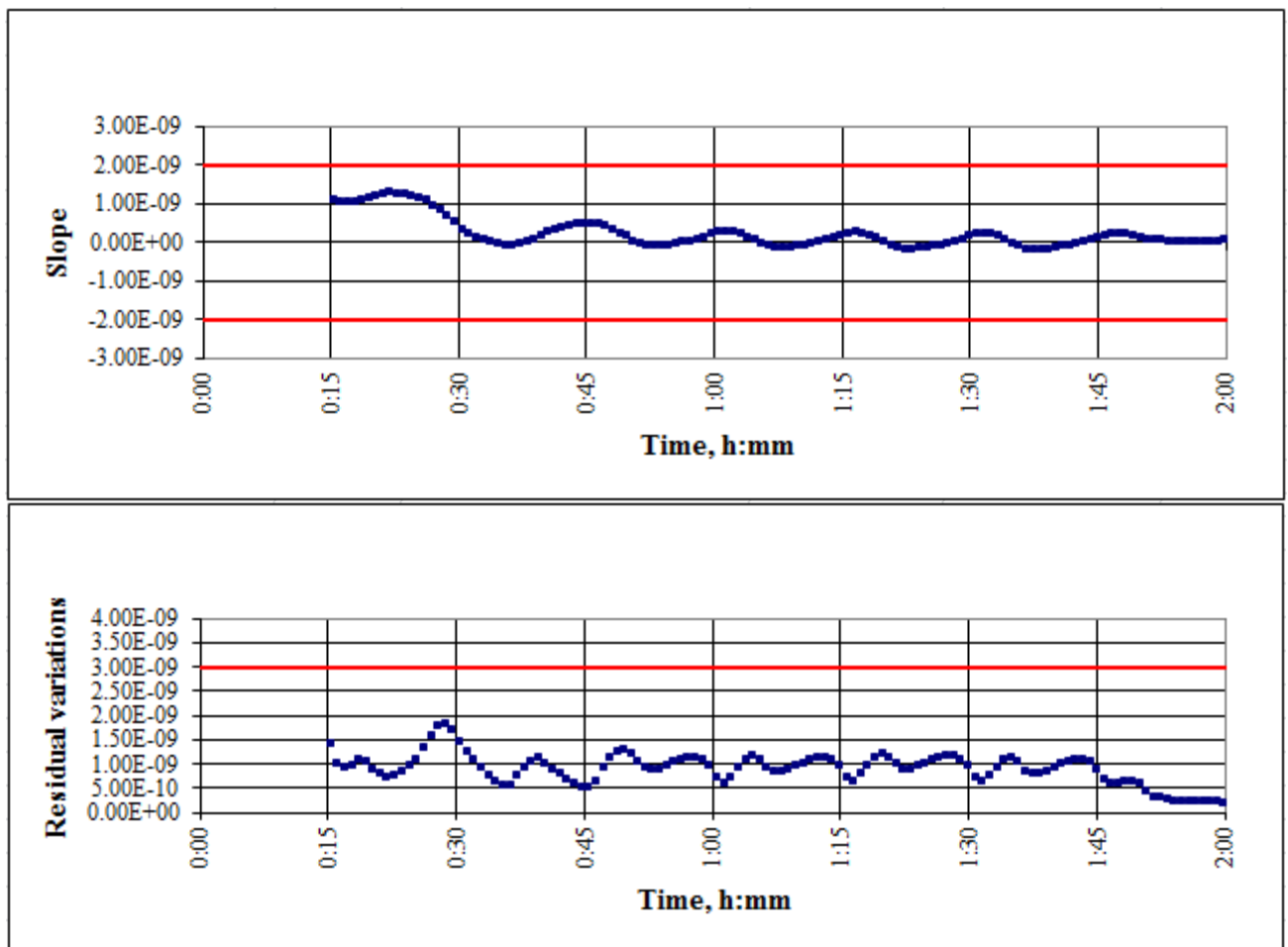


Figure 5.3.4 – Medium-Term Stability

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)**

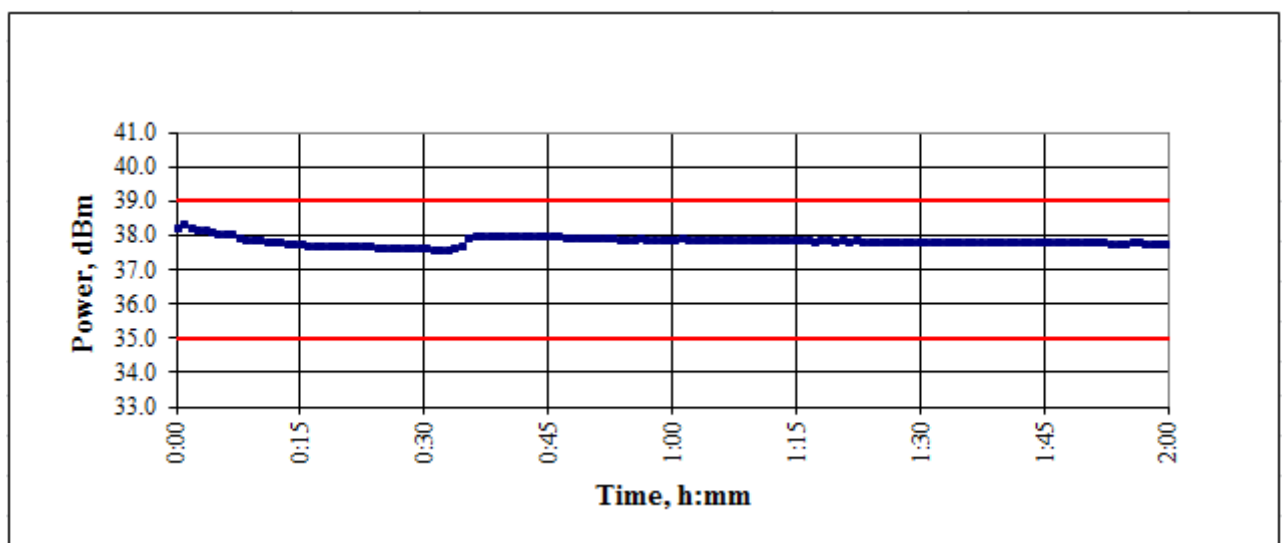


Figure 5.3.5 – Transmitter power during test

**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                                                        |         |                               |
| Longitude 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                                                                       | 15.02.2016-18.02.2016                                                                                                                                                                |
| Date of additional test of the homer transmitter's parameters.                     | 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).<br>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<br>Relative air humidity: 45-69 %                                                                                                        |
| Test temperature                                                                   | minus 20°C                                                                                                                                                                           |
| Pre-test battery discharge duration                                                | 12:20:01 hours with current 97.7 mA                                                                                                                                                  |
| Pre-test battery discharge duration                                                | 12:55:56 hours with current 97.7 mA                                                                                                                                                  |
| Lifetime test duration                                                             | 77 hours 39 minutes                                                                                                                                                                  |
| Additional Lifetime test duration                                                  | 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:<br>Manually<br>selectable or<br>Automatic | Measurement<br>interval, sec | Average<br>Current, mA | Peak Current,<br>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.

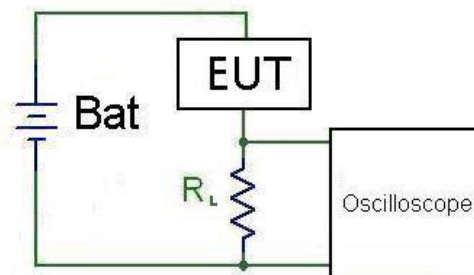


Figure 5.4.1 - The Circuit for Current Consumption Measurement

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.

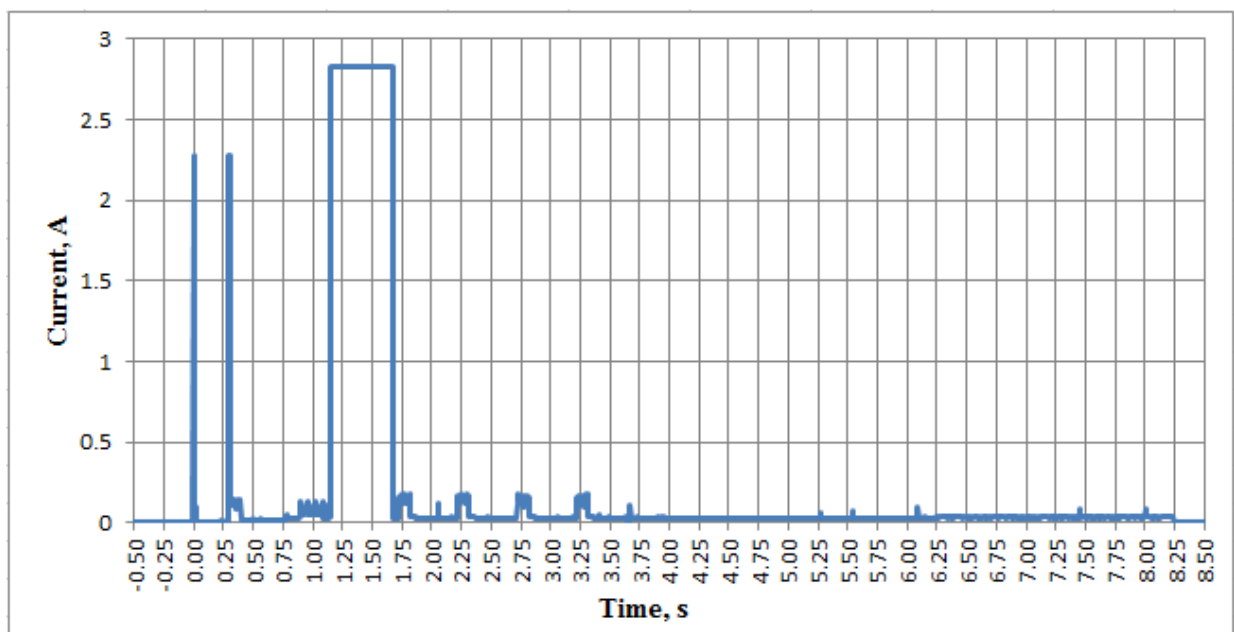


Figure 5.4.2 - Current during self-test

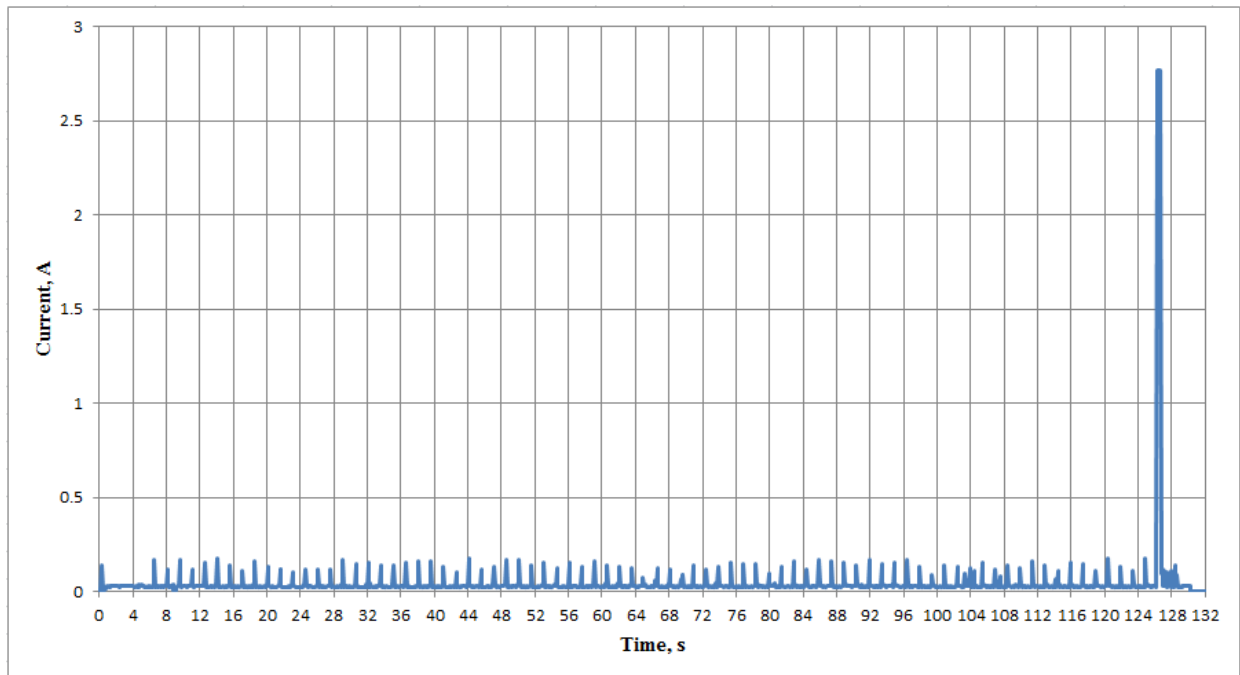


Figure 5.4.3 - Current during GNSS self-test

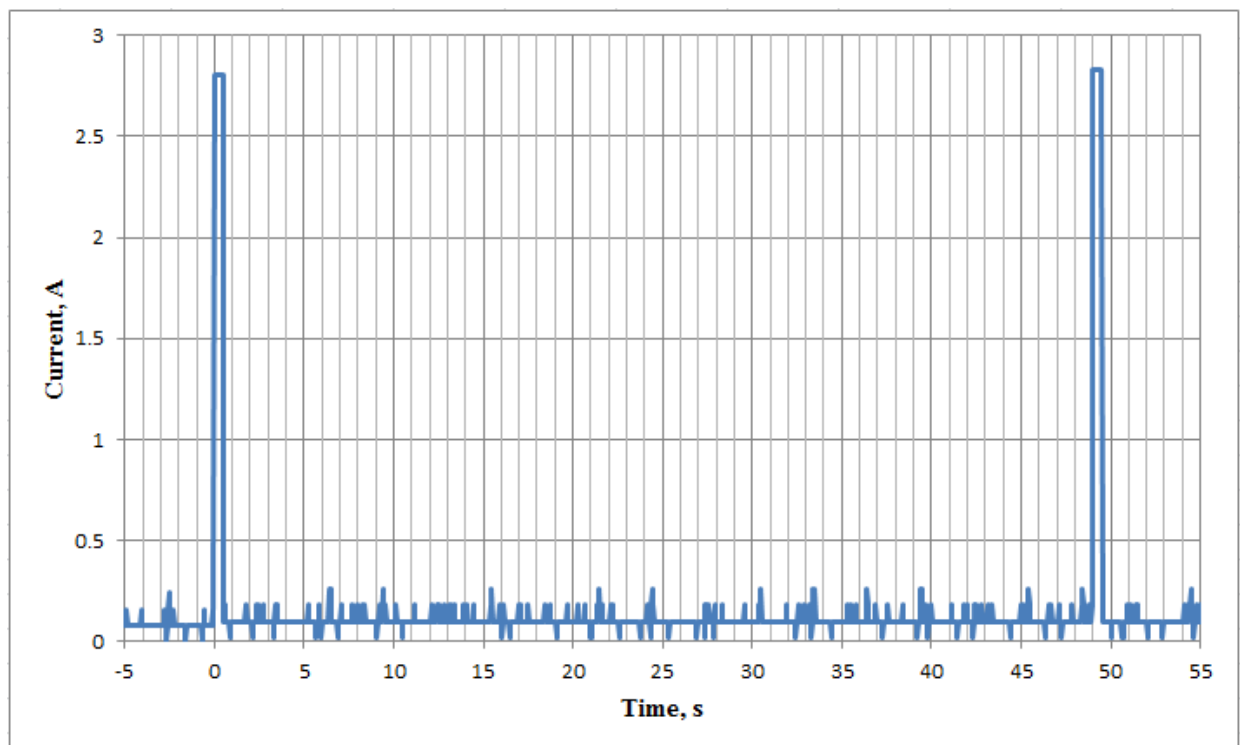


Figure 5.4.4 - GPS receiver is switching to GNSS search mode.

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

$$L_{AGEING} = C_{BN} - [C_{BN} * (1 - L_{SDC} / 100)^{2.92}] = 0.66 \text{ A-hrs.}$$

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.

$$L_{PRE-DISCHARGE} = 2 * 10 / 3600 = 5.56 \text{ mA-hrs}$$

The final value of the discharge to take into account the cell ageing:

$$L_{CDC} - L_{AGEING\_total} - L_{PRE-DISCHARGE} = 1.87 \text{ A-hrs} - 0.66 \text{ A-hrs} - 0.00556 = 1.205 \text{ A-hrs.}$$

The discharge current is 97.7 mA.

The time of pre-discharge of battery is:  
 $1.205 \text{ A-hrs} / 0.0977 \text{ A} = 12.334 \text{ hrs.}$

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  $-20^{\circ}\text{C}$  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:

$$L_{\text{AGEING}} = C_{\text{BN}} - [C_{\text{BN}} * (1 - L_{\text{SDC}} / 100)^{2.65}] = 0.601 \text{ A-hrs.}$$

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.

$$L_{\text{PRE-DISCHARGE}} = 2 * 10 / 3600 = 5.56 \text{ mA-hrs}$$

The final value of the discharge to take into account the cell ageing:

$$L_{\text{CDC}} - L_{\text{AGEING\_total}} - L_{\text{PRE-DISCHARGE}} = 1.87 \text{ A-hrs} - 0.601 \text{ A-hrs} - 0.00556 = 1.263 \text{ A-hrs.}$$

The discharge current is 97.7 mA.

The time of pre-discharge of battery is:

$$1.263 \text{ A-hrs} / 0.0977 \text{ A} = 12.932 \text{ hrs.}$$

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  $-20^{\circ}\text{C}$  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. |
|------------------------------------------------------------|----------|
| <b>Transmission frequency 406 MHz:</b>                     |          |
| Nominal frequency value                                    | 77       |
| Short and average frequency stability                      | 78       |
| Maximum and minimum frequency stability values during test | 75       |
| <b>Transmitter power output:</b>                           |          |
| Diagram of power output values during test                 | 81       |
| Maximum and minimum power output values during test        | 75       |
| <b>Message:</b>                                            |          |
| 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 <sup>1</sup> |                                       |                                                      |             |             |            |
| 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 <sup>1</sup>                           |                                       |                                                      |             |             |            |
| 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 <sup>1</sup>       |                                       |                                                      |             |             |            |
| 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      |

<sup>1</sup> - 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.

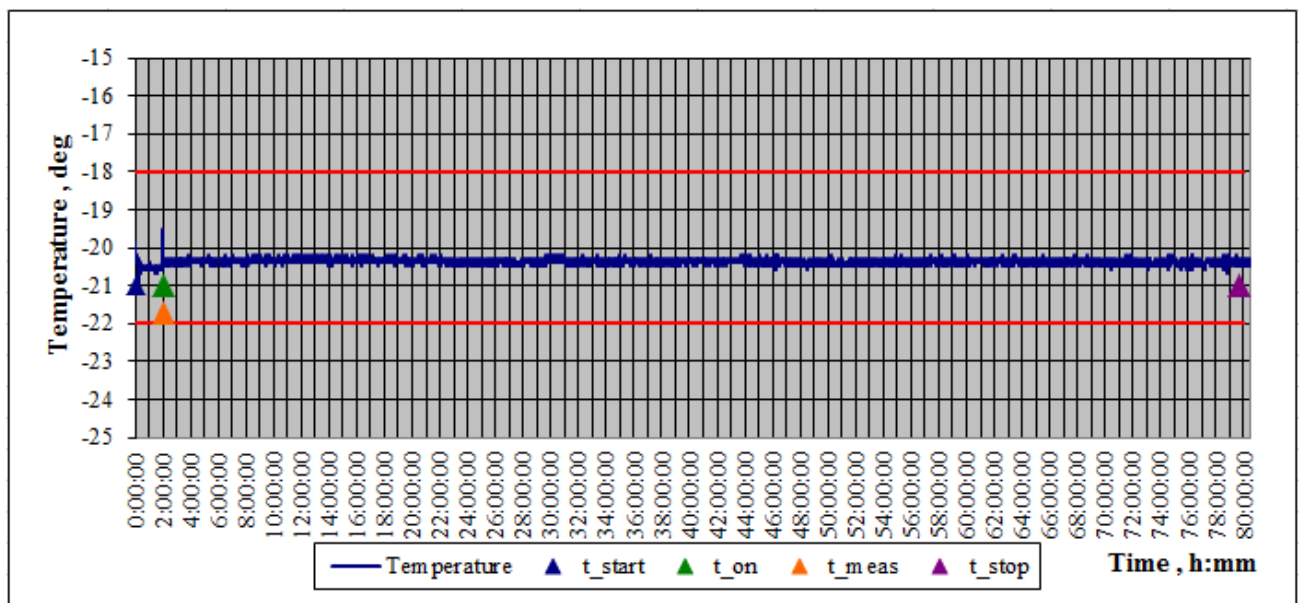


Figure 5.4.5 – Temperature During The Test

**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)**

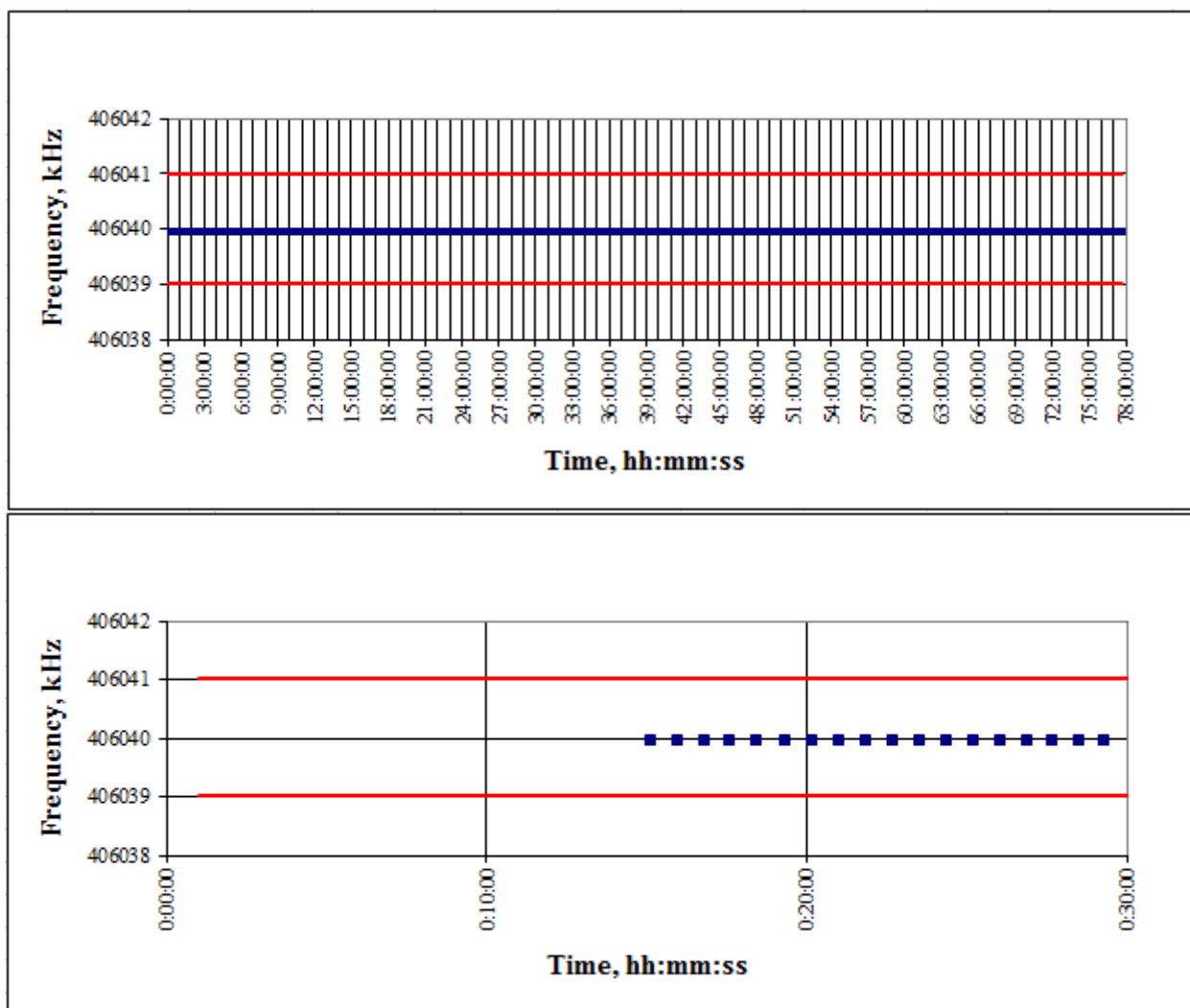


Figure 5.4.6 – Nominal Value of frequency

- Short-Term Stability (A.3.2.1.2)

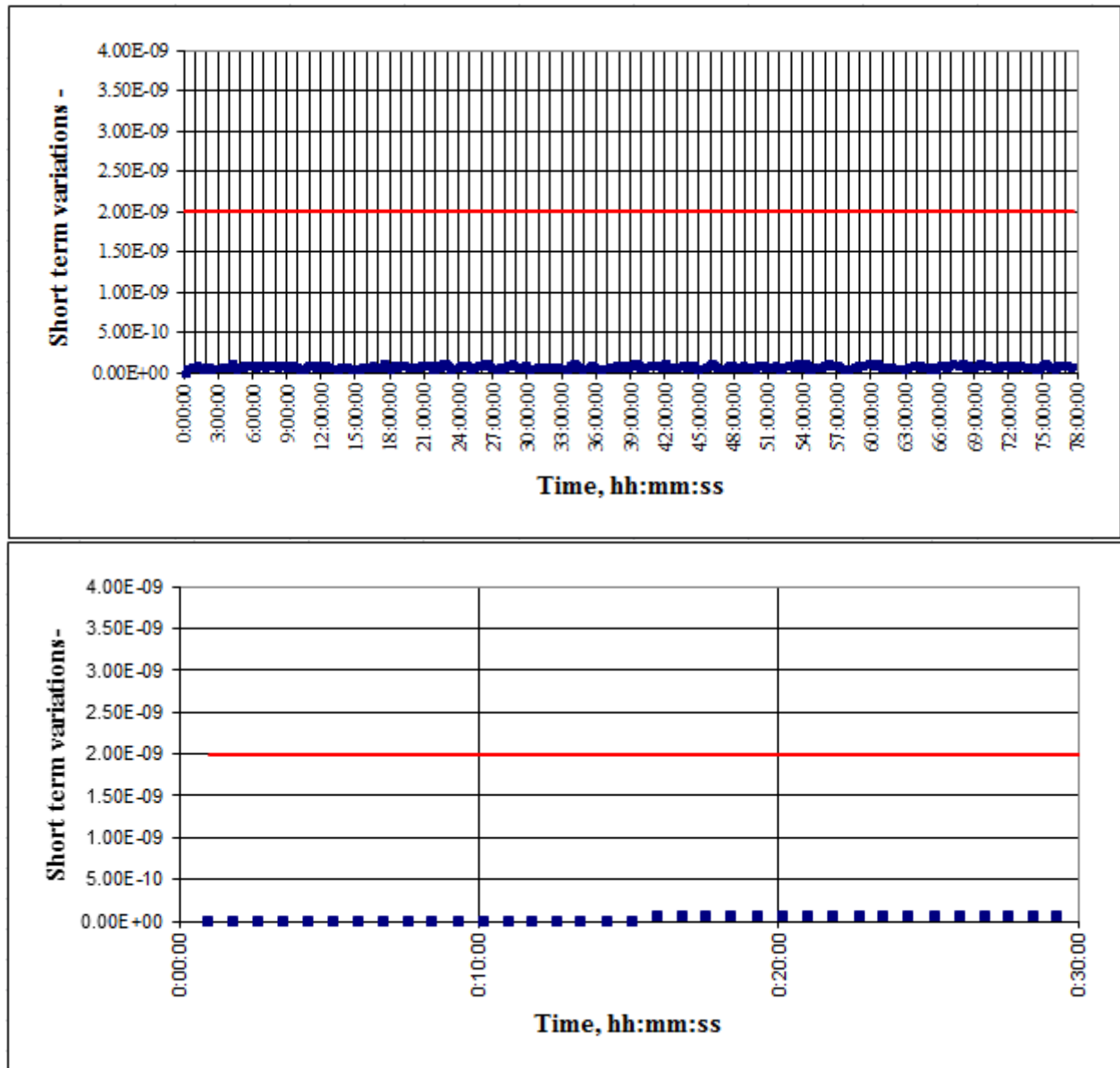


Figure 5.4.7 – Short-Term Stability

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

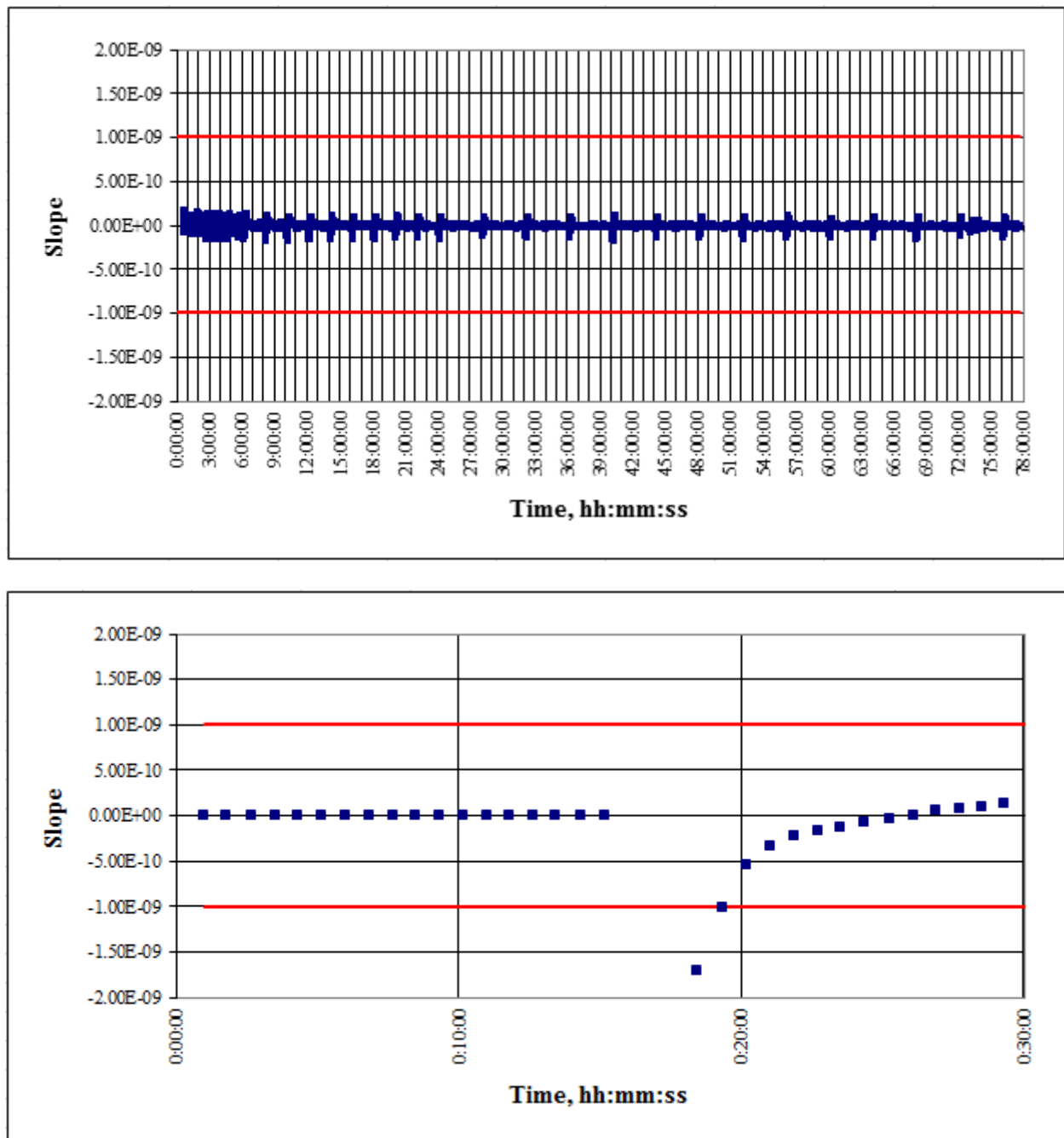


Figure 5.4.8 – Medium-Term Stability. Slope

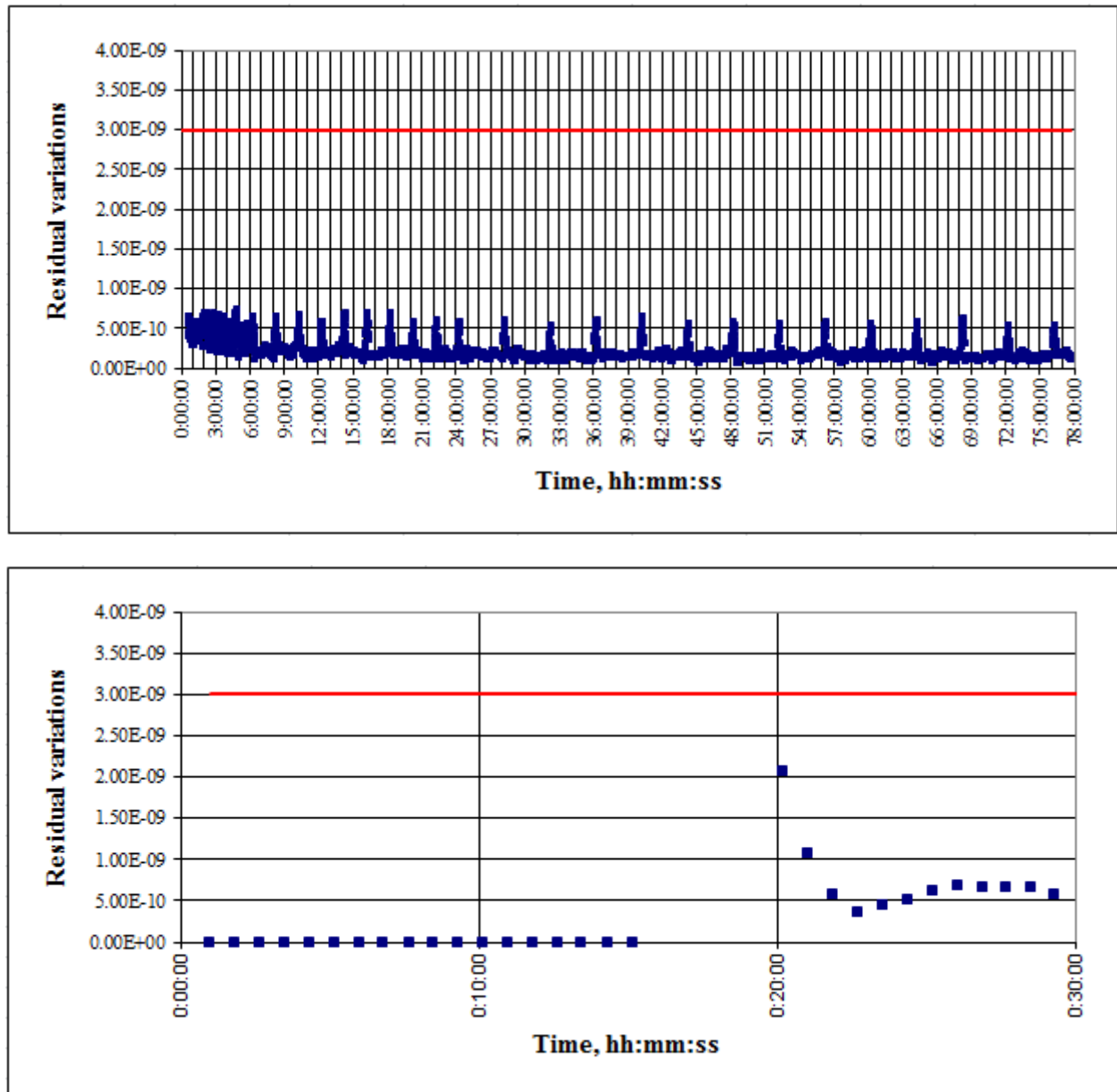


Figure 5.4.9 – Medium-Term Stability. Residual variations

**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)**

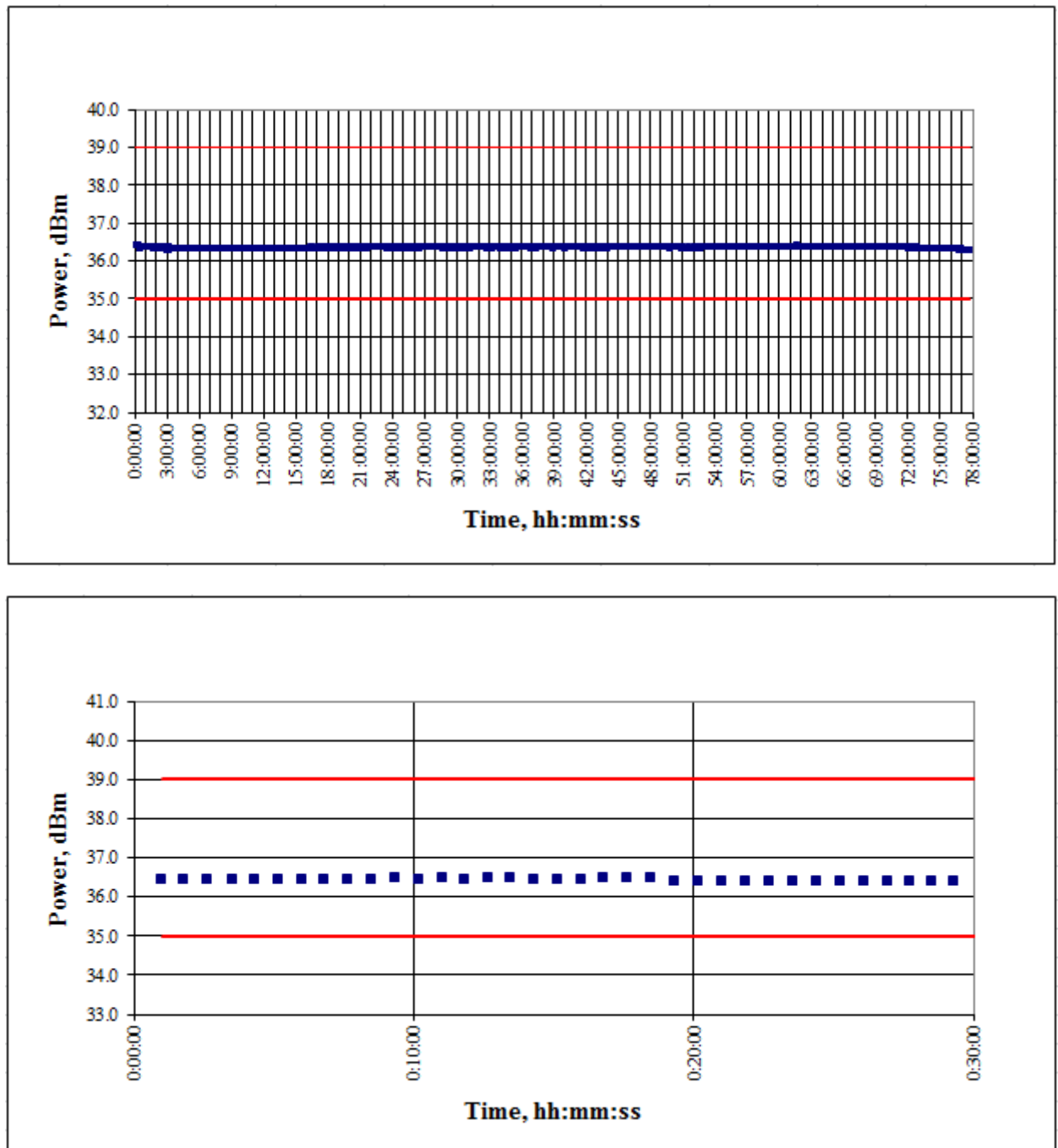


Figure 5.4.10– Transmitter power during test

**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                                                        |         |                            |
| Longitude 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             |

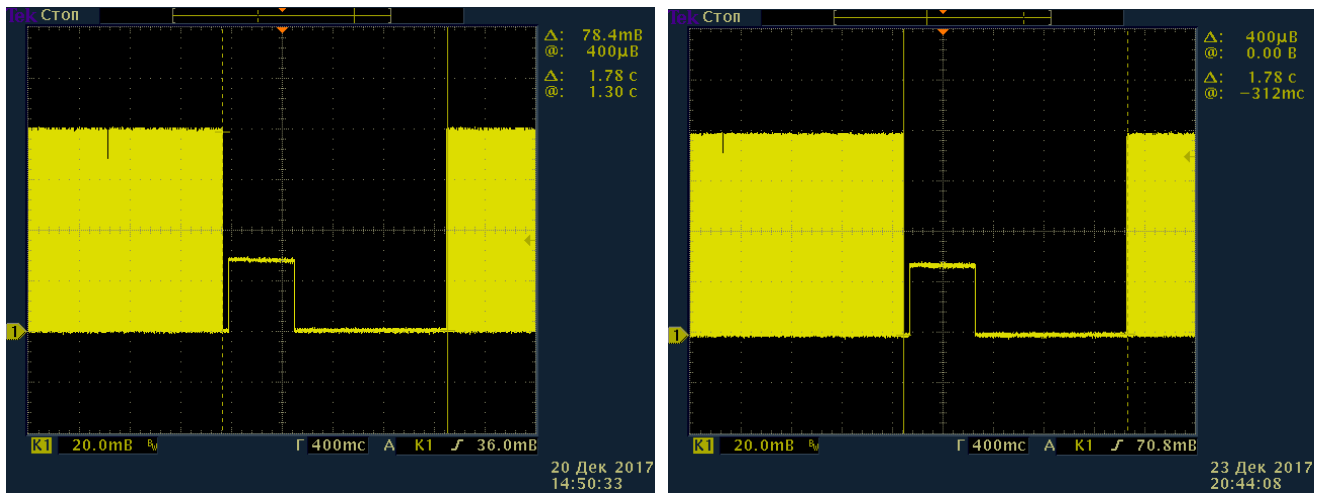
**d) Homer-transmitter duty cycle**

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

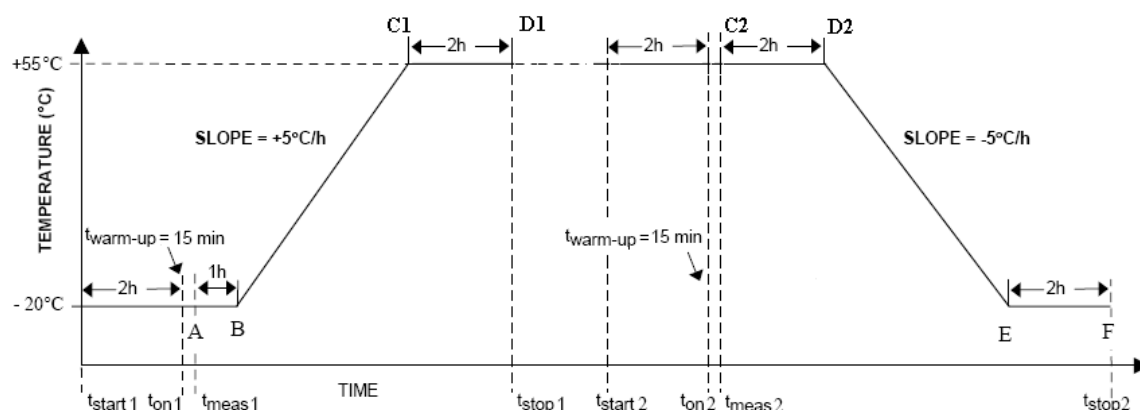
|                                                                                    |                                                                                                                                                                                      |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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).<br>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<br>Relative air humidity: 45-61 %                                                                                                       |
| Temperature range                                                                  | -20°C to 55°C: 5°C/hour and<br>55°C to -20°C: 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 -20°C to 55°C: 5°C/hour;
- Duration of temperature gradient from -20°C to 55°C: 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 °C to -20°C: - 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 °C to -20°C: 15 hours;
- Soaking time of the turned-on beacon at the temperature (Tmin= -20°C): 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 |
| <b>Transmission frequency 406 MHz</b>                      |          |           |
| Nominal frequency value                                    | 87       | 91        |
| Short and average frequency stability                      | 87       | 92        |
| Maximum and minimum frequency stability values during test | 87       | 91        |
| <b>Transmitter power output</b>                            |          |           |
| Diagram of power output values during test                 | 84       | 93        |
| Maximum and minimum power output values during test        | 87       | 91        |
| <b>Message</b>                                             |          |           |
| 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\_meas 1 - start time of measurement with battery #1  
t\_stop 1 - stop time of measurement with battery #1  
t\_start 2 - heat soak start with battery #2  
t\_on 2 - beacon turn on after 2 hour heat soak  
t\_meas 2 - start time of measurement with battery #2  
t\_stop 2 - stop time of measurement with battery #2

Figure 5.5.1 – Temperature Gradient Test Profile

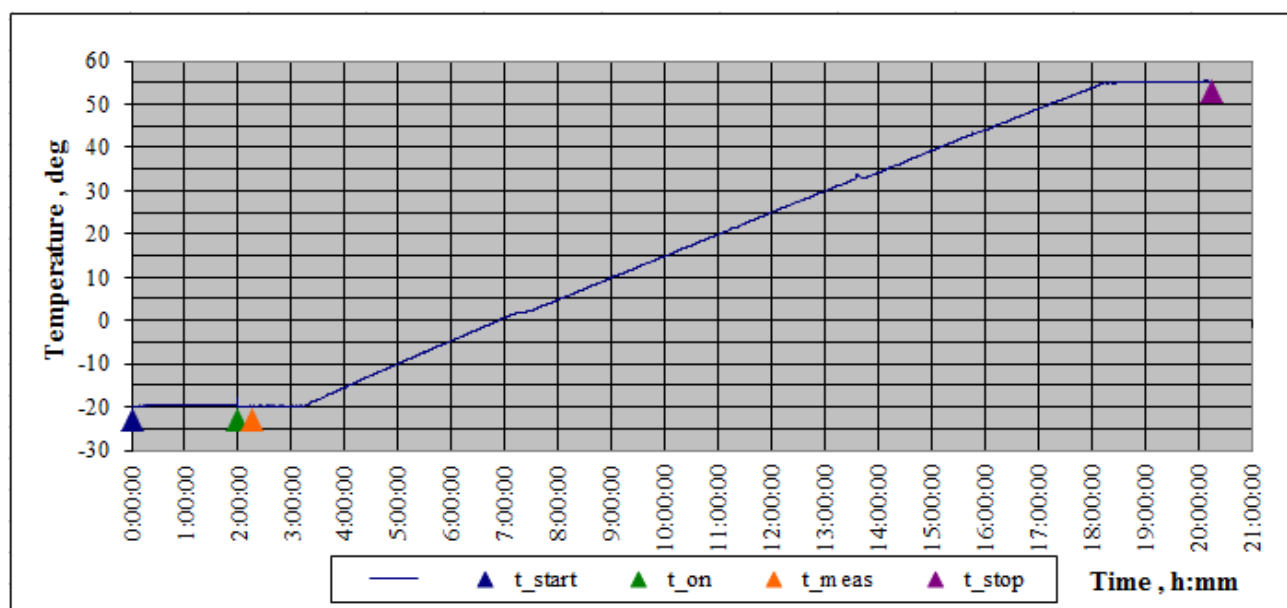


Figure 5.5.2 – Gradient up ramp temperature during the Test

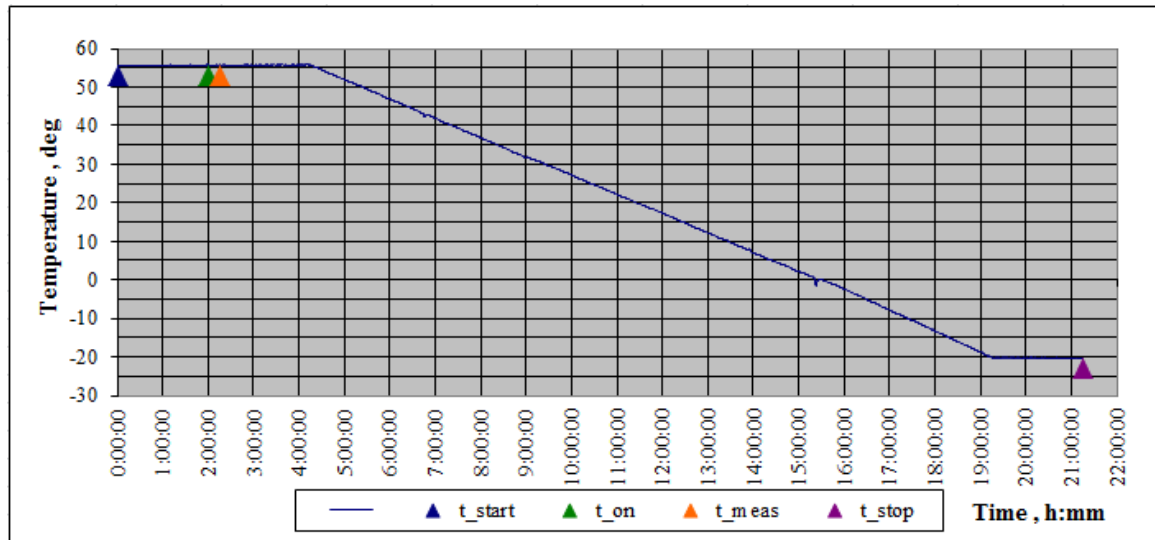


Figure 5.5.3 – Gradient up ramp temperature during the Test

**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)**

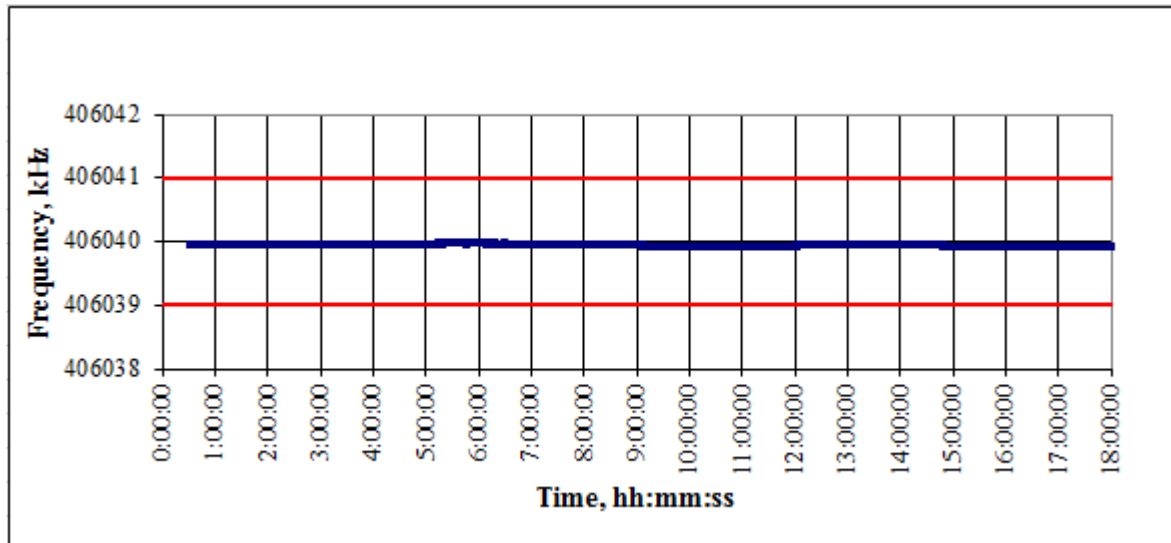


Figure 5.5.4 – Nominal Value of frequency

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

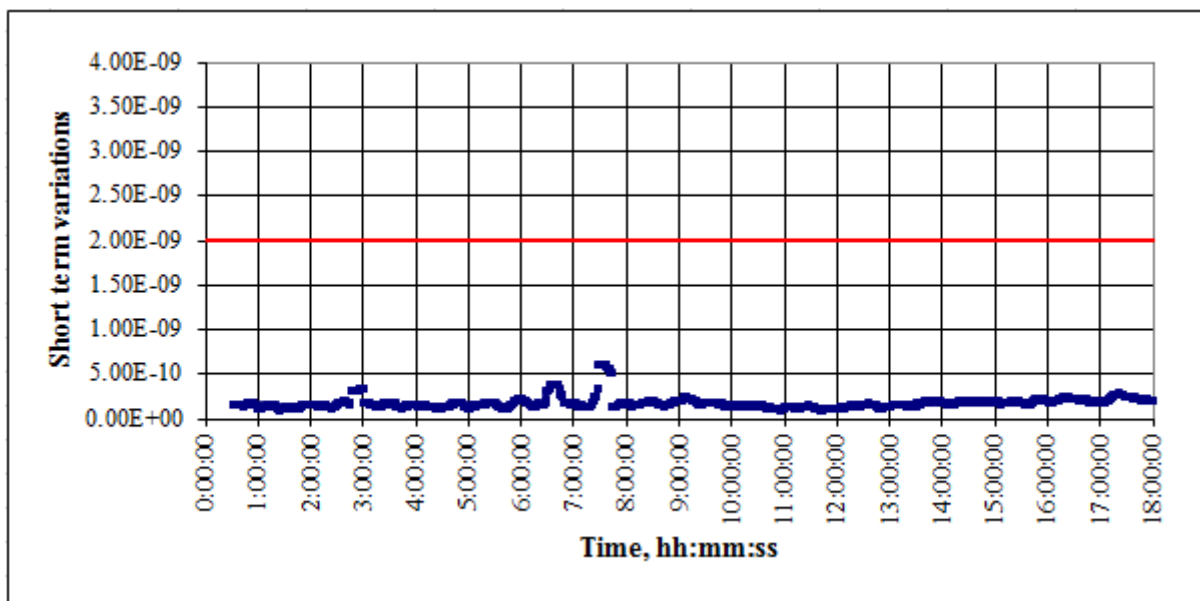


Figure 5.5.5 – Short-Term Stability

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

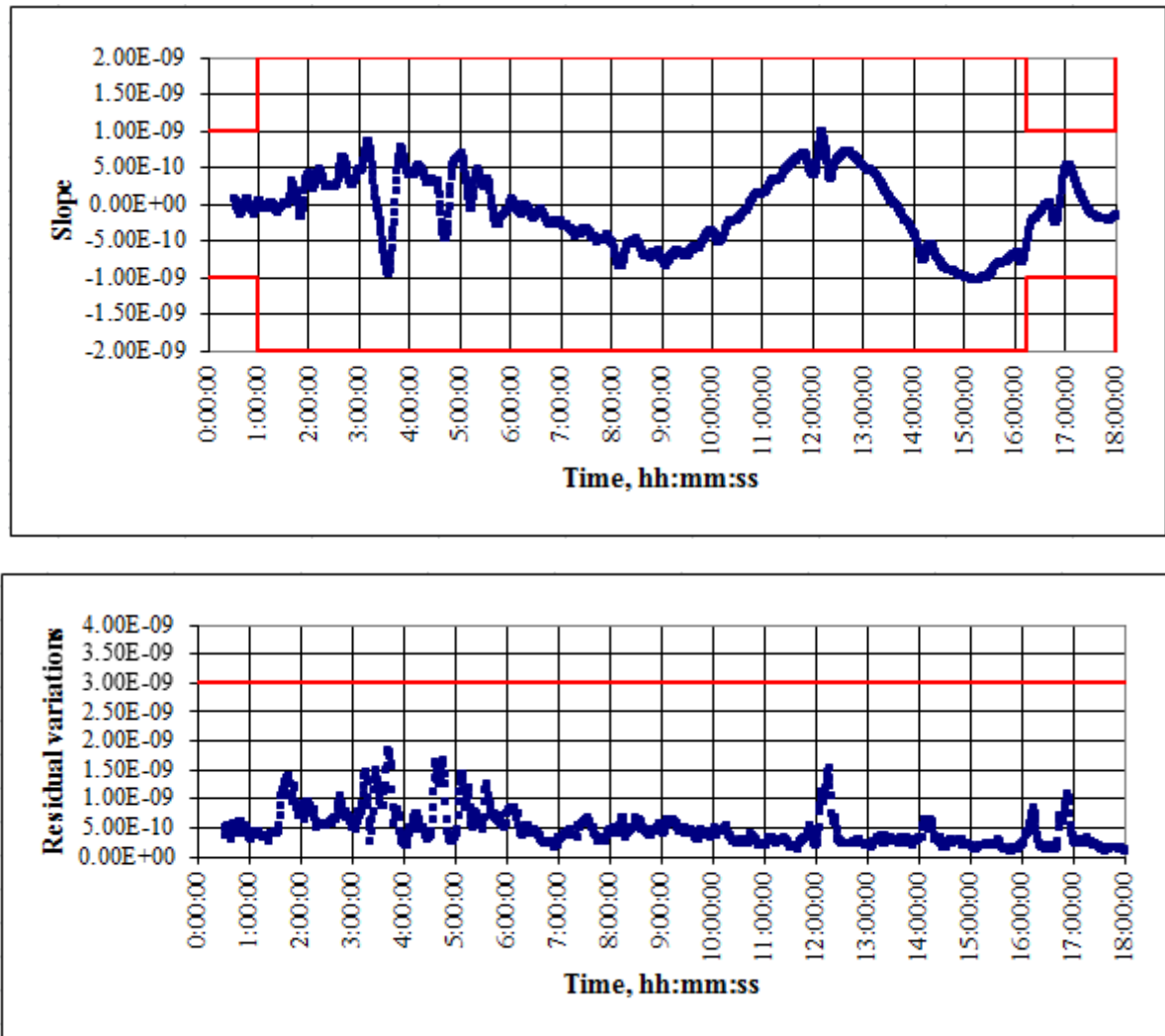


Figure 5.5.6 – Medium-Term Stability

**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)**

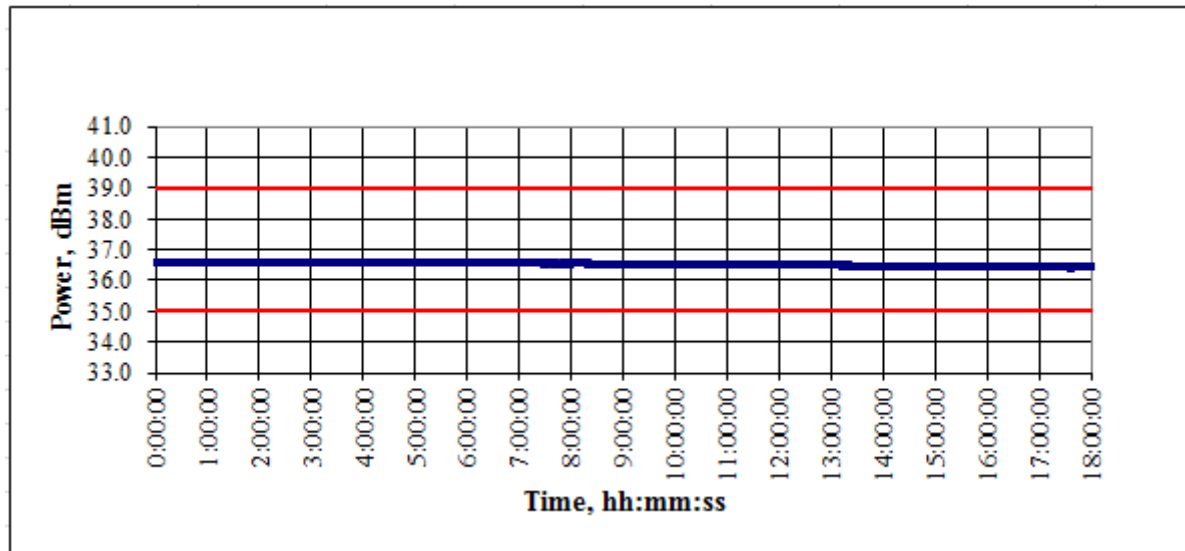


Figure 5.5.7 – Transmitter power during test

**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                                                        |         |                               |
| Longitude 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 temperature 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)

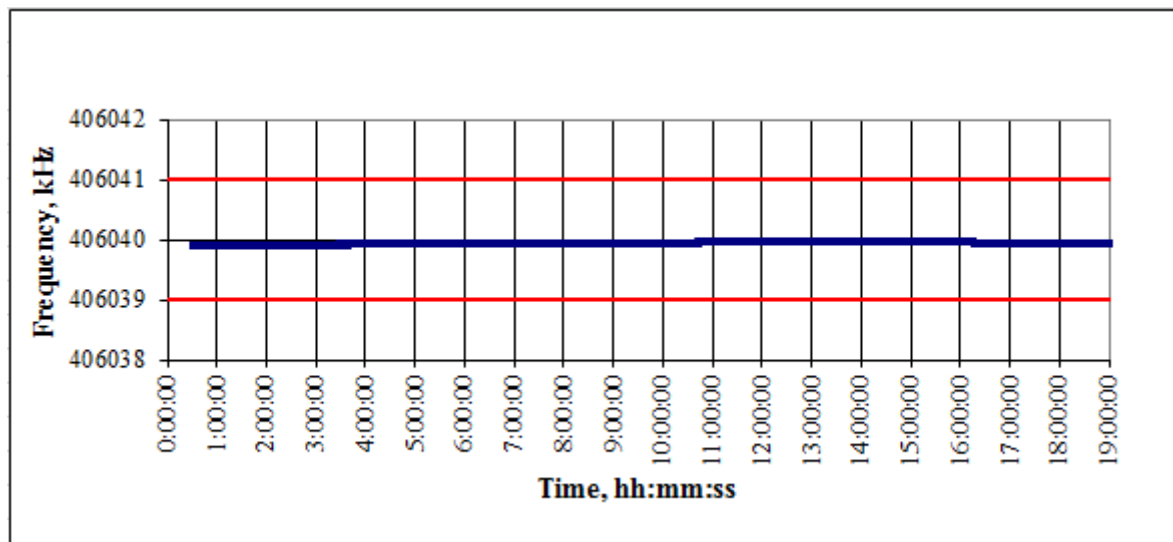


Figure 5.5.8 – Nominal Value of frequency

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

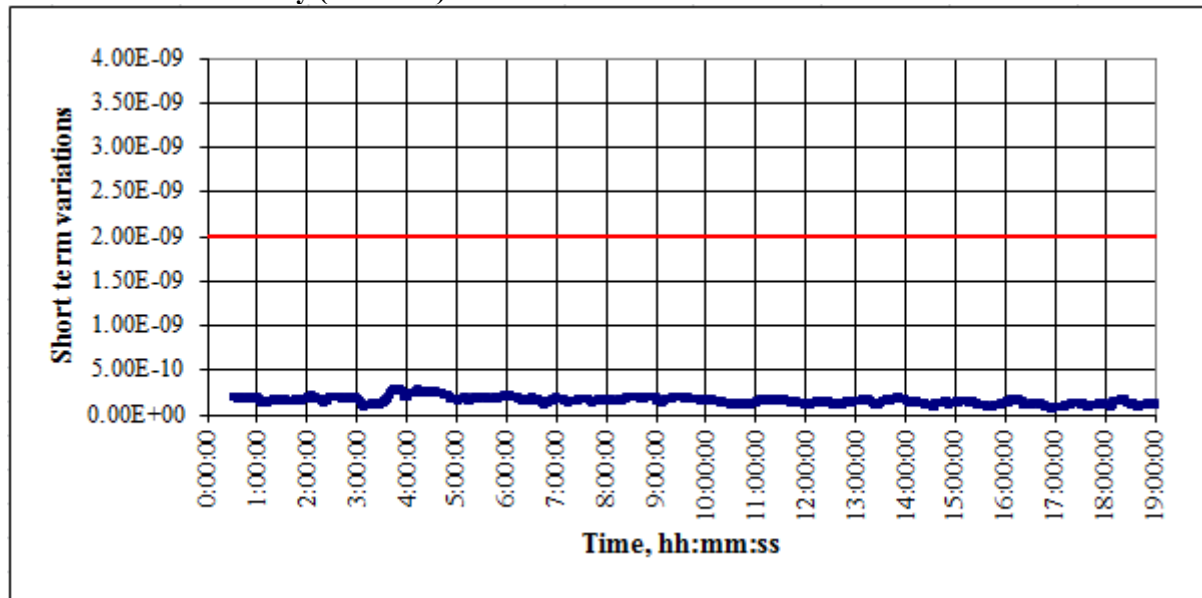


Figure 5.5.9 – Short-Term Stability

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

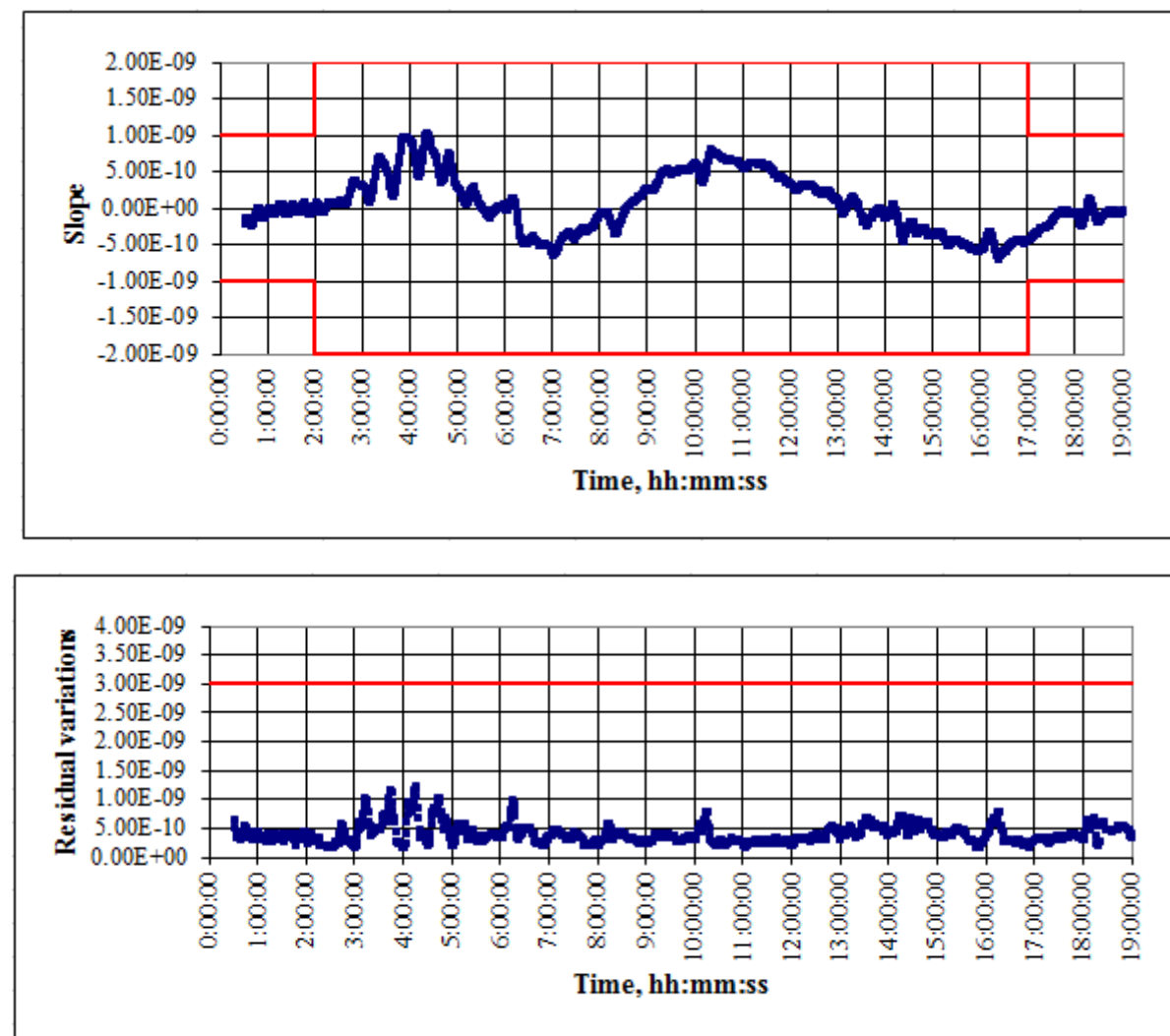


Figure 5.5.10 – Medium-Term Stability

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)**

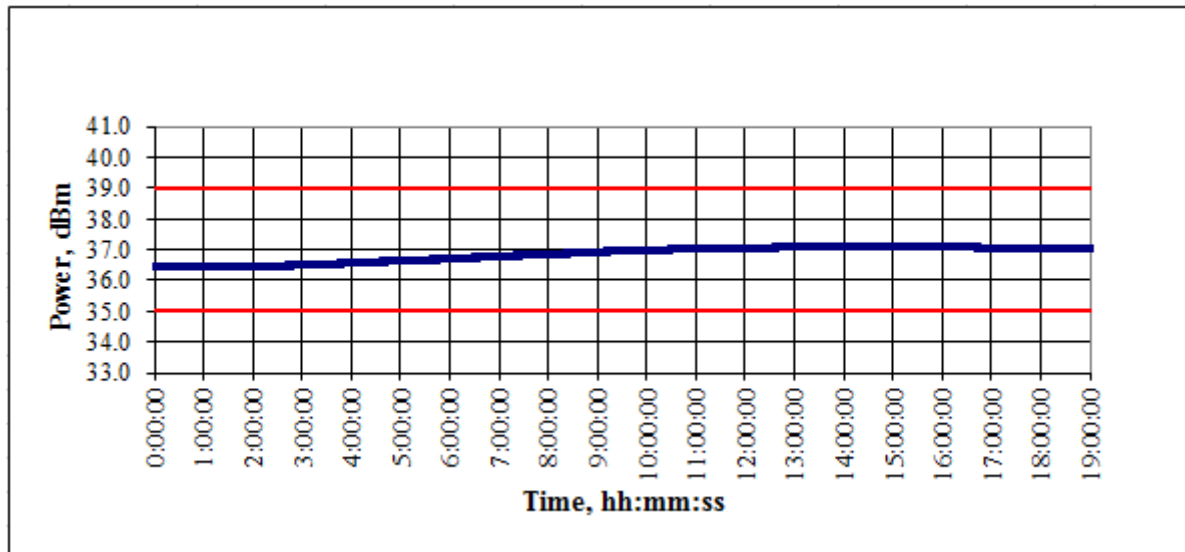


Figure 5.5.11 – Transmitter power during test

**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                                                        |         |                               |
| Longitude 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<br>TCXO E5344LF(T)                                                                   |
| Oscillator S/N                              | NK9508                                                                                                |
| Reference documents                         | TCXO Manufacturer's spread sheet data for NK9508<br>(TCXO Data Sheet E5344LF(T).pdf)                  |
| Environmental conditions:                   | Ambient laboratory temperature: 18.0-18.6°C<br>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<br><b>Fail</b> ; 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        | <b>Fail.</b><br>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       | <b>Fail.</b><br>Pass with MU |

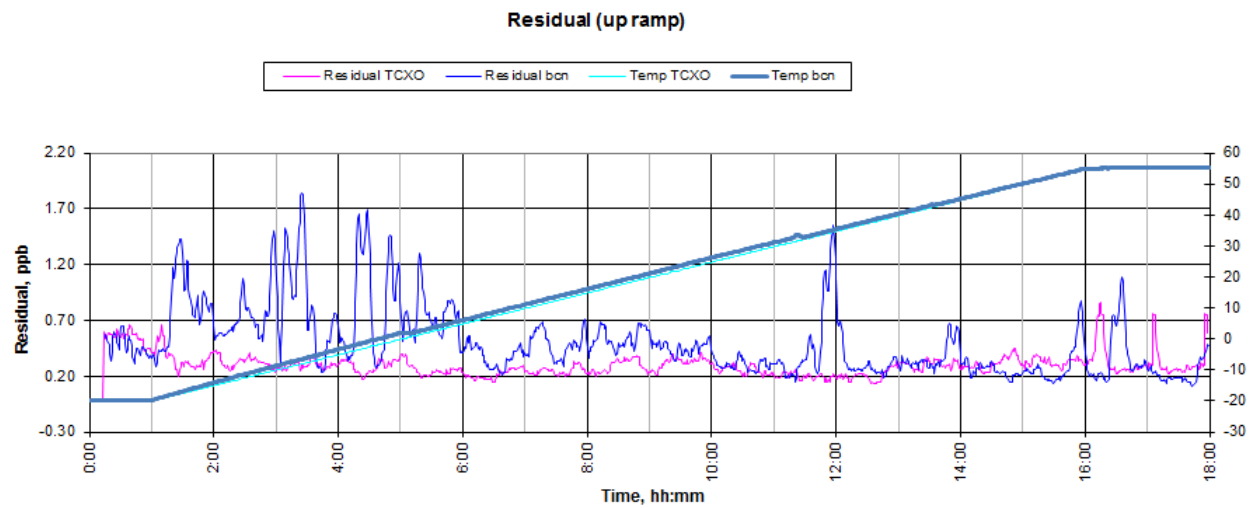


Fig. 5.5.1 Residual (up ramp) during Temperature Gradient Test

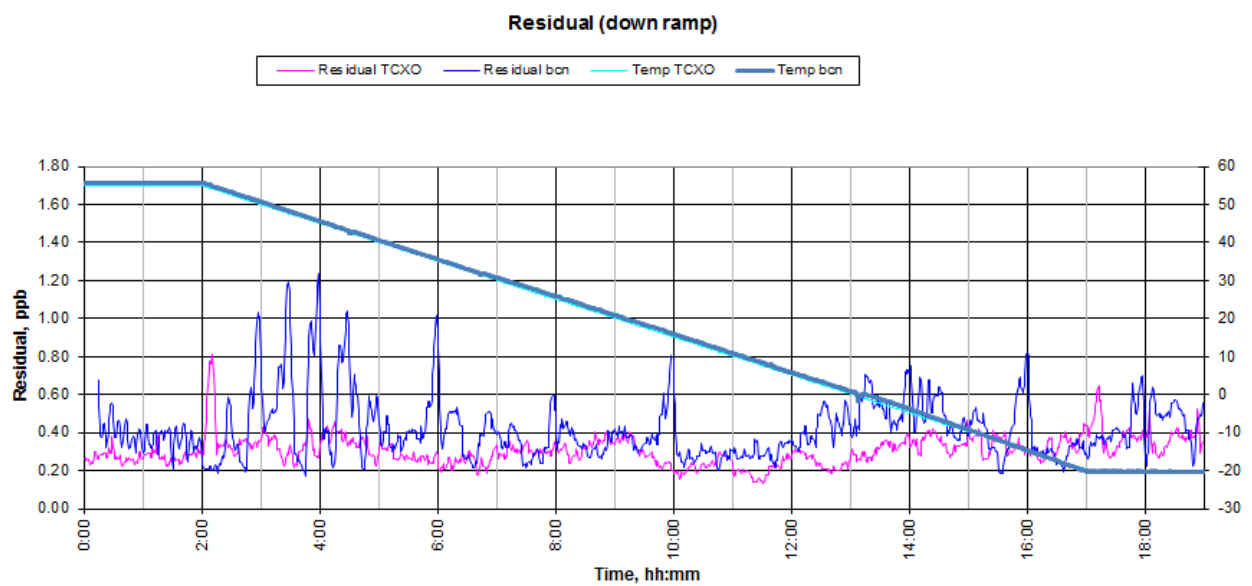


Fig. 5.5.2 Residual (down ramp) during Temperature Gradient Test

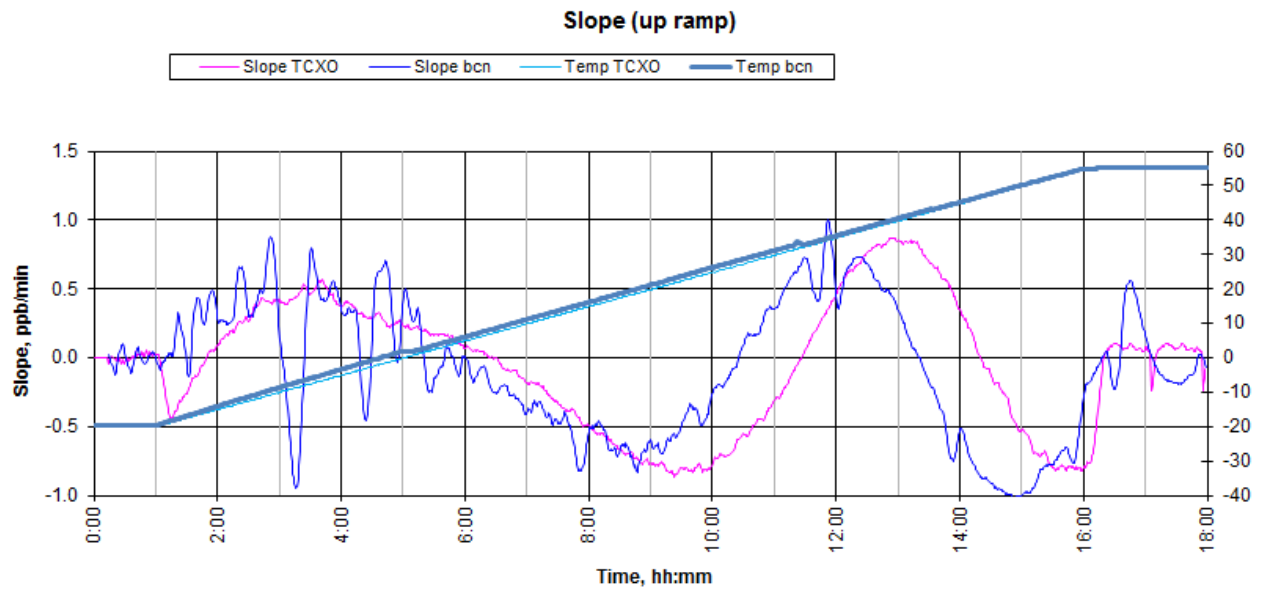


Fig. 5.5.3 Slope (up ramp) during temperature gradient test

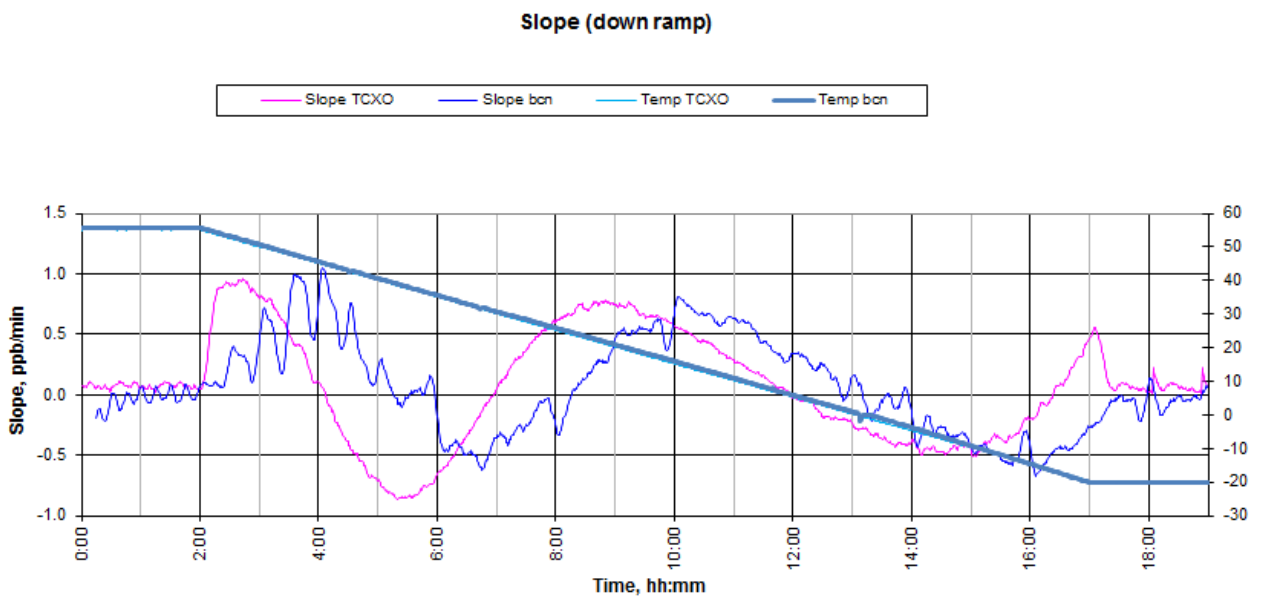


Fig. 5.5.4 Slope (down ramp) during temperature gradient test

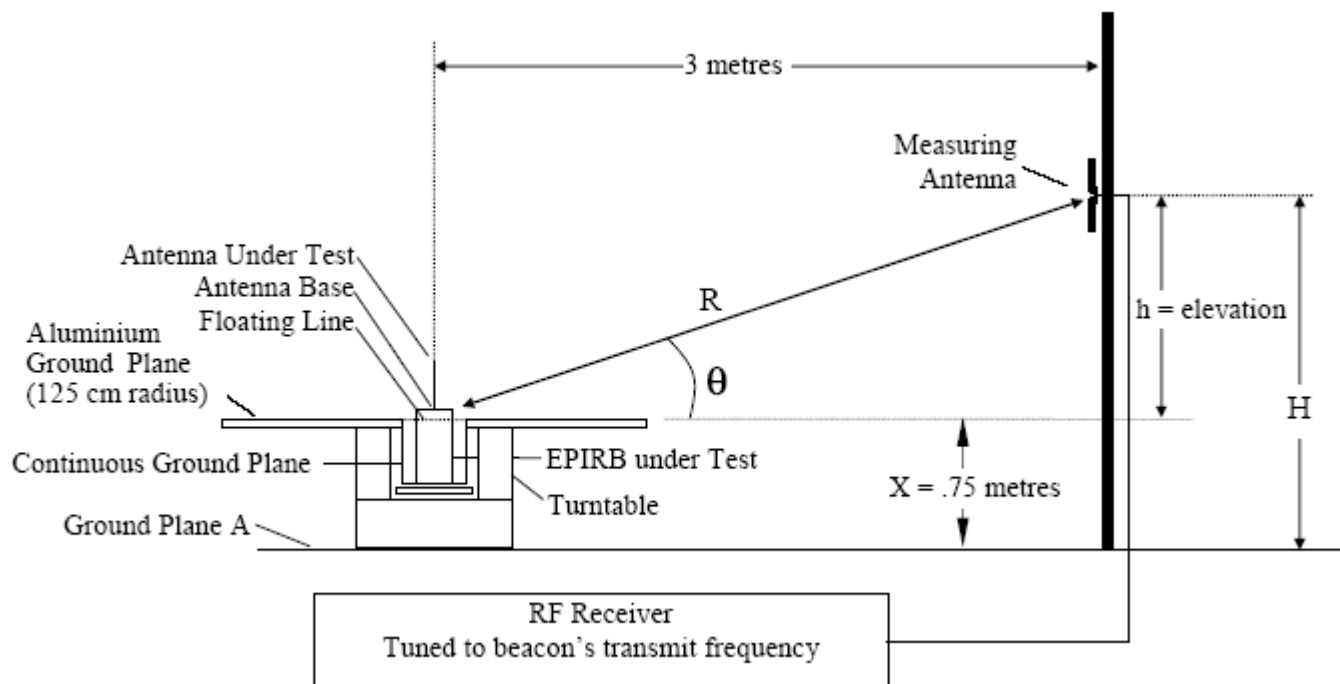
## 5.6 Antenna Characteristics

|                                                                                                      |                                                                                                                                                                                         |
|------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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).<br>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<br>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  $V_v$  /  $V_h$  (dBuV)**

| Azimuth Angle<br>(degrees)                    | Elevation Angle (degrees) |                |                |                |                           |
|-----------------------------------------------|---------------------------|----------------|----------------|----------------|---------------------------|
|                                               | 10                        | 20             | 30             | 40             | 50                        |
| <b>0</b>                                      | 113.60 / 96.00            | 111.30 / 95.50 | 109.90 / 86.70 | 108.20 / 92.30 | 101.40 / 90.60            |
| <b>30</b>                                     | 113.20 / 96.80            | 110.70 / 96.60 | 110.10 / 87.00 | 108.50 / 89.80 | 101.80 / 88.80            |
| <b>60</b>                                     | 113.50 / 96.20            | 110.70 / 96.80 | 109.90 / 90.60 | 108.50 / 91.70 | 102.10 / 82.90            |
| <b>90</b>                                     | 113.50 / 96.60            | 110.40 / 97.10 | 109.70 / 89.40 | 108.40 / 90.10 | 102.00 / 88.60            |
| <b>120</b>                                    | 113.70 / 95.70            | 110.40 / 96.40 | 109.60 / 91.10 | 108.60 / 92.50 | 102.20 / 90.30            |
| <b>150</b>                                    | 113.80 / 94.80            | 110.20 / 96.00 | 109.90 / 89.60 | 108.70 / 93.20 | 102.20 / 91.20            |
| <b>180</b>                                    | 113.90 / 93.80            | 110.40 / 95.70 | 110.10 / 91.70 | 108.90 / 95.60 | <del>101.90 / 92.40</del> |
| <b>210</b>                                    | 113.50 / 94.30            | 110.30 / 96.30 | 110.00 / 91.70 | 108.60 / 94.80 | 101.80 / 91.20            |
| <b>240</b>                                    | 113.50 / 94.90            | 111.10 / 96.20 | 109.50 / 92.40 | 108.40 / 94.50 | 101.70 / 91.50            |
| <b>270</b>                                    | 113.60 / 96.00            | 111.20 / 97.10 | 109.60 / 91.20 | 108.40 / 91.30 | 101.70 / 90.80            |
| <b>300</b>                                    | 113.70 / 95.40            | 110.80 / 96.40 | 109.80 / 91.20 | 108.90 / 92.80 | 102.00 / 91.70            |
| <b>330</b>                                    | 113.80 / 95.50            | 110.60 / 96.00 | 109.80 / 88.80 | 108.60 / 90.50 | 101.80 / 89.40            |
| <b>Min(<math>V_v</math>-<math>V_h</math>)</b> | 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            |
| <b>0</b>                | 41.30 / 4.67              | 39.44 / 2.82 | 38.66 / 2.03 | 38.12 / 1.49 | 33.08 / -3.55 |
| <b>30</b>               | 40.92 / 4.29              | 38.90 / 2.27 | 38.86 / 2.23 | 38.36 / 1.74 | 33.34 / -3.29 |
| <b>60</b>               | 41.20 / 4.58              | 38.90 / 2.28 | 38.69 / 2.06 | 38.40 / 1.77 | 33.48 / -3.15 |
| <b>90</b>               | 41.21 / 4.58              | 38.63 / 2.00 | 38.48 / 1.85 | 38.27 / 1.64 | 33.52 / -3.10 |
| <b>120</b>              | 41.39 / 4.76              | 38.60 / 1.97 | 38.40 / 1.77 | 38.51 / 1.88 | 33.80 / -2.83 |
| <b>150</b>              | 41.48 / 4.85              | 38.39 / 1.77 | 38.68 / 2.05 | 38.63 / 2.00 | 33.86 / -2.77 |
| <b>180</b>              | 41.57 / 4.94              | 38.58 / 1.95 | 38.90 / 2.28 | 38.90 / 2.28 | 33.69 / -2.94 |
| <b>210</b>              | 41.18 / 4.55              | 38.50 / 1.87 | 38.80 / 2.18 | 38.58 / 1.96 | 33.49 / -3.14 |
| <b>240</b>              | 41.18 / 4.56              | 39.27 / 2.64 | 38.32 / 1.70 | 38.38 / 1.75 | 33.43 / -3.20 |
| <b>270</b>              | 41.30 / 4.67              | 39.40 / 2.77 | 38.40 / 1.78 | 38.29 / 1.66 | 33.37 / -3.26 |
| <b>300</b>              | 41.39 / 4.76              | 38.99 / 2.36 | 38.60 / 1.97 | 38.81 / 2.18 | 33.72 / -2.91 |
| <b>330</b>              | 41.49 / 4.86              | 38.78 / 2.15 | 38.57 / 1.95 | 38.47 / 1.85 | 33.37 / -3.25 |

$$\text{EIRP}_{\text{LOSS}} = P_{\text{t ambient}} - P_{\text{t EOL}} = 36.63 - 36.47 = 0.16 \text{ dB}$$

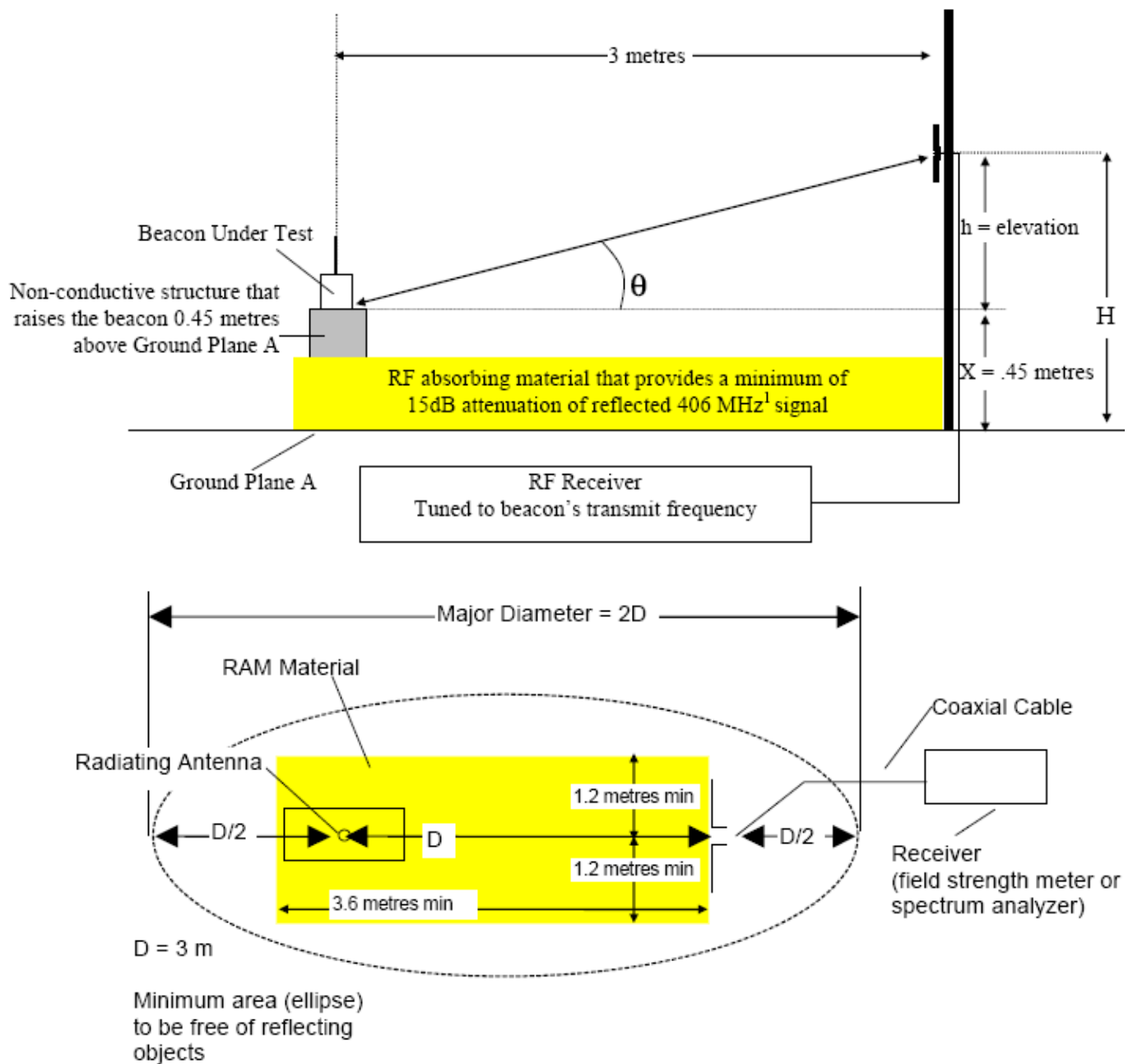
$$\text{EIRP}_{\text{max EOL}} = \text{MAX} [ \text{EIRP}_{\text{max}}, ( \text{EIRP}_{\text{max}} - \text{EIRP}_{\text{LOSS}} ) ] = \text{MAX} (41.57, 41.41) = 41.57 \text{ dBm} (<= 43 \text{ dBm})$$

$$\text{EIRP}_{\text{min EOL}} = \text{MIN} [ \text{EIRP}_{\text{min}}, ( \text{EIRP}_{\text{min}} - \text{EIRP}_{\text{LOSS}} ) ] = \text{MIN} (33.08, 32.92) = 32.92 \text{ dBm} (>= 32 \text{ dBm})$$

### 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)**

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

$$\text{EIRP}_{\text{LOSS}} = P_{\text{t ambient}} - P_{\text{t EOL}} = 36.63 - 36.47 = 0.16 \text{ dB}$$

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

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

## 5.7 Beacon Coding Software

|                                                        |                                                                               |
|--------------------------------------------------------|-------------------------------------------------------------------------------|
| Date of test                                           | 18.03.2016                                                                    |
| Date of additional test of the NUP                     | 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<br>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 required by the CS Secretariat.

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

|                      |                                                       | <b>Page No.</b>                                                           |                                                |                                  |                                       |
|----------------------|-------------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------------|----------------------------------|---------------------------------------|
| <b>Protocol type</b> |                                                       | <b>Decoded operational message, location A</b>                            | <b>Decoded operational message, location B</b> | <b>Decoded self-test message</b> | <b>Decoded GNSS self-test message</b> |
| 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<br>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<br>0000165E98000000000                                          | FFFE0CC98E08C800<br>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)<br>Location "A"<br>N:44°35'16",<br>E:33°29'20" |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
|                                                             | Location "A" <sup>1</sup><br>N:44°35'16",<br>E:33°29'20"                          | Location "B" <sup>1</sup><br>N: 44°31'20",<br>E: 33°33'00" |                                                                                 |                                                                                                                                     |
| Standard Location:<br>EPIRB with MMSI                       | FFFE2F8C92F423F02C<br>842B1503F7952E5AC9                                          | FFFE2F8C92F423F02C<br>8431CF8AB785630AB0                   | FFFED08C92F423F07F<br>DFFB2BF03783E0F66C                                        | FFFED08C92F423F02C8<br>42B1503F7952E5AC9                                                                                            |
| Standard Location:<br>EPIRB with Serial Number              | FFFE2F8C96F9C0632C<br>8429AC1CF7952E5AC9                                          | FFFE2F8C96F9C0632C<br>84337695B785630AB0                   | FFFED08C96F9C0637F<br>DFF992EF3783E0F66C                                        | FFFED08C96F9C0632C<br>8429AC1CF7952E5AC9                                                                                            |
| Standard Location:<br>ELT with 24-bit Address               | N/A                                                                               | N/A                                                        | N/A                                                                             | N/A                                                                                                                                 |
| Standard Location:<br>ELT with Serial Number                | N/A                                                                               | N/A                                                        | N/A                                                                             | N/A                                                                                                                                 |
| Standard Location:<br>ELT with Aircraft Operator Designator | N/A                                                                               | N/A                                                        | N/A                                                                             | N/A                                                                                                                                 |
| Standard Location:<br>PLB with Serial Number                | N/A                                                                               | N/A                                                        | N/A                                                                             | N/A                                                                                                                                 |
| Standard Location:<br>Test                                  | N/A                                                                               | N/A                                                        | N/A                                                                             | N/A                                                                                                                                 |
| National Location:<br>EPIRB                                 | FFFE2F8C9A00000B22<br>2172C5CCB7A9540F06                                          | FFFE2F8C9A00000B1E<br>21866C5F37AB400CC6                   | FFFED08C9A00001FC0<br>FF021F5DB79F3C0010                                        | FFFED08C9A00000B22<br>2172C5CCB7A9540F06                                                                                            |
| National Location:<br>ELT                                   | N/A                                                                               | N/A                                                        | N/A                                                                             | N/A                                                                                                                                 |
| National Location:<br>PLB                                   | N/A                                                                               | N/A                                                        | N/A                                                                             | N/A                                                                                                                                 |
| National Location:<br>Test                                  | N/A                                                                               | N/A                                                        | N/A                                                                             | N/A                                                                                                                                 |
| RLS Location:<br>(ELT, EPIRB or PLB) <sup>2</sup>           | N/A                                                                               | N/A                                                        | N/A                                                                             | N/A                                                                                                                                 |

<sup>1</sup> Location "A" and location "B" must be separated by at least 500 meters for the Standard, National and RLS location protocols.

<sup>2</sup> 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                                                 | FFFE2FCC94186186186689DE52A59221788C                                              | FFFE2FCC94186186186689DE52A59021875F | FFFED0CC94186186186689DE52AFE0FF0146                                            | FFFED0CC94186186186689DE52A59221788C                                                                 |
| Maritime Protocol with Radio Call Sign                                      | FFFE2FCC946EF6F06B268BD3F3A59221788C                                              | FFFE2FCC946EF6F06B268BD3F3A59021875F | FFFED0CC946EF6F06B268BD3F3AFE0FF0146                                            | FFFED0CC946EF6F06B268BD3F3A59221788C                                                                 |
| Radio Call Sign                                                             | FFFE2FCC9C6EF6F005468D0ACC259221788C                                              | FFFE2FCC9C6EF6F005468D0ACC259021875F | FFFED0CC9C6EF6F005468D0ACC2FE0FF0146                                            | FFFED0CC9C6EF6F005468D0ACC259221788C                                                                 |
| Serial User-Location: Float-Free EPIRB                                      | FFFE2FCC96A000C6007CEEED42E59221788C                                              | FFFE2FCC96A000C6007CEEED42E59021875F | FFFED0CC96A000C6007CEEED42EFE0FF0146                                            | FFFED0CC96A000C6007CEEED42E59221788C                                                                 |
| Serial User-Location: Non Float-Free EPIRB                                  | FFFE2FCC972000C6007CEB7FB1659221788C                                              | FFFE2FCC972000C6007CEB7FB1659021875F | FFFED0CC972000C6007CEB7FB16FE0FF0146                                            | FFFED0CC972000C6007CEB7FB1659221788C                                                                 |
| 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):<br>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                                                              |         |                            |
| Longitude 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<br>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                                                        |         |                            |
| Longitude 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                                                        |         |                            |
| Longitude 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: FFFED0CC98E08C8000000165E980000000000

| 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                                                                                                                         |
|-------------------------------|---------------------|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| <b>User Location Protocol</b> |                     |                                        |                                                                                                                                 |
| Start of test                 |                     |                                        | BUT was in a shielded room,<br>GNSS simulator transmits GPS<br>signal via antenna with location<br>data: N44° 44.5' E033° 33.5' |
| Activation EUT                | 26.12.2017 11:18:04 |                                        |                                                                                                                                 |
| Received message              | 26.12.2017 11:19:04 | FFFE2FCC9800000000<br>003AAC2400000000 |                                                                                                                                 |
| GNSS data was<br>changed      | 26.12.2017 11:23:00 |                                        | N44° 49.5'<br>E033° 33.5'                                                                                                       |
| Received message              | 26.12.2017 11:23:13 | FFFE2FCC9800000000<br>003AAC2400000000 |                                                                                                                                 |
| GNSS data was<br>changed      | 26.12.2017 11:28:00 |                                        | N44° 54.5'<br>E033° 33.5'                                                                                                       |
| Received message              | 26.12.2017 11:28:15 | FFFE2FCC9800000000<br>003AAC2400000000 |                                                                                                                                 |
| GNSS data was<br>changed      | 26.12.2017 11:33:00 |                                        | N45° 59.5'<br>E033° 33.5'                                                                                                       |
| Received message              | 26.12.2017 11:33:13 | FFFE2FCC9800000000<br>003AAC2400000000 |                                                                                                                                 |
| GNSS data was<br>changed      | 26.12.2017 11:38:00 |                                        | N45° 04.5'<br>E033° 33.5'                                                                                                       |
| Received message              | 26.12.2017 11:38:16 | FFFE2FCC9800000000<br>003AAC2400000000 |                                                                                                                                 |
| GNSS data was<br>changed      | 26.12.2017 11:43:00 |                                        | N45° 09.5'<br>E033° 33.5'                                                                                                       |
| Received message              | 26.12.2017 11:43:13 | FFFE2FCC9800000000<br>003AAC2400000000 |                                                                                                                                 |
| GNSS data was<br>changed      | 26.12.2017 11:48:00 |                                        | N45° 14.5'<br>E033° 33.5'                                                                                                       |
| Received message              | 26.12.2017 11:43:18 | FFFE2FCC9800000000<br>003AAC2400000000 |                                                                                                                                 |
| GNSS data was<br>changed      | 26.12.2017 11:53:00 |                                        | N45° 19.5'<br>E033° 33.5'                                                                                                       |
| Received last<br>message      | 26.12.2017 11:53:10 | FFFE2FCC9800000000<br>003AAC2400000000 |                                                                                                                                 |
| 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.<br>Maritime User Protocol | 37- 39  | 010                        |
| MMSI/Call sign(last 6 digits MMSI or up to 6<br>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.<br>Maritime User Protocol | 37- 39  | 010                        |
| MMSI/Call sign(last 6 digits MMSI or up to 6<br>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.<br>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.<br>Maritime User Protocol | 37- 39  | 010                        |
| MMSI/Call sign(last 6 digits MMSI or up to 6<br>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.<br>Maritime User Protocol | 37- 39  | 010                        |
| MMSI/Call sign(last 6 digits MMSI or up to 6<br>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.<br>Maritime User Protocol | 37- 39  | 010                        |
| MMSI/Call sign(last 6 digits MMSI or up to 6<br>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.<br>Maritime User Protocol | 37- 39  | 010                        |
| MMSI/Call sign(last 6 digits MMSI or up to 6<br>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.<br>Maritime User Protocol | 37- 39  | 010                        |
| MMSI/Call sign(last 6 digits MMSI or up to 6<br>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: FFFE2FCC96A000C6007CEE BD42E59221788C

| 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: FFFE2FCC96A000C6007CEE BD42E59021875F

| 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: FFFED0CC96A000C6007CEEED42E59221788C

| 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).<br>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<br>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,<br>UTC+3       | Message                              | Comment                                                                                  |
|-----------------------------------|----------------------|--------------------------------------|------------------------------------------------------------------------------------------|
| <b>National Location Protocol</b> |                      |                                      |                                                                                          |
| Start of test                     |                      |                                      | BUT was in a shielded room,                                                              |
|                                   |                      |                                      | GNSS signal was not available                                                            |
| Activation<br>EUT                 | 01.02.16<br>10:44:18 |                                      |                                                                                          |
| Received<br>first message         | 01.02.16<br>10:45:18 | FFFE2F8C9F0018DFC0FF04F9E4379F3C0010 | All messages have frame synchronization pattern in normal operation mode.<br>Page No 144 |
| Deactivation                      | 01.02.16<br>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                                                        |         |                            |
| Longitude 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,<br>UTC+3       | Message                              | Comment                                                                      |
|-----------------------------------|----------------------|--------------------------------------|------------------------------------------------------------------------------|
| <b>Standart Location Protocol</b> |                      |                                      |                                                                              |
| Start of test                     |                      |                                      | BUT was in a shielded room,                                                  |
|                                   |                      |                                      | GNSS signal was not available                                                |
| Activation<br>EUT                 | 03.02.16<br>15:31:03 |                                      |                                                                              |
| Received<br>first<br>message      | 03.02.16<br>15:32:03 | FFFE2F8C9E0000007FDFFA79ED3783E0F66C | All messages contained default position data during the test.<br>Page No 146 |
| Deactivation                      | 03.02.16<br>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                                                        |         |                               |
| Longitude 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,<br>UTC+3       | Message                              | Comment                                                                       |
|-------------------------------|----------------------|--------------------------------------|-------------------------------------------------------------------------------|
| <b>User Location Protocol</b> |                      |                                      |                                                                               |
| Start of test                 |                      |                                      | BUT was in a shielded room,                                                   |
|                               |                      |                                      | GNSS signal was not available                                                 |
| Activation<br>EUT             | 04.02.16<br>16:30:04 |                                      |                                                                               |
| Received<br>first<br>message  | 04.02.16<br>16:31:04 | FFFE2FCC9E000000000007CDFDEFE0FF0146 | All operation messages have default position data during test.<br>Page No 148 |
| Deactivation                  | 04.02.16<br>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 |
| 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,<br>UTC+3       | Message                              | Comment                                            |
|-----------------------------------------------|----------------------|--------------------------------------|----------------------------------------------------|
| <b>National Location Protocol, point No 1</b> |                      |                                      |                                                    |
| Activation EUT                                | 02.02.16<br>17:17:04 |                                      | Configuration 7 -<br>Beacon on ground<br>plane.    |
| Get message with<br>location date             | 02.02.16<br>17:18:04 | FFFE2F8C9F0018CB24217FF4467716280201 | Decoding location:<br>N 44°35'16"<br>E 033°29'20"  |
| Deactivation                                  | 02.02.16<br>17:18:18 |                                      |                                                    |
| Activation EUT                                | 02.02.16<br>17:15:27 |                                      | Configuration 8 -<br>Beacon above ground<br>plane. |
| Get message with<br>location date             | 02.02.16<br>17:16:27 | FFFE2F8C9F0018CB24217FF4467716280201 | Decoding location:<br>N 44°35'16"<br>E 033°29'20"  |
| Deactivation                                  | 02.02.16<br>17:16:42 |                                      |                                                    |
| Activation EUT                                | 02.02.16<br>17:18:35 |                                      | Configuration 5 -<br>Water ground plane            |
| Get message with<br>location date             | 02.02.16<br>17:19:35 | FFFE2F8C9F0018CB24217FF4467716280201 | Decoding location:<br>N 44°31'20"<br>E 033°33'00"  |
| Deactivation                                  | 02.02.16<br>17:19:49 |                                      |                                                    |
| <b>National Location Protocol, point No 2</b> |                      |                                      |                                                    |
| Activation EUT                                | 02.02.16<br>14:15:58 |                                      | Configuration 7 -<br>Beacon on ground<br>plane.    |
| Get message with<br>location date             | 02.02.16<br>14:16:58 | FFFE2F8C9F0018CB2021829C32F715400449 | Decoding location:<br>N 44°31'20"<br>E 033°33'00"  |
| Deactivation                                  | 02.02.16<br>14:17:11 |                                      |                                                    |
| Activation EUT                                | 02.02.16<br>14:13:47 |                                      | Configuration 8 -<br>Beacon above ground<br>plane. |
| Get message with<br>location date             | 02.02.16<br>14:14:47 | FFFE2F8C9F0018CB2021829C32F715400449 | Decoding location:<br>N 44°31'20"<br>E 033°33'00"  |
| Deactivation                                  | 02.02.16<br>14:14:59 |                                      |                                                    |
| Activation EUT                                | 02.02.16<br>14:18:01 |                                      | Configuration 5 -<br>Water ground plane            |
| Get message with<br>location date             | 02.02.16<br>14:19:01 | FFFE2F8C9F0018CB20218B2A4A3714400FAA | Decoding location:<br>N 44°31'20"<br>E 033°33'00"  |
| Deactivation                                  | 02.02.16<br>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<br>Standard<br>Section | Test procedure<br>description                                                                                                                                                                                                                                                                                  | Obtained results                                                                                                                                   | Comments    |
|----|------------------------------------------------------------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1. | Beacon was coded at National Location - Test                                 |                                  |                                                                                                                                                                                                                                                                                                                |                                                                                                                                                    |             |
| 2. | Position<br>Acquasition<br>Time and<br>Position<br>Accuracy<br>at point No 1 | A.3.8.2.1                        | a. EPIRB was placed<br>on the aluminum dwask<br>(configuration 7).<br><br>b. Activate the beacon<br>at the location with<br>coordinate:<br>- N 44°35'12.31"<br>- E 33°29'16.52"<br>c. Deactivate the<br>beacon.                                                                                                | Time to Acquire<br>Position:<br>1 min<br><br>Encoded location<br>data:<br>- N 44°35'16"<br>- E 33°29'20"<br>Position accuracy<br>0.137 kilometers  | Page No 154 |
| 3. | Position<br>Acquasition<br>Time and<br>Position<br>Accuracy<br>at point No 1 | A.3.8.2.1                        | a. EPIRB was placed<br>above ground plane<br>(configuration 8).<br><br>b. Activate the beacon<br>at the location with<br>coordinate:<br>- N 44°35'12.31"<br>- E 33°29'16.52"<br>c. Deactivate the<br>beacon.                                                                                                   | Time to Acquire<br>Position:<br>1 min<br><br>Encoded location<br>data:<br>- N 44°35'16"<br>- E 33°29'20"<br>Position accuracy<br>0.137 kilometers  | Page No 154 |
| 4. | Position<br>Acquasition<br>Time and<br>Position<br>Accuracy<br>at point No 1 | A.3.8.2.1                        | a. EPIRB was placed<br>on the water ground<br>plane (configuration 5).<br><br>b. Activate the beacon<br>at the location with<br>coordinate:<br>- N 44°35'12.31"<br>- E 33°29'16.52"<br>c. Deactivate the<br>beacon.                                                                                            | Time to Acquire<br>Position:<br>1 min<br><br>Encoded location<br>data:<br>- N 44°31'20"<br>- E 33°33'00"<br>Position accuracy<br>0.137 kilometers  | Page No 154 |
| 5. | Position<br>Acquasition<br>Time and<br>Position<br>Accuracy<br>at point No 2 | A.3.8.2.2                        | a. Change location to<br>Point 2. The dwastance<br>between Point 1 and<br>Point 2 was 8.71 km.<br><br>b. EPIRB was placed<br>on the aluminum dwask<br>(configuration 7).<br><br>c. Activate the beacon<br>at the location with<br>coordinate:<br>- N 44°31'19.66"<br>- E 33°32'59.26"<br><br>d. Deactivate the | Time to Acquire<br>Position:<br>1 min<br><br>Encoded location<br>data:<br>- N 44°31'20"<br>- E 33°33'00"<br>Position accuracy<br>0.0194 kilometers | Page No 155 |

| No | Test Name                                                                    | C/S T.007<br>Standard<br>Section | Test procedure<br>description                                                                                                                                                                                     | Obtained results                                                                                                                                          | Comments    |
|----|------------------------------------------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
|    |                                                                              |                                  | beacon.                                                                                                                                                                                                           |                                                                                                                                                           |             |
| 6. | Position<br>Acquasition<br>Time and<br>Position<br>Accuracy<br>at point No 2 | A.3.8.2.2                        | <p>a. EPIRB was placed above ground plane (configuration 8).</p> <p>b. Activate the beacon at the location with coordinate:<br/>- N 44°31'19.66"<br/>- E 33°32'59.26"</p> <p>c. Deactivate the beacon.</p>        | <p>Time to Acquire Position:<br/>1 min</p> <p>Encoded location data:<br/>- N 44°31'20"<br/>- E 33°33'00"<br/>Position accuracy<br/>0.0194 kilometers</p>  | Page No 155 |
| 7. | Position<br>Acquasition<br>Time and<br>Position<br>Accuracy<br>at point No 2 | A.3.8.2.2                        | <p>a. EPIRB was placed on the water ground plane (configuration 5).</p> <p>b. Activate the beacon at the location with coordinate:<br/>- N 44°31'19.66"<br/>- E 33°32'59.26"</p> <p>c. Deactivate the beacon.</p> | <p>Time to Acquire Position:<br/>1 min</p> <p>Encoded location data:<br/>- N 44°31'20"<br/>- E 033°33'00"<br/>Position accuracy<br/>0.0194 kilometers</p> | 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,<br>UTC+3       | Message                              | Comment                                            |
|-----------------------------------------------|----------------------|--------------------------------------|----------------------------------------------------|
| <b>Standart Location Protocol, point No 1</b> |                      |                                      |                                                    |
| Activation EUT                                | 02.02.16<br>16:41:57 |                                      | Configuration 7 -<br>Beacon on ground<br>plane.    |
| Get message with<br>location date             | 02.02.16<br>16:43:46 | FFFE2F8C9E0000002C84309D97B79540BB89 | Decoding location:<br>N 44°35'20"<br>E 033°29'16"  |
| Deactivation                                  | 02.02.16<br>16:44:01 |                                      |                                                    |
| Activation EUT                                | 02.02.16<br>16:40:05 |                                      | Configuration 8 -<br>Beacon above ground<br>plane. |
| Get message with<br>location date             | 02.02.16<br>16:41:05 | FFFE2F8C9E0000002C84309D97B79500A39A | Decoding location:<br>N 44°35'16"<br>E 33°29'20"   |
| Deactivation                                  | 02.02.16<br>16:41:21 |                                      |                                                    |
| Activation EUT                                | 02.02.16<br>16:44:41 |                                      | Configuration 5 -<br>Water ground plane            |
| Get message with<br>location date             | 02.02.16<br>16:45:41 | FFFE2F8C9E0000002C84309D97B79500A39A | Decoding location:<br>N 44°31'20"<br>E 33°33'00"   |
| Deactivation                                  | 02.02.16<br>16:45:56 |                                      |                                                    |
| <b>Standart Location Protocol, point No 2</b> |                      |                                      |                                                    |
| Activation EUT                                | 02.02.16<br>14:03:28 |                                      | Configuration 7 -<br>Beacon on ground<br>plane.    |
| Get message with<br>location date             | 02.02.16<br>14:04:28 | FFFE2F8C9E0000002C84309D97B785630AB0 | Decoding location:<br>N 44°31'20"<br>E 33°33'00"   |
| Deactivation                                  | 02.02.16<br>14:04:43 |                                      |                                                    |
| Activation EUT                                | 02.02.16<br>14:01:19 |                                      | Configuration 8 -<br>Beacon above ground<br>plane. |
| Get message with<br>location date             | 02.02.16<br>14:02:19 | FFFE2F8C9E0000002C84309D97B785630AB0 | Decoding location:<br>N 44°31'20"<br>E 33°33'00"   |
| Deactivation                                  | 02.02.16<br>14:02:36 |                                      |                                                    |
| Activation EUT                                | 02.02.16<br>14:05:58 |                                      | Configuration 5 -<br>Water ground plane            |
| Get message with<br>location date             | 02.02.16<br>14:06:58 | FFFE2F8C9E0000002C84309D97B785630AB0 | Decoding location:<br>N 44°31'20"<br>E 33°33'00"   |
| Deactivation                                  | 02.02.16<br>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<br>Standard<br>Section | Test procedure<br>description                                                                                                                                                                                                                                                                                  | Obtained results                                                                                                                                          | Comments    |
|----|-------------------------------------------------------------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1. | Beacon was coded at Standart Location - Test                                  |                                  |                                                                                                                                                                                                                                                                                                                |                                                                                                                                                           |             |
| 2. | Position<br>Acquwasition<br>Time and<br>Position<br>Accuracy<br>at point No 1 | A.3.8.2.1                        | a. EPIRB was placed<br>on the aluminum dwask<br>(configuration 7).<br><br>b. Activate the beacon<br>at the location with<br>coordinate:<br>- N 44°35'12.31"<br>- E 33°29'16.52"<br>c. Deactivate the<br>beacon.                                                                                                | Time to Acquire<br>Position:<br>1 min 49 sec<br><br>Encoded location<br>data:<br>- N 44°35'20"<br>- E 033°29'16"<br>Position accuracy<br>0.238 kilometers | Page No 161 |
| 3. | Position<br>Acquwasition<br>Time and<br>Position<br>Accuracy<br>at point No 1 | A.3.8.2.1                        | a. EPIRB was placed<br>above ground plane<br>(configuration 8).<br><br>b. Activate the beacon<br>at the location with<br>coordinate:<br>- N 44°35'12.31"<br>- E 33°29'16.52"<br>c. Deactivate the<br>beacon.                                                                                                   | Time to Acquire<br>Position:<br>1 min<br><br>Encoded location<br>data:<br>- N 44°35'16"<br>- E 33°29'20"<br>Position accuracy<br>0.137 kilometers         | Page No 162 |
| 4. | Position<br>Acquwasition<br>Time and<br>Position<br>Accuracy<br>at point No 1 | A.3.8.2.1                        | a. EPIRB was placed<br>on the water ground<br>plane (configuration 5).<br><br>b. Activate the beacon<br>at the location with<br>coordinate:<br>- N 44°35'12.31"<br>- E 33°29'16.52"<br>c. Deactivate the<br>beacon.                                                                                            | Time to Acquire<br>Position:<br>1 min<br><br>Encoded location<br>data:<br>- N 44°31'20"<br>- E 33°33'00"<br>Position accuracy<br>0.137 kilometers         | Page No 162 |
| 5. | Position<br>Acquwasition<br>Time and<br>Position<br>Accuracy<br>at point No 2 | A.3.8.2.2                        | a. Change location to<br>Point 2. The dwastance<br>between Point 1 and<br>Point 2 was 8.71 km.<br><br>b. EPIRB was placed<br>on the aluminum dwask<br>(configuration 7).<br><br>c. Activate the beacon<br>at the location with<br>coordinate:<br>- N 44°31'19.66"<br>- E 33°32'59.26"<br><br>d. Deactivate the | Time to Acquire<br>Position:<br>1 min<br><br>Encoded location<br>data:<br>- N 44°31'20"<br>- E 33°33'00"<br>Position accuracy<br>0.0194 kilometers        | Page No 163 |

| No | Test Name                                                                    | C/S T.007<br>Standard<br>Section | Test procedure<br>description                                                                                                                                                                                     | Obtained results                                                                                                                                         | Comments    |
|----|------------------------------------------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
|    |                                                                              |                                  | beacon.                                                                                                                                                                                                           |                                                                                                                                                          |             |
| 6. | Position<br>Acquasition<br>Time and<br>Position<br>Accuracy<br>at point No 2 | A.3.8.2.2                        | <p>a. EPIRB was placed above ground plane (configuration 8).</p> <p>b. Activate the beacon at the location with coordinate:<br/>- N 44°31'19.66"<br/>- E 33°32'59.26"</p> <p>c. Deactivate the beacon.</p>        | <p>Time to Acquire Position:<br/>1 min</p> <p>Encoded location data:<br/>- N 44°31'20"<br/>- E 33°33'00"<br/>Position accuracy<br/>0.0194 kilometers</p> | Page No 163 |
| 7. | Position<br>Acquasition<br>Time and<br>Position<br>Accuracy<br>at point No 2 | A.3.8.2.2                        | <p>a. EPIRB was placed on the water ground plane (configuration 5).</p> <p>b. Activate the beacon at the location with coordinate:<br/>- N 44°31'19.66"<br/>- E 33°32'59.26"</p> <p>c. Deactivate the beacon.</p> | <p>Time to Acquire Position:<br/>1 min</p> <p>Encoded location data:<br/>- N 44°31'20"<br/>- E 33°33'00"<br/>Position accuracy<br/>0.0194 kilometers</p> | 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,<br>UTC+3       | Message                              | Comment                                            |
|------------------------------------------------------------------|----------------------|--------------------------------------|----------------------------------------------------|
| <b>User Location Protocol, point No 1, External GNSS antenna</b> |                      |                                      |                                                    |
| Activation EUT                                                   | 02.02.16<br>16:18:54 |                                      | Configuration 7 -<br>Beacon on ground<br>plane.    |
| Get message with<br>location date                                | 02.02.16<br>16:19:54 | FFFE2FCC9E000000000007CDFDE59221788C | Decoding location:<br>N 44°36'00"<br>E 33°28'00"   |
| Deactivation                                                     | 02.02.16<br>16:20:10 |                                      |                                                    |
| Activation EUT                                                   | 02.02.16<br>16:16:15 |                                      | Configuration 8 -<br>Beacon above ground<br>plane. |
| Get message with<br>location date                                | 02.02.16<br>16:18:04 | FFFE2FCC9E000000000007CDFDE59221788C | Decoding location:<br>N 44°36'00"<br>E 33°28'00"   |
| Deactivation                                                     | 02.02.16<br>16:18:20 |                                      |                                                    |
| Activation EUT                                                   | 02.02.16<br>16:20:41 |                                      | Configuration 5 - Water<br>ground plane.           |
| Get message with<br>location date                                | 02.02.16<br>16:21:41 | FFFE2FCC9E000000000007CDFDE59221788C | Decoding location:<br>N 44°32'00"<br>E 33°32'00"   |
| Deactivation                                                     | 02.02.16<br>16:21:57 |                                      |                                                    |
| <b>User Location Protocol, point No 2</b>                        |                      |                                      |                                                    |
| Activation EUT                                                   | 02.02.16<br>14:31:57 |                                      | Configuration 7 -<br>Beacon on ground<br>plane.    |
| Get message with<br>location date                                | 02.02.16<br>14:32:57 | FFFE2FCC9E000000000007CDFDE59021875F | Decoding location:<br>N 44°32'00"<br>E 33°32'00"   |
| Deactivation                                                     | 02.02.16<br>14:33:12 |                                      |                                                    |
| Activation EUT                                                   | 02.02.16<br>14:29:41 |                                      | Configuration 8 -<br>Beacon above ground<br>plane. |
| Get message with<br>location date                                | 02.02.16<br>14:30:41 | FFFE2FCC9E000000000007CDFDE59021875F | Decoding location:<br>N 44°32'00"<br>E 33°32'00"   |
| Deactivation                                                     | 02.02.16<br>14:30:55 |                                      |                                                    |
| Activation EUT                                                   | 02.02.16<br>14:34:19 |                                      | Configuration 5 - Water<br>ground plane.           |
| Get message with<br>location date                                | 02.02.16<br>14:35:19 | FFFE2FCC9E000000000007CDFDE59021875F | Decoding location:<br>N 44°32'00"<br>E 33°32'00"   |
| Deactivation                                                     | 02.02.16<br>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<br>Standard<br>Section | Test procedure<br>description                                                                                                                                                                                                                                                                                  | Obtained results                                                                                                                                         | Comments    |
|----|------------------------------------------------------------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1. | Beacon was coded at User Location - Test                                     |                                  |                                                                                                                                                                                                                                                                                                                |                                                                                                                                                          |             |
| 2. | Position<br>Acquasition<br>Time and<br>Position<br>Accuracy<br>at point No 1 | A.3.8.2.1                        | a. EPIRB was placed<br>on the aluminum dwask<br>(configuration 7).<br><br>b. Activate the beacon<br>at the location with<br>coordinate:<br>- N 44°35'12.31"<br>- E 33°29'16.52"<br>c. Deactivate the<br>beacon.                                                                                                | Time to Acquire<br>Position:<br>1 min<br><br>Encoded location<br>data:<br>- N 44°36'00"<br>- E 33°28'00"<br>Position accuracy<br>2.235 kilometers        | Page No 168 |
| 3. | Position<br>Acquasition<br>Time and<br>Position<br>Accuracy<br>at point No 1 | A.3.8.2.1                        | a. EPIRB was placed<br>above ground plane<br>(configuration 8).<br><br>b. Activate the beacon<br>at the location with<br>coordinate:<br>- N 44°35'12.31"<br>- E 33°29'16.52"<br>c. Deactivate the<br>beacon.                                                                                                   | Time to Acquire<br>Position:<br>1 min 49 sec<br><br>Encoded location<br>data:<br>- N 44°36'00"<br>- E 33°28'00"<br>Position accuracy<br>2.235 kilometers | Page No 168 |
| 4. | Position<br>Acquasition<br>Time and<br>Position<br>Accuracy<br>at point No 1 | A.3.8.2.1                        | a. EPIRB was placed<br>on the water ground<br>plane (configuration 5).<br><br>b. Activate the beacon<br>at the location with<br>coordinate:<br>- N 44°35'12.31"<br>- E 33°29'16.52"<br>c. Deactivate the<br>beacon.                                                                                            | Time to Acquire<br>Position:<br>1 min<br><br>Encoded location<br>data:<br>- N 44°32'00"<br>- E 33°32'00"<br>Position accuracy<br>2.235 kilometers        | Page No 168 |
| 5. | Position<br>Acquasition<br>Time and<br>Position<br>Accuracy<br>at point No 2 | A.3.8.2.2                        | a. Change location to<br>Point 2. The dwastance<br>between Point 1 and<br>Point 2 was 8.71 km.<br><br>b. EPIRB was placed<br>on the aluminum dwask<br>(configuration 7).<br><br>c. Activate the beacon<br>at the location with<br>coordinate:<br>- N 44°31'19.66"<br>- E 33°32'59.26"<br><br>d. Deactivate the | Time to Acquire<br>Position:<br>1 min<br><br>Encoded location<br>data:<br>- N 44°32'00"<br>- E 33°32'00"<br>Position accuracy<br>1.803 kilometers        | Page No 169 |

| No | Test Name                                                                    | C/S T.007<br>Standard<br>Section | Test procedure<br>description                                                                                                                                                                                     | Obtained results                                                                                                                                        | Comments    |
|----|------------------------------------------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
|    |                                                                              |                                  | beacon.                                                                                                                                                                                                           |                                                                                                                                                         |             |
| 6. | Position<br>Acquasition<br>Time and<br>Position<br>Accuracy<br>at point No 2 | A.3.8.2.2                        | <p>a. EPIRB was placed above ground plane (configuration 8).</p> <p>b. Activate the beacon at the location with coordinate:<br/>- N 44°31'19.66"<br/>- E 33°32'59.26"</p> <p>c. Deactivate the beacon.</p>        | <p>Time to Acquire Position:<br/>1 min</p> <p>Encoded location data:<br/>- N 44°32'00"<br/>- E 33°32'00"<br/>Position accuracy<br/>1.803 kilometers</p> | Page No 169 |
| 7. | Position<br>Acquasition<br>Time and<br>Position<br>Accuracy<br>at point No 2 | A.3.8.2.2                        | <p>a. EPIRB was placed on the water ground plane (configuration 5).</p> <p>b. Activate the beacon at the location with coordinate:<br/>- N 44°31'19.66"<br/>- E 33°32'59.26"</p> <p>c. Deactivate the beacon.</p> | <p>Time to Acquire Position:<br/>1 min</p> <p>Encoded location data:<br/>- N 44°32'00"<br/>- E 33°32'00"<br/>Position accuracy<br/>1.803 kilometers</p> | 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 |
| 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,<br>UTC+3       | Message                              | Comment                                                            |
|-----------------------------------|----------------------|--------------------------------------|--------------------------------------------------------------------|
| <b>National Location Protocol</b> |                      |                                      |                                                                    |
| Start of test                     |                      |                                      | BUT was placed in<br>Location 1                                    |
| Activation EUT                    | 09.03.16<br>16:34:04 |                                      |                                                                    |
| Get message with<br>location date | 09.03.16<br>16:35:04 | FFFE2F8C9F0018CB24217FF4467710280500 | N 44°35'28"<br>E 033°29'20"<br>Page No 171                         |
| Change Location                   | 09.03.16<br>16:35:44 |                                      | Start of location change<br>from point 1 to point 2                |
|                                   | 09.03.16<br>16:40:48 |                                      | Completion of the<br>change of location from<br>point 1 to point 2 |
| Get message with<br>location date | 09.03.16<br>17:04:59 | FFFE2F8C9F0018CB22217D950DF79C10039B | N 44°34'56"<br>E 033°29'44"<br>Page No 172                         |
| Deactivation                      | 09.03.16<br>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,<br>UTC+3       | Message                              | Comment                                                            |
|--------------------------------------|----------------------|--------------------------------------|--------------------------------------------------------------------|
| <b>Standart Location Protocol</b>    |                      |                                      |                                                                    |
| Start of test                        |                      |                                      | BUT was placed in<br>Location 1                                    |
| Activation<br>EUT                    | 09.03.16<br>15:47:04 |                                      |                                                                    |
| Get message<br>with location<br>date | 09.03.16<br>15:48:04 | FFFE2F8C9E0000002C84309D97B795C0A1DD | N 44°35'28"<br>E 033°29'20"<br>Page No 174                         |
| Change<br>Location                   | 09.03.16<br>15:48:44 |                                      | Start of location<br>change<br>from point 1 to point 2             |
|                                      | 09.03.16<br>15:51:47 |                                      | Completion of the<br>change of location<br>from point 1 to point 2 |
| Get message<br>with location<br>date | 09.03.16<br>16:17:59 | FFFE2F8C9E0000002C84309D97B7938043E3 | N 44°34'56"<br>E 033°29'44"<br>Page No 175                         |
| Deactivation                         | 09.03.16<br>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,<br>UTC+3       | Message                              | Comment                                                            |
|--------------------------------------|----------------------|--------------------------------------|--------------------------------------------------------------------|
| <b>User Location Protocol</b>        |                      |                                      |                                                                    |
| Start of test                        |                      |                                      | BUT was placed in<br>Location 1                                    |
| Activation<br>EUT                    | 09.03.16<br>14:45:01 |                                      |                                                                    |
| Get message<br>with location<br>date | 09.03.16<br>14:46:01 | FFFE2FCC9E000000000007CDFDE590219266 | N 44°32'00"<br>E 033°36'00"<br>Page No 177                         |
| Change<br>Location                   | 09.03.16<br>14:46:41 |                                      | Start of location<br>change<br>from point 1 to point 2             |
|                                      | 09.03.16<br>14:56:44 |                                      | Completion of the<br>change of location<br>from point 1 to point 2 |
| Get message<br>with location<br>date | 09.03.16<br>15:15:55 | FFFE2FCC9E000000000007CDFDE59021875F | N 44°32'00"<br>E 033°32'00"<br>Page No 178                         |
| Deactivation                         | 09.03.16<br>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):<br>Test User Protocol            | 37- 39  | 111                                                     |
| Binary data (46 bits, i.e. max=0x3FFF<br>FFFF FFFF): 0x0000 0000 0000 | 40- 85  | 00 0000 0000 0000 0000 0000 0000 0000<br>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 |
| 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,<br>UTC+3       | Message                              | Comment                                                                                             |
|------------------------------------------------|----------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------|
| <b>Standart Location Protocol</b>              |                      |                                      |                                                                                                     |
| Reactivation<br>EUT                            | 09.03.16<br>16:19:22 |                                      | BUT was reactivated after<br>test A.3.8.3, with no<br>navigation signal or<br>navigation data input |
| Get operating<br>message with<br>location date | 09.03.16<br>16:20:22 | FFFE2F8C9E0000007FDFFA79ED3783E0F66C | Message location: default<br>Page No 180                                                            |
| Deactivation                                   | 09.03.16<br>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                                                        |         |                               |
| Longitude 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,<br>UTC+3       | Message                              | Comment                                                                                             |
|------------------------------------------------|----------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------|
| <b>National Location Protocol</b>              |                      |                                      |                                                                                                     |
| Reactivation<br>EUT                            | 09.03.16<br>17:05:35 |                                      | BUT was reactivated after<br>test A.3.8.3, with no<br>navigation signal or<br>navigation data input |
| Get operating<br>message with<br>location date | 09.03.16<br>17:06:35 | FFFE2F8C9F0018DFC0FF04F9E4379F3C0010 | Message location: default<br>Page No 182                                                            |
| Deactivation                                   | 09.03.16<br>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                                                        |         |                            |
| Longitude 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,<br>UTC+3       | Message                              | Comment                                                                                             |
|------------------------------------------------|----------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------|
| <b>User Location Protocol</b>                  |                      |                                      |                                                                                                     |
| Reactivation<br>EUT                            | 09.03.16<br>15:21:00 |                                      | BUT was reactivated after<br>test A.3.8.3, with no<br>navigation signal or<br>navigation data input |
| Get operating<br>message with<br>location date | 09.03.16<br>15:22:00 | FFFE2FCC9E000000000007CDFDEFE0FF0146 | Message location: default<br>Page No 184                                                            |
| Deactivation                                   | 09.03.16<br>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 |
| 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,<br>UTC+3       | Message                              | Comment                                    |
|-------------------------------------------------------------|----------------------|--------------------------------------|--------------------------------------------|
| <b>Standart Location Protocol</b>                           |                      |                                      |                                            |
| Start of test                                               |                      |                                      | BUT was placed in<br>Location 1            |
| Activation<br>EUT                                           | 01.02.16<br>16:06:10 |                                      |                                            |
| Get message<br>with location<br>date                        | 01.02.16<br>16:07:10 | FFFE2F8C9E0000002C84309D97B79500A39A | N 44°35'16"<br>E 033°29'20"<br>Page No 186 |
| Navigation<br>input<br>removal                              | 01.02.16<br>16:08:15 |                                      |                                            |
| The next<br>message after<br>navigation<br>input<br>removal | 01.02.16<br>16:08:50 | FFFE2F8C9E0000002C84309D97B79500A39A | N 44°35'16"<br>E 033°29'20"<br>Page No 186 |
| Received last<br>message with<br>encoded<br>position        | 01.02.16<br>20:06:02 | FFFE2F8C9E0000002C84309D97B79500A39A | N 44°35'16"<br>E 033°29'20"<br>Page No 186 |
| Received<br>first<br>message with<br>default<br>position    | 01.02.16<br>20:06:52 | FFFE2F8C9E0000007FDFFA79ED3783E0F66C | default<br>Page No 187                     |
| Deactivation                                                | 01.02.16<br>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                                                        |         |                               |
| Longitude 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,<br>UTC+3       | Message                              | Comment                                    |
|----------------------------------------------------------|----------------------|--------------------------------------|--------------------------------------------|
| <b>National Location Protocol</b>                        |                      |                                      |                                            |
| Start of test                                            |                      |                                      | BUT was placed in<br>Location 1            |
| Activation EUT                                           | 01.02.16<br>11:22:00 |                                      |                                            |
| Get message<br>with location<br>date                     | 01.02.16<br>11:23:00 | FFFE2F8C9F0018CB24217FF4467716240E03 | N 44°35'16"<br>E 033°29'24"<br>Page No 189 |
| Navigation<br>input<br>removal                           | 01.02.16<br>11:24:05 |                                      |                                            |
| The next<br>message after<br>navigation input<br>removal | 01.02.16<br>11:27:09 | FFFE2F8C9F0018CB24217FF4467716240E03 | N 44°35'16"<br>E 033°29'24"<br>Page No 189 |
| Received last<br>message with<br>encoded<br>position     | 01.02.16<br>15:21:51 | FFFE2F8C9F0018CB24217FF4467716240E03 | N 44°35'16"<br>E 033°29'24"<br>Page No 189 |
| Received first<br>message with<br>default position       | 01.02.16<br>15:22:41 | FFFE2F8C9F0018DFC0FF04F9E4379F3C0010 | default<br>Page No 190                     |
| Deactivation                                             | 01.02.16<br>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                                                        |         |                            |
| Longitude 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,<br>UTC+3       | Message                              | Comment                                    |
|----------------------------------------------------------|----------------------|--------------------------------------|--------------------------------------------|
| <b>User Location Protocol</b>                            |                      |                                      |                                            |
| Start of test                                            |                      |                                      | BUT was placed in<br>Location 1            |
| Activation<br>EUT                                        | 02.02.16<br>08:30:04 |                                      |                                            |
| Get message<br>with location<br>date                     | 02.02.16<br>08:31:04 | FFFE2FCC9E000000000007CDFDE59221788C | N 44°36'00"<br>E 033°28'00"<br>Page No 192 |
| Navigation<br>input<br>removal                           | 02.02.16<br>08:32:09 |                                      |                                            |
| The next<br>message after<br>navigation<br>input removal | 02.02.16<br>08:33:35 | FFFE2FCC9E000000000007CDFDE59221788C | N 44°36'00"<br>E 033°28'00"<br>Page No 192 |
| Received last<br>message with<br>encoded<br>position     | 02.02.16<br>12:29:55 | FFFE2FCC9E000000000007CDFDE59221788C | N 44°36'00"<br>E 033°28'00"<br>Page No 192 |
| Received first<br>message with<br>default<br>position    | 02.02.16<br>12:30:46 | FFFE2FCC9E000000000007CDFDEFE0FF0146 | default<br>Page No 193                     |
| Deactivation                                             | 02.02.16<br>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<br>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 |
| 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).

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## 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<br>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                                                                                   |

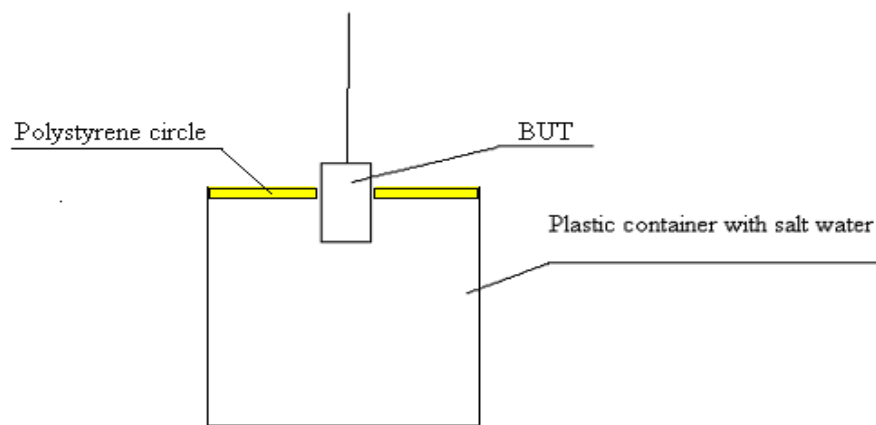
### 5.9.1 Test Configuration 5 "Water" Ground Plane

**Date of the Test:** February 25, 2016

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

**Test conditions:**

- o Ambient temperature at open testing area: 5-10 °C
- o Relative air humidity: 97-100 %
- o Atmosphere pressure: 736-737 mm/Hg
- o The duration of the satellite test: 10 hours 50 minutes.
- o The homing transmitter not operated.
- o Actual Location: N 44°35'12.3"; E 33°29'16.6".
- o Data provided by CMC
- o 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.
- o 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.
- o Container holding the salt water was placed in an area with a good all round view of the sky.
- o 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.
- o Beacon is submerged in a container with water at floating-line.



**Beacon coding**

- o Beacon is coded with Standard Location – Test protocol
- o Country code is Russia
- o Message content 1 – 144 bits: FFFE3FD11E0000000000007DA82FE0FF0146
- o 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:** A23C000000000000

**Actual location of the test beacon:** Latitude N 44°35'12.3"; Longitude: E 33°29'16.6".

**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              | A23C000000000000          | N44°35.2 E33°29.61  | 0.440               |
| S11          | 48524                 | 5:31:36                        | 24.4              | A23C000000000000          | N44°34.7 E33°29.84  | N/A                 |
| S07          | 92489                 | 6:10:59                        | 20.6              | A23C000000000000          | N44°35.58 E33°29.55 | 0.783               |
| S13          | 17838                 | 6:25:04                        | 15.1              | A23C000000000000          | N44°35.13 E33°29.54 | 0.375               |
| S10          | 55479                 | 7:09:02                        | 27.6              | A23C000000000000          | N/A                 | N/A                 |
| S11          | 48525                 | 7:12:59                        | 6.5               | A23C000000000000          | N44°35.11 E33°29.42 | 0.258               |
| S13          | 17839                 | 8:05:39                        | 2.7               | A23C000000000000          | 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              | A23C000000000000          | N44°35.15 E33°29.66 | 0.516               |
| S13          | 17840                 | 9:44:45                        | 18.7              | A23C000000000000          | N44°34.99 E33°29.33 | 0.404               |
| S12          | 36322                 | 10:24:54                       | 12.7              | A23C000000000000          | N44°35.18 E33°29.17 | 0.148               |
| S11          | 48527                 | 10:31:12                       | 25.2              | A23C000000000000          | 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               | A23C000000000000          | N44°35.57 E33°29.56 | 0.773               |
| S07          | 92493                 | 12:36:12                       | 22.0              | A23C000000000000          | N44°34.93 E33°29.54 | N/A                 |
| S10          | 55483                 | 13:38:06                       | 12.4              | A23C000000000000          | N44°35.14 E33°29.13 | 0.228               |
| S12          | 36324                 | 13:47:00                       | 22.4              | A23C000000000000          | N44°35.41 E33°29.54 | N/A                 |
| S07          | 92494                 | 14:14:39                       | 6.7               | A23C000000000000          | N44°35.3 E33°29.02  | 0.382               |
| S10          | 55484                 | 15:18:23                       | 4.6               | A23C000000000000          | N44°35.5 E33°29.74  | 0.820               |

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

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

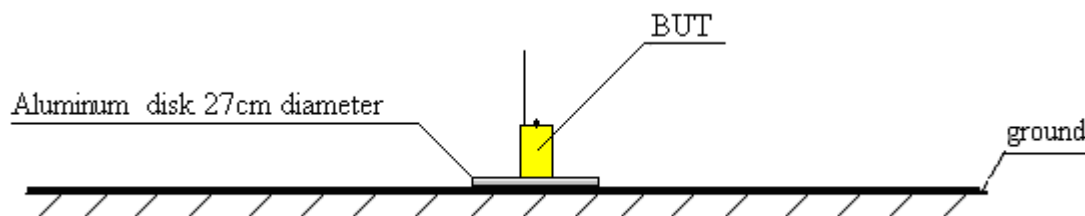
### 5.9.2 Test Configuration 7 Beacon on Ground Plane

**Date of the Test:** February 24, 2016

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

**Test conditions:**

- o Ambient temperature at open testing area: 9-13 °C
- o Relative air humidity: 54-71 %
- o Atmosphere pressure: 736-737 mm/Hg
- o The duration of the satellite test: 10 hours 20 minutes.
- o The homing transmitter not operated.
- o Actual Location: N 44°35'12.3"; E 33°29'16.6".
- o Data provided by CMC
- o Beacon was placed in the vertical orientation described in the manufacturer's instruction.
- o Beacon was placed in the area with a good all round view of the sky.
- o 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**

- o Beacon is coded with Standard Location – Test protocol
- o Country code is Russia
- o Message content 1 – 144 bits: FFFE3FD11E0000000000007DA82FE0FF0146
- o 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:** A23C000000000000

**Actual location of the test beacon:** Latitude N 44°35'12.3"; Longitude: E 33°29'16.6"

**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              | A23C000000000000          | N44°35.24 E33°30.56 | N/A                 |
| S13          | 17824                 | 6:46:01                        | 11.4              | A23C000000000000          | N44°35.55 E33°29.02 | 0.723               |
| S11          | 48511                 | 7:33:45                        | 2.8               | A23C000000000000          | N44°35.12 E33°29.4  | 0.227               |
| S13          | 17825                 | 8:26:17                        | 6.2               | A23C000000000000          | N44°35.48 E33°29.7  | 0.756               |
| S11          | 48512                 | 9:13:19                        | 14.0              | A23C000000000000          | N44°35.24 E33°29.5  | 0.302               |
| S13          | 17826                 | 10:05:04                       | 21.6              | A23C000000000000          | N44°35.21 E33°29.45 | N/A                 |
| S12          | 36308                 | 10:36:07                       | 10.9              | A23C000000000000          | N44°35.15 E33°28.97 | 0.418               |
| S11          | 48513                 | 10:51:19                       | 27.6              | A23C000000000000          | N44°35.3 E33°29.4   | N/A                 |
| S10          | 55468                 | 12:07:28                       | 25.0              | A23C000000000000          | N/A                 | N/A                 |
| S12          | 36309                 | 12:16:34                       | 6.3               | A23C000000000000          | N44°35.32 E33°29.34 | 0.229               |
| S07          | 92479                 | 13:00:34                       | 18.5              | A23C000000000000          | N44°34.75 E33°29.18 | 0.852               |
| S10          | 55469                 | 13:49:33                       | 10.6              | A23C000000000000          | N44°35.12 E33°28.93 | 0.484               |
| S12          | 36310                 | 13:58:35                       | 24.4              | A23C000000000000          | N44°35.32 E33°29.35 | N/A                 |
| S07          | 92480                 | 14:39:23                       | 2.5               | A23C000000000000          | N44°35.2 E33°28.61  | 0.881               |
| S10          | 55470                 | 15:30:00                       | 6.6               | A23C000000000000          | N44°35.42 E33°29.74 | 0.730               |
| S07          | 0                     | 16:19:40                       | 15.2              | A23C000000000000          | N44°35.19 E33°29.81 | 0.705               |

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

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

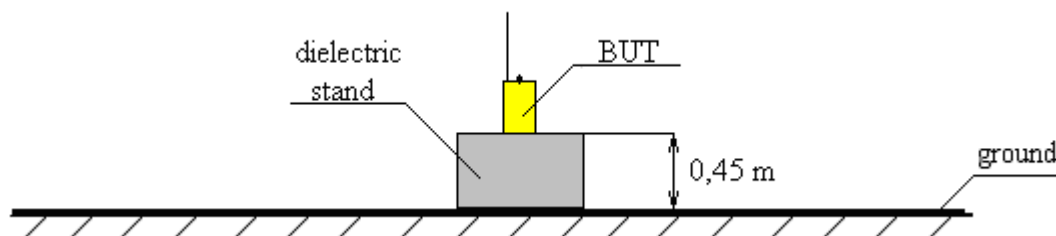
### 5.9.3 Test Configuration 8 Beacon above Ground Plane

**Date of the Test:** February 24-25, 2016

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

**Test conditions:**

- o Ambient temperature at open testing area: 5-10 °C
- o Relative air humidity: 97-100 %
- o Atmosphere pressure: 736-737 mm/Hg
- o The duration of the satellite test: 11 hours 35 minutes.
- o The homing transmitter not operated.
- o Actual Location: N 44°35'12.3"; E 33°29'16.6".
- o Data provided by CMC
- o Beacon was placed in the vertical orientation described in the manufacturer's instructions.
- o Beacon was placed in an area with a good all round view of the sky.
- o 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**

- o Beacon is coded with Standard Location – Test protocol
- o Country code is Russia
- o Message content 1 – 144 bits: FFFE3FD11E0000000000007DA82FE0FF0146
- o Beacon identification number (15-digit ID): A23C000000000000

## 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:** A23C000000000000

**Actual location of the test beacon:** Latitude N 44°35'12.3"; Longitude: E 33°29'16.6".

**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              | A23C000000000000          | N44°35.42 E33°29.38 | N/A                 |
| S11          | 46094                 | 17:18:03                       | 13.8              | A23C000000000000          | N44°35.17 E33°28.98 | 0.397               |
| S13          | 17831                 | 18:10:13                       | 5.4               | A23C000000000000          | N44°35.24 E33°28.99 | 0.384               |
| S11          | 15408                 | 18:57:38                       | 3.0               | A23C000000000000          | N44°35.62 E33°29.78 | 1.016               |
| S13          | 46095                 | 19:50:33                       | 12.2              | A23C000000000000          | N44°35.55 E33°29.53 | 0.721               |
| S11          | 15409                 | 20:38:42                       | 21.0              | A23C000000000000          | N44°35.35 E33°29.4  | 0.314               |
| S12          | 33908                 | 22:55:08                       | 20.8              | A23C000000000000          | N44°35.12 E33°29.62 | 0.480               |
| S12          | 46096                 | 0:36:48                        | 2.7               | A23C000000000000          | N44°35.3 E33°29.32  | 0.185               |
| S10          | 15410                 | 2:08:32                        | 20.7              | A23C000000000000          | N44°35.3 E33°29.63  | 0.499               |
| S12          | 33909                 | 2:16:59                        | 14.1              | A23C000000000000          | N44°35.29 E33°29.33 | 0.172               |
| S07          | 33910                 | 2:52:19                        | 12.6              | A23C000000000000          | N44°35.06 E33°29.51 | 0.409               |
| S10          | 90057                 | 3:50:09                        | 2.7               | A23C000000000000          | N44°35.08 E33°29.24 | 0.236               |
| S12          | 33911                 | 3:55:35                        | 27.6              | A23C000000000000          | N44°36.67 E33°31.25 | N/A                 |
| S07          | 53070                 | 4:32:23                        | 5.0               | A23C000000000000          | N44°35.23 E33°29.77 | 0.653               |

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

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

## 5.10 Photographs



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



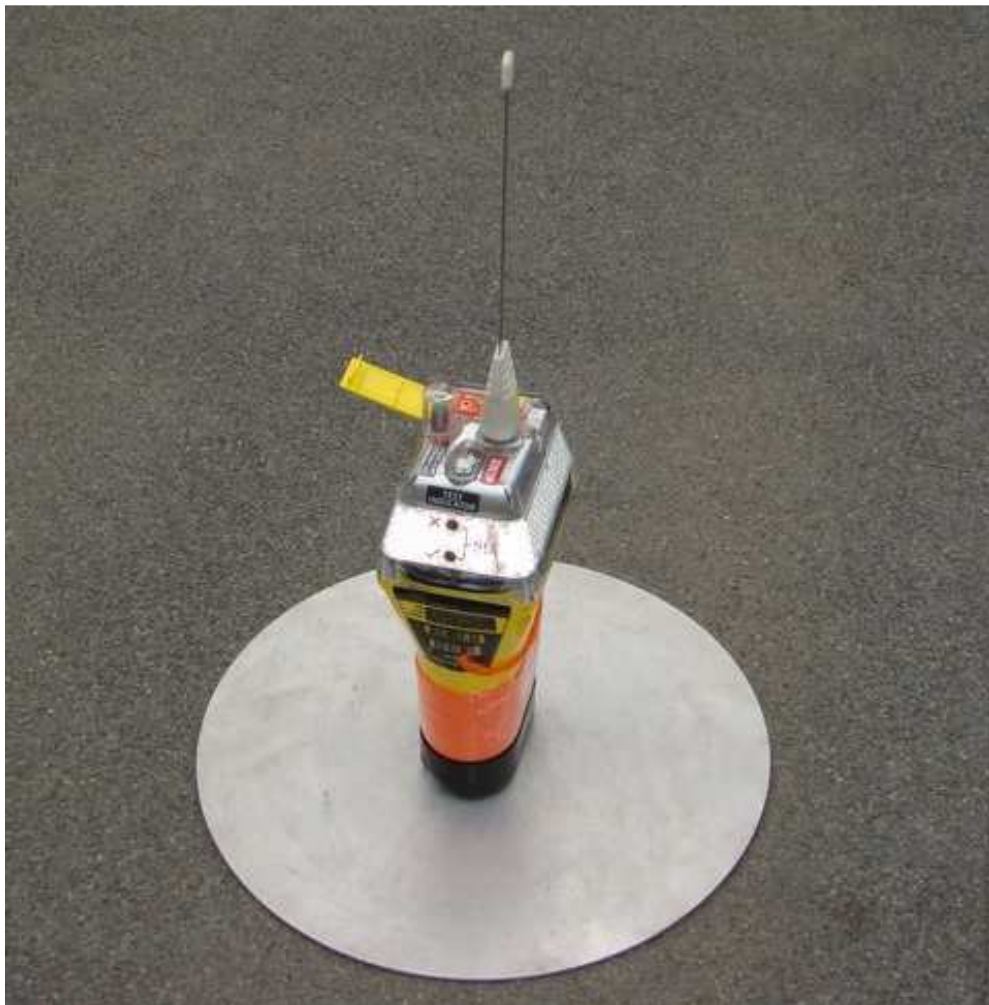
**Fig. 5.10.2** — General view of test site for navigation test, point 1 (Configuration 7 – Beacon on ground plan).



**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).

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**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                   | BHT-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                           | $\pm 0.01$ sec          |
| 2.  | Total (Transmission Time)                 | $\pm 1.0$ ms            |
| 3.  | CW Preamble                               | $\pm 1.0$ ms            |
| 4.  | Bit Rate                                  | $\pm 0.6$ bit/sec       |
| 5.  | Nominal Frequency                         | $\pm 100$ Hz            |
| 6.  | Frequency Stability                       | $< 1 \times 10^{-10}$   |
| 7.  | Transmitted Power                         | $\pm 0.5$ dB            |
| 8.  | Spurious Power Level                      | $\pm 2$ dB              |
| 9.  | Carrier Rise Time                         | $\pm 0.5$ ms            |
| 10. | Modulation Rise                           | $\pm 25$ $\mu$ s        |
| 11. | Modulation Symmetry                       | $< 0.01$                |
| 12. | Phase Modulation                          | $\pm 0.04$ rad          |
| 13. | Voltage                                   | 0.1%                    |
| 14. | Current value                             | 2%                      |
| 15. | Ambient temperature (near beacon) various | $\pm 2^{\circ}\text{C}$ |
| 16. | Antenna Measurement                       | $\pm 3$ dB              |

**ANNEX A**  
**Technical Data Submitted by Beacon Manufacturer**

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## **Application Form (Annex G)**

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TYPE APPROVAL CERTIFICATE****G.1 INFORMATION PROVIDED BY THE BEACON MANUFACTURER****Beacon Manufacturer and Beacon Model**

|                                      |                                 |
|--------------------------------------|---------------------------------|
| <b>Beacon Manufacturer</b>           | Standard Communications Pty Ltd |
| <b>Beacon Model Name</b>             | MT603G                          |
| <b>Additional Beacon Model Names</b> | MT603FG                         |

**Beacon Type and Operational Configurations**

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

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| Characteristic                                                                                                                                   | Specification                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| Operating frequency                                                                                                                              | <u>406.04</u> MHz                                             |
| Operating temperature range                                                                                                                      | T <sub>min</sub> = <u>-20C</u> T <sub>max</sub> = <u>+55C</u> |
| Temperature, at which minimum duration of continuous operation is expected                                                                       | <u>-20C</u>                                                   |
| Operating lifetime                                                                                                                               | <u>48</u> hours                                               |
| Beacon power supply type (internal non-rechargeable, internal re-chargeable, external, combined, other)                                          | Internal Battery, non-rechargeable                            |
| 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                                                                                                                           | LiSO <sub>2</sub>                                             |
| 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) | <u>1</u> years                                                |
| Declared beacon battery replacement period (from date of installation in the beacon to expiry date marked on the beacon)                         | <u>7</u> 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                                                                 |                                                               |

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| 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                                 |

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| <b>Self-Test Mode Characteristics:</b>                                                                                                              | 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,<br>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                                  |

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| Self-Test Mode Characteristics:                                                                                           | Self-Test Mode                                                 | Optional GNSS Self-test Mode                 |
|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------|
| – GNSS Self-test results in transmission of a single burst, irrespective 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         |
| <b>Message Coding Protocols:</b>                                                                                          | (x) Tick the boxes below against the intended protocol options |                                              |
| User Protocol (tick where appropriate)                                                                                    | <input type="checkbox"/>                                       | Maritime with MMSI                           |
|                                                                                                                           | <input type="checkbox"/>                                       | Maritime with Radio Call Sign                |
|                                                                                                                           | <input type="checkbox"/>                                       | EPIRB Float Free with Serial Number          |
|                                                                                                                           | <input type="checkbox"/>                                       | EPIRB Non Float Free with Serial Number      |
|                                                                                                                           | <input type="checkbox"/>                                       | Radio Call Sign                              |
|                                                                                                                           | <input type="checkbox"/>                                       | Aviation                                     |
|                                                                                                                           | <input type="checkbox"/>                                       | ELT with Serial Number                       |
|                                                                                                                           | <input type="checkbox"/>                                       | ELT with Aircraft Operator and Serial Number |
|                                                                                                                           | <input type="checkbox"/>                                       | ELT with Aircraft 24-bit Address             |
|                                                                                                                           | <input type="checkbox"/>                                       | PLB with Serial Number                       |
|                                                                                                                           | <input type="checkbox"/>                                       | National (Short Message Format)              |
|                                                                                                                           | <input checked="" type="checkbox"/>                            | National (Long Message Format)               |
| Standard Location Protocol (tick where appropriate)                                                                       | <input checked="" type="checkbox"/>                            | EPIRB with MMSI                              |
|                                                                                                                           | <input checked="" type="checkbox"/>                            | EPIRB with Serial Number                     |
|                                                                                                                           | <input type="checkbox"/>                                       | ELT with 24-bit Address                      |
|                                                                                                                           | <input type="checkbox"/>                                       | ELT with Aircraft Operator Designator        |
|                                                                                                                           | <input type="checkbox"/>                                       | ELT with Serial Number                       |
|                                                                                                                           | <input type="checkbox"/>                                       | PLB with Serial Number                       |
| National Location Protocol (tick where appropriate)                                                                       | <input checked="" type="checkbox"/>                            | National Location: EPIRB                     |
|                                                                                                                           | <input type="checkbox"/>                                       | National Location: ELT                       |
|                                                                                                                           | <input type="checkbox"/>                                       | National Location: PLB                       |

|                                                                                                                                                                                                                                                                                                        |                                         |                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------------------------------|
| RLS Location Protocol (tick where appropriate) <sup>1</sup>                                                                                                                                                                                                                                            | <input type="checkbox"/>                | EPIRB                                        |
|                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/>                | ELT                                          |
|                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/>                | PLB                                          |
| User Location Protocol (tick where appropriate)                                                                                                                                                                                                                                                        | <input checked="" type="checkbox"/>     | Maritime with MMSI                           |
|                                                                                                                                                                                                                                                                                                        | <input checked="" type="checkbox"/>     | Maritime with Radio Call Sign                |
|                                                                                                                                                                                                                                                                                                        | <input checked="" type="checkbox"/>     | EPIRB Float Free with Serial Number          |
|                                                                                                                                                                                                                                                                                                        | <input checked="" type="checkbox"/>     | EPIRB Non Float Free with Serial Number      |
|                                                                                                                                                                                                                                                                                                        | <input checked="" type="checkbox"/>     | Radio Call Sign                              |
|                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/>                | Aviation                                     |
|                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/>                | ELT with Serial Number                       |
|                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/>                | ELT with Aircraft Operator and Serial Number |
|                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/>                | ELT with Aircraft 24-bit Address             |
| <input type="checkbox"/>                                                                                                                                                                                                                                                                               | PLB with Serial Number                  |                                              |
| Beacon includes a homer transmitter(s) (Yes or No)<br>- homer transmitter(s) frequency<br>- homer transmitter(s) power                                                                                                                                                                                 | <u>121.5</u> MHz<br><u>14 ± 0.5</u> dBm |                                              |
| - homer transmitter(s) duty cycle<br>- duty cycle of homer swept tone                                                                                                                                                                                                                                  | <u>&gt;96</u> %<br><u>34</u> %          |                                              |
| Beacon includes a high intensity flashing light (e.g. Strobe)                                                                                                                                                                                                                                          | Yes or No                               | <b>Yes</b>                                   |
| - light intensity                                                                                                                                                                                                                                                                                      | <u>0.75</u> cd                          |                                              |
| - flash rate                                                                                                                                                                                                                                                                                           | <u>20</u> 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) | <b>Yes</b>                              |                                              |
| 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.                                                                                                 | <b>None</b>                             |                                              |
| Beacon includes automatic activation mechanism (Yes or No). Specify type of automatic beacon activation mechanism                                                                                                                                                                                      | <b>Yes. (Conductive Water Switch)</b>   |                                              |
| Beacon includes features and functions not listed above, related or non-related to 406 MHz (Yes or No)<br>List features and use a separate sheet if insufficient space                                                                                                                                 | <b>No</b>                               |                                              |

<sup>1</sup> RLS protocols will be effective as of 1 November 2015. The use of RLS-enabled beacons will be regulated by national administrations.

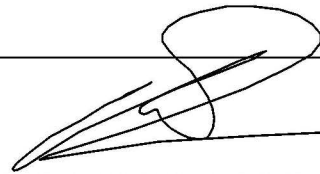
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|                                                                                                                                         |                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| 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)<br>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<br>Phone: +61 2 8867 6000<br>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)**