



**Add value.
Inspire trust.**

Report On

Limited Emergency Beacons Testing of the
Ocean Signal Limited
EPIRB1 Pro
In accordance with Cospas-Sarsat T.007

Document 75948182 Report 1 Issue 1

March 2020



TÜV SÜD, Octagon House, Concorde Way, Segensworth North,
Fareham, Hampshire, United Kingdom, PO15 5RL
Tel: +44 (0) 1489 558100. Website: www.tuv-sud.co.uk

REPORT ON

Limited Emergency Beacons Testing of the
Ocean Signal Limited EPIRB1 Pro

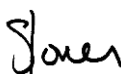
Document 75948182 Report 1 Issue 1

March 2020

PREPARED FOR

Ocean Signal Ltd
Unit 4, Ocivan Way
Margate
Kent
CT9 4NN
United Kingdom

PREPARED BY



Sarah Jones
Key Account Manager

APPROVED BY



Martin Hardy
Authorised Signatory

DATED

05 March 2020





CONTENTS

Section	Page No
1	REPORT SUMMARY 3
1.1	Introduction 4
1.2	Application Form 5
1.3	Product Information 12
1.4	Test Locations 14
1.5	Modifications 14
1.6	Report Modification Record 14
2	TEST DETAILS 15
2.1	Satellite qualitative Test 17
2.2	Navigation System Test 21
3	TEST EQUIPMENT USED 25
3.1	Test Equipment 26
3.2	Measurement Uncertainty 27
4	PHOTOGRAPHS 28
4.1	Photographs of Equipment Under Test (EUT) 29
5	ACCREDITATION, DISCLAIMERS AND COPYRIGHT 32
5.1	Accreditation, Disclaimers and Copyright 33
ANNEX A	Manufacturer Supplied Data A.2



SECTION 1

REPORT SUMMARY

Limited Emergency Beacons Testing of the
Ocean Signal Limited EPIRB1 Pro



1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Ocean Signal Limited EPIRB1 Pro to limited requirements of Cospas-Sarsat T.007.

The scope of testing was agreed between the Manufacturer and C/S Secretariat.

Objective	To perform Emergency Beacon Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Ocean Signal Limited
Model Number(s)	EPIRB1 Pro
Serial Number(s)	0102404U
Number of Samples Tested	1
Test Specification/Issue/Date	Cospas-Sarsat T.007 Issue 5 - Rev 3 February 2019
Date of Receipt of Test Samples	07 February 2020
Order Number	9228
Date	05 February 2020
Start of Test	11 February 2020
Finish of Test	02 March 2020
Name of Engineer(s)	S Ho L Gofford
Related Documents	Cospas-Sarsat T.001 Issue 4 Rev 4 Feb 2019 Cospas-Sarsat T.IP (TCXO) Issue 1 Rev 5 Oct 2013

1.2 APPLICATION FORM

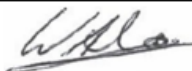
G.1 - Beacon Manufacturer and Beacon Model		
Beacon Manufacturer	Ocean Signal Ltd	
Beacon Manufacturer's Address	Unit 4 Ocivan Way, Margate, Kent, CT9 4NN	
Beacon Model Name	EPIRB1	
Additional Beacon Model Names	EPIRB1 Pro	
G.1 - Beacon Type and Operational Configurations		
Beacon Type	Beacon Used While	Tick Where Appropriate (X)
EPIRB Float Free	Floating in water or on deck or in a safety raft	X
EPIRB Non-Float Free (automatic and manual activation)	Floating in water or on deck or in a safety raft	X
EPIRB Non-Float Free (manual activation only)	Floating in water or on deck or in a safety raft	
EPIRB Float Free with VDR	Floating in water or on deck or in a safety raft	
PLB	On ground and above ground	
	On ground and above ground and floating in water	
ELT Survival	On ground and above ground	
	On ground and above ground and floating in water	
ELT Auto Fixed	Fixed ELT with aircraft external antenna	
ELT(DT)	Distress Tracking ELT with aircraft external antenna	
ELT Auto Portable	In aircraft with an external antenna	
	On ground, above ground, or in a safety raft with an integrated antenna	
ELT Auto Deployable	Deployable ELT with attached antenna	
Other (specify)		

G.1 - Beacon Characteristics		
Characteristic	Declared Value	
Operating frequency (406 MHz operating channel = 406.nnn)	406.040 MHz	
Operating temperature range	Tmin = -20 °C	Tmax= 55 °C
Temperature, at which minimum duration of continuous operation is expected (Submit C/S T.007 Section 5, part s, if applicable)	Tmin ✓	OR Other (nn °C)
Operating lifetime	48	hours
Beacon power supply type (internal non-rechargeable, internal re-chargeable, external, combined, other)	Internal 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)	No	
Battery cell chemistry	Lithium Manganese Dioxide	
Battery cell model name, cell size, number of cells in a battery pack, and details of the battery pack electrical configuration	Cell Model Name:	CR123
	Cell Size:	34.5mm x 17mm dia
	Number of Cells in Battery Pack:	6
	Details of the battery pack electrical configuration:	2 x 3 in series
Battery cell manufacturer	Qlite	
Battery pack manufacturer and part number	Battery Pack Manufacturer Name:	Ocean Signal Ltd
	Battery Pack Part Number:	901S-01393
Beacon manufacturers declared maximum allowed cell shelf-life (from date of cell manufacture to date of battery pack installation in the beacon)	2.5	years
Declared beacon battery replacement period (from date of installation in the beacon to expiry date marked on the beacon)	12.5	years
Oscillator type (e.g. OCXO, MCXO, TCXO)	TCXO	
Oscillator manufacturer	Rakon	
Oscillator model name/ part number	Model Name:	E5344LF
	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, manually deployed	
Antenna manufacturer	Ocean Signal Ltd	
Antenna part name and part number (OEM, if applicable, and beacon manufacturer's)	OEM Model Name:	N/A
	OEM Part Number:	N/A
	Beacon Manufacturer's Model Name:	130S-01404 (EPIRB1 only) 130S-03273 (EPIRB1 Pro only)
	Beacon Manufacturer's Part Number:	130S-01404 (EPIRB1 only) 130S-03273 (EPIRB1 Pro only)

Antenna cable assembly min/max RF- losses at 406 MHz, if applicable	Minimum loss (dB):	N/A
	Maximum loss (dB):	N/A
Navigation device type (Internal, External or None)	Internal	
Features in beacon that prevent degradation to 406 MHz signal or beacon lifetime 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)	25 to 120	minutes
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		
Navigation device model name and part Number	Model Name:	L70
	Part Number:	L70
Internal navigation device antenna type(integrated, internal, external, passive/active) , manufacturer and model	Internal, AEL Crystals Ltd, DAE1575R1820A	
GNSS system supported (e.g. GPS, GLONASS, Galileo)	GPS	
For External Navigation Devices		
Data protocol for GNSS receiver to beacon interface	N/A	
Physical interface for beacon to navigation device	N/A	
Electrical interface for beacon to navigation device	N/A	
Part number of the external navigation interface device (if applicable)	N/A	
Navigation device model and manufacturer (if beacon designed to use specific devices)	N/A	

Self-Test Mode Characteristics:	Self-Test Mode	Optional GNSS Self-test Mode
Activated by a separate switch/ separate switch position (Yes or No)	Yes	Yes
Self-test/GNSS self-test mode switch automatically returns to normal position when released (Yes or No)	Yes	Yes
Self-test/ GNSS self-test activation can cause an operational mode transmission (Yes or No)	No	No
Results in transmission of a single self-test burst only, regardless of how long the self-test activation mechanism is applied (Yes or No)	Yes	No
Results of self-test / GNSS self-test are indicated by (provide details, e.g. Pass / Fail indicator light, strobe light, etc.)	Indicator LED / Strobe	Indicator LED / Strobe
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, 121.5MHz for 1sec	No
Self-test can be activated directly at beacon (Yes or No)	Yes	Yes
List of items checked by self-test	406 Power, Synth, 121.5 Power, Battery Status	GPS
Self-test/ GNSS self-test 406 MHz burst duration (440 or 520 ms)	520ms	N/A
Self-test message length format flag in bit 25, ("0" or "1")	1	N/A
Maximum duration of a self-test mode, sec	16.5sec	315.5sec
Maximum recommended number of self-tests / GNSS self-tests during battery pack replacement period (as applicable)	150	12
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)	Yes	N/A
Automatic termination of self-test mode immediately after completion of the self-test cycle (Yes or No)	Yes	Yes
GNSS Self-test results in transmission of a single burst, irrespectively of the test result (Yes or No)	N/A	No
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	Test key only	Test key only

Message Coding Protocols	Protocol Option	Tick Where Appropriate (X)
User Protocol	Maritime with MMSI	
	Maritime with Radio Call Sign	
	EPIRB Float Free with Serial Number	
	EPIRB Non Float Free with Serial Number	
	Radio Call Sign	
	Aviation	
	ELT with Serial Number	
	ELT with Aircraft Operator and Serial Number	
	ELT with Aircraft 24-bit Address	
	PLB with Serial Number	
	National (Short Message Format)	
	National (Long Message Format)	
Standard Location Protocol	EPIRB with MMSI	X
	EPIRB with Serial Number	X
	ELT with 24-bit Address	
	ELT with Aircraft Operator Designator	
	ELT with Serial Number	
	PLB with Serial Number	
National Location Protocol	National Location: EPIRB	X
	National Location: ELT	
	National Location: PLB	
ELT(DT) Location Protocol	ELT with Serial Number	
	ELT with Aircraft Operator and Serial Number	
	ELT with Aircraft 24-bit Address	
RLS Location Protocol	EPIRB	
	ELT	
	PLB	
User Location Protocol	Maritime with MMSI	
	Maritime with Radio Call Sign	X
	EPIRB Float Free with Serial Number	
	EPIRB Non Float Free with Serial Number	
	Radio Call Sign	X
	Aviation	
	ELT with Serial Number	
	ELT with Aircraft Operator and Serial Number	
	ELT with Aircraft 24-bit Address	
	PLB with Serial Number	

Other Declarations	Declared Value		
Beacon includes a homer transmitter(s) (Yes or No)	<< Yes / No >>		
- homer transmitter(s) frequency and power	Frequency	Power (dBm)	Yes / No
	121.5 MHz	16dBm ±2dBm	Yes
	243.0 MHz	<< Power >>	No
	AIS	<< Power >>	No
	Other (MHz)		
	<< frequency >>	<< Power >>	<< Yes / No >>
	Description:	<< Description >>	
homer transmitter(s) duty cycle	97	%	
duty cycle of homer swept tone	34	%	
Beacon includes a high intensity flashing light (e.g. Strobe)	Yes		
- light intensity	>1.14	cd	
- flash rate	20-30	flashes per minute	
Beacon transmission repetition period satisfies C/S T.001 requirement that two beacon's repetition periods are not synchronised closer than a few seconds over 5 minute period, and the time intervals between transmissions are randomly distributed on the interval 47.5 to 52.5 seconds (Yes or No)	Yes		
Other ancillary devices (e.g. voice transceiver, remote control, external audio and light indicators, external activation device). List details on a separate sheet if insufficient space to describe.	No		
Beacon includes automatic activation mechanism (Yes or No). Specify type of automatic beacon activation mechanism	Yes / No :	Yes	
	Description:	Water activation	
Beacon includes features and functions not listed above, related or non-related to 406 MHz (Yes or No). List features and use a separate sheet if insufficient space	No		
	Description:		
Beacon model hardware part number (P/N) and version	900S-01448 Issue 01.00 (EPIRB1 only) 900S-03377 Issue 01.00 (EPIRB1 Pro only)		
Beacon model firmware P/N, version, date of issue/releases	500S-01449 Issue 01.00		
Beacon model software P/N, version, date of issue/releases	N/A		
Beacon model printed circuit board P/N and version	101S-01367 Issue 01.00		
Known non-compliances with C/S T.001 requirements (Yes or No). If Yes, provide details (Submit C/S T.007 Section 5, part t, if applicable)	No		
Beacon Manufacturer Point of Contact (POC) for this Type Approval application:			
Name and Job Title:	Wayne Card		
Phone:	+44 1843 282930		
E-mail:	wayne.card@oceansignal.com		
Dated(*)	14/11/2019		
Signed(*)	 Wayne Card, Senior Engineer		



Information Provided by the Cospas-Sarsat Accepted Test Facility

Name and Location of Beacon Test Facility: TÜV SÜD, United Kingdom

Date of Submission for Testing: 07 February 2020

Applicable C/S Standards:

Document	Issue	Revision	Date
C/S T.001	4	4	Feb 2019
C/S T.007	5	3	Feb 2019
IP (TCXO)	-	5	October 2013

I hereby confirm that the 406 MHz beacon described above has been successfully tested in accordance with the Cospas-Sarsat 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

Detail any observed non-compliances and/or deviations from standard test procedures here:

Non-compliances:

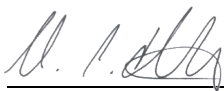
None.

Deviations:

None.

Notes:

None.

Signed: 

Name: Martin Hardy

Position Held: Authorised Signatory

Date: 05 March 2020

1.3 PRODUCT INFORMATION

1.3.1 Technical Description

The Equipment Under Test (EUT) was an Ocean Signal Limited EPIRB1 Pro as shown in the photograph below. A full technical description can be found in the manufacturer's documentation.



Equipment Under Test

1.3.2 Physical Test Configuration

The EUT was a fully packaged beacon, similar to the proposed production beacons equipped with its proper antenna. This EUT was used to perform Satellite Qualitative and Navigation System (PATPAT). The test configuration for these tests is a function of the beacon type and the operational environments supported by the beacon, as declared by the manufacturer.



1.3.3 Modes of Operation

Modes of operation of the EUT during testing were as follows:

Operating

- Push and hold power button for 3 seconds then release.
- 121 Homer active and offset
- GPS operating in normal duty cycle for the following navigation input conditions
- No navigation data applied (unless otherwise stated)

All modes

All mode descriptions are applicable to all tests unless otherwise stated. Additional methods of activation include:

- Water contacts



1.4 TEST LOCATIONS

Satellite Qualitative/Navigation test A.3.8.2.1: Daedalus Airfield, Lee-on-the-Solent, Hants, UK
All other tests: Octagon House Laboratory, Fareham, Hampshire, UK

1.5 MODIFICATIONS

Modification 0 - No modifications were made to the test sample during testing.

1.6 REPORT MODIFICATION RECORD

Issue 1 – First Issue.



SECTION 2

TEST DETAILS

Limited Emergency Beacons Testing of the
Ocean Signal Limited EPIRB1 Pro



TEST RESULTS TABLE

Parameters to be Measured	Range of Specification	Units	Test Results				Comments
14. Satellite Qualitative Tests							Result: Pass
Model: EPIRB1 Pro, S/N: 0102404U, TUV Ref: TSR5 and Modification State 0							
Test Configuration 15 Hex ID Decoded by LUT Doppler Location results with error ≤ 5km	As per C/S T.007	P / F %	Configuration				
			5	6	7	8	
	correct ≥ 80		P 100	- -	P 85.72	P 100	
17. Navigation System							Result: Pass
Model: EPIRB1 Pro, S/N: 0102404U, TUV Ref: TSR5 and Modification State 0							
Location protocol	C/S T.001	P / F	National	Standard	User		
Position data default values	correct		P	P	P		
Configuration 5							
Position accuracy - A.3.8.2.1	C/S T.001	m	46.83	46.83	1565.33		
Position Acquisition Time - A.3.8.2.1	<10/1	min	1.67	1.67	1.67		
Position accuracy - A.3.8.2.2	C/S T.001	m	35.85	35.85	1594.63		
Position Acquisition Time - A.3.8.2.2	<10/1	min	1.67	0.87	0.88		
Configuration 7							
Position accuracy - A.3.8.2.1	C/S T.001	m	22.63	22.63	1565.39		
Position Acquisition Time - A.3.8.2.1	<10/1	min	0.87	0.87	0.87		
Position accuracy - A.3.8.2.2	C/S T.001	m	35.85	35.85	1594.63		
Position Acquisition Time - A.3.8.2.2	<10/1	min	1.67	0.87	0.87		
Configuration 8							
Position accuracy - A.3.8.2.1	C/S T.001	m	22.70	22.70	1565.39		
Position Acquisition Time - A.3.8.2.1	<10/1	min	0.87	0.87	0.87		
Position accuracy - A.3.8.2.2	C/S T.001	m	35.85	35.85	3462.92		
Position Acquisition Time - A.3.8.2.2	<10/1	min	0.87	0.87	0.87		
Encoded position data update interval	>5	min	-	-	-		
Position clearance after deactivation	cleared	P / F	-	-	-		
Position data input update interval (as applicable)	20/1	Min	-	-	-		



2.1 SATELLITE QUALITATIVE TEST

2.1.1 Specification

Cospas-Sarsat T.007, Clause A.2.5

2.1.2 Equipment Under Test and Modification State

EPIRB1 Pro, S/N: 0102404U - Modification State 0

2.1.3 Date of Test

11 February 2020 to 14 February 2020

2.1.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.5 Environmental Conditions

Ambient Temperature 5.0 – 11.0°C

Relative Humidity 41 - 70%



2.1.6 Test Result

Configuration 5

Test Start: 2020-02-13 15:00:02
Test End: 2020-02-14 09:00:00
15 Hex ID: 193DF380C665C05

Actual location of the test beacon: 50.814305
(Daedalus Airfield, Lee-on-the-Solent, Central) -1.2017598

Satellite ID	Satellite Pass	TCA Date	TCA Time	Cross Track Angle	15 Hex ID	Doppler Latitude	Doppler Longitude	Location Error (km)	> 5 km
12	56778	2020-02-13	15:22:58	13.138	193DF380C665C05	50.816	-1.198	0.324	1.0
7	13145	2020-02-13	16:29:48	17.035	193DF380C665C05	50.818	-1.197	0.529	1.0
7	13146	2020-02-13	18:08:36	3.272	193DF380C665C05	50.818	-1.189	0.985	1.0
13	38432	2020-02-13	19:54:28	8.62	193DF380C665C05	50.82	-1.202	0.633	1.0
12	56787	2020-02-14	07:00:25	5.357	193DF380C665C05	50.816	-1.206	0.352	1.0
12	56788	2020-02-14	08:39:54	18.686	193DF380C665C05	50.823	-1.196	1.047	1.0

Location Errors greater than 5 km are marked in red text.

$$\begin{aligned}\text{Ratio of Successful Solutions} &= \frac{\text{number of Doppler solutions within 5 km with } 1^\circ < \text{CTA} < 21^\circ}{\text{number of satellite passes over test duration with } 1^\circ < \text{CTA} < 21^\circ} \\ &= \frac{6}{6} \\ &= 100\%\end{aligned}$$



Configuration 7

Test Start: 2020-02-12 15:00:00
 Test End: 2020-02-13 09:00:00
 15 Hex ID: 193DF380C665C05

Actual location of the test beacon: 50.814305
 (Daedalus Airfield, Lee-on-the-Solent, Central) -1.2017598

Satellite ID	Satellite Pass	TCA Date	TCA Time	Cross Track Angle	15 Hex ID	Doppler Latitude	Doppler Longitude	Location Error (km)	> 5 km
12	56764	2020-02-12	15:34:31	11.556	193DF380C665C05	50.817	-1.196	0.503	1.0
7	13131	2020-02-12	16:54:30	13.853	193DF380C665C05	50.818	-1.194	0.682	1.0
13	38418	2020-02-12	20:15:02	5.618	193DF380C665C05	50.817	-1.199	0.357	1.0
13	38417	2020-02-12	18:36:08	18.952	193DF380C665C05	50.812	-1.21	0.633	1.0
12	56773	2020-02-13	07:12:03	7.082	193DF380C665C05	50.815	-1.208	0.445	1.0
7	13140	2020-02-13	08:23:18	4.088	193DF380C665C05	50.815	-1.207	0.376	1.0
12	56774	2020-02-13	08:51:22	20.013	193DF380C665C05	50.819	-1.199	0.557	1.0
13	38425	2020-02-13	08:26:05	18.827	193DF380C665C05	41.292	50.597	4043.010	0.0

Location Errors greater than 5 km are marked in red text.

$$\begin{aligned}
 \text{Ratio of Successful Solutions} &= \frac{\text{number of Doppler solutions within 5 km with } 1^\circ < \text{CTA} < 21^\circ}{\text{number of satellite passes over test duration with } 1^\circ < \text{CTA} < 21^\circ} \\
 &= \frac{6}{7} \\
 &= 85.72
 \end{aligned}$$



Configuration 8

Test Start: 2020-02-11 15:00:00
 Test End: 2020-02-12 15:00:00
 15 Hex ID: 193DF380C665C05

Actual location of the test beacon: 50.814305
 (Daedalus Airfield, Lee-on-the-Solent, Central) -1.2017598

Satellite ID	Satellite Pass	TCA Date	TCA Time	Cross Track Angle	15 Hex ID	Doppler Latitude	Doppler Longitude	Location Error (km)	> 5 km
12	56750	2020-02-11	15:46:06	9.93	193DF380C665C05	50.818	-1.192	0.799	1.0
7	13117	2020-02-11	17:19:18	10.459	193DF380C665C05	50.817	-1.196	0.503	1.0
13	38403	2020-02-11	18:56:29	16.47	193DF380C665C05	50.817	-1.208	0.531	1.0
13	38404	2020-02-11	20:35:40	2.519	193DF380C665C05	50.819	-1.193	0.807	1.0
12	56759	2020-02-12	07:23:39	8.774	193DF380C665C05	50.815	-1.206	0.308	1.0
7	13126	2020-02-12	08:48:15	7.778	193DF380C665C05	50.815	-1.205	0.240	1.0

Location Errors greater than 5 km are marked in red text.

$$\begin{aligned}
 \text{Ratio of Successful Solutions} &= \frac{\text{number of Doppler solutions within 5 km with } 1^\circ < \text{CTA} < 21^\circ}{\text{number of satellite passes over test duration with } 1^\circ < \text{CTA} < 21^\circ} \\
 &= \frac{6}{6} \\
 &= 100\%
 \end{aligned}$$

Summary

The EUT complies with clause A.2.6 of Cospas-Sarsat T.007.



2.2 NAVIGATION SYSTEM TEST

2.2.1 Specification

Cospas-Sarsat T.007, Clause A.2.7

2.2.2 Equipment Under Test and Modification State

EPIRB1 Pro, S/N: 0102404U - Modification State 0

2.2.3 Date of Test

17 February 2020 & 19 February 2020 & 02 March 2020

2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.5 Environmental Conditions

Ambient Temperature 7.9 - 16.5°C

Relative Humidity 46.6 – 72.8%



2.2.6 Test Results

National Location Protocol

Position Acquisition Time and Position Accuracy (C/S T.007 A.3.8.2)

Locations:

A.3.8.2.1: 50° 52.1423' N 1° 14.6799' W ①

A.3.8.2.2: 50° 48.8584' N 1° 12.1056' W ②

The appropriate position was applied, the EUT activated and time to first message containing valid position data timed.

Configuration as per C/S T.007	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 metres	Time to Acquire Position (sec)	Location Error in metres
Configuration 5	100	46.83	100	35.85
Configuration 7	52	22.63	100	35.85
Configuration 8	52	22.70	52	35.85

Positional accuracy was calculated using the Haversine Formula, The Earth's radius was taken as 6367 km.

①/② GPS Site Survey – Live Location



Standard Location Protocol

Position Acquisition Time and Position Accuracy (C/S T.007 A.3.8.2)

Locations:

A.3.8.2.1: 50° 52.1423' N 1° 14.6799' W ①

A.3.8.2.2: 50° 48.8584' N 1° 12.1056' W ②

The appropriate position was applied, the EUT activated and time to first message containing valid position data timed.

Configuration as per C/S T.007	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 metres	Time to Acquire Position (sec)	Location Error in metres
Configuration 5	100	46.83	52	35.85
Configuration 7	52	22.63	52	35.85
Configuration 8	52	22.70	52	35.85

Positional accuracy was calculated using the Haversine Formula, The Earth's radius was taken as 6367 km.

①/② GPS Site Survey – Live Location



User Location Protocol

Position Acquisition Time and Position Accuracy (C/S T.007 A.3.8.2)

Locations:

A.3.8.2.1: 50° 52.1423' N 1° 14.6799' W ①

A.3.8.2.2: 50° 48.8584' N 1° 12.1056' W ②

The appropriate position was applied, the EUT activated and time to first message containing valid position data timed.

Configuration as per C/S T.007	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 metres	Time to Acquire Position (sec)	Location Error in metres
Configuration 5	100	1565.33	53	1594.63
Configuration 7	52	1565.36	52	1594.63
Configuration 8	52	1565.39	52	3462.92

Positional accuracy was calculated using the Haversine Formula, The Earth's radius was taken as 6367 km.

①/② GPS Site Survey – Live Location

Summary

The EUT complies with clause A.2.7 of Cospas-Sarsat T.007.



SECTION 3

TEST EQUIPMENT USED



3.1 TEST EQUIPMENT

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.1 Beacons – Satellite Qualitative					
Hygrometer	Rotronic	A1	2760	12	02 Jan 2021
Copper Ground Plane	TUV SUD	27cm Diameter Copper GRP	3538	-	O/P Mon
Non Conductive Standoff Box	TUV SUD	Test Box	4966	-	O/P Mon
Section 2.2 Beacons – Navigation System					
Hygrometer	Rotronic	A1	2760	12	02 Jan 2021
Hygrometer	Rotronic	HP21	4740	12	11 Feb 2021
Copper Ground Plane	TUV SUD	27cm Diameter Copper GRP	3538	-	O/P Mon
Non Conductive Standoff Box	TUV SUD	Test Box	4966	-	O/P Mon

Note: some tests took place over one or more days and consequently it may appear that some of the test equipment could have been outside of the valid calibration period at the time of testing. However, we confirm that all equipment held a valid and in-date calibration when used, and we hold this information on record.

O/P Mon – Output Monitored using calibrated equipment



3.2 MEASUREMENT UNCERTAINTY

Measurement Uncertainty Decision Rule

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2007, clause 4.4.3 and 4.5.1.



SECTION 4

PHOTOGRAPHS

4.1 PHOTOGRAPHS OF EQUIPMENT UNDER TEST (EUT)



Configuration 5 – Test Setup



Configuration 7 – Test Setup



Configuration 8 – Test Setup



SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA (Not UKAS Accredited).

This report must not be reproduced, except in its entirety, without the written permission of TÜV SÜD

© 2020 TÜV SÜD