Features

EPIRB1 fitted in the mounting bracket

rescueME EPIRB1 is the smallest EPIRB on the market and is designed for use on small vessels where it can be stowed in the grab bag of mounted ready to hand in the cockpit.

Activation control protected by break off tab and lift up flap.

Unique antenna winding mechanism

Activation protected by lift up flap

www.oceansignal.com

Features and Specifications

Small size compared to previous generations

Easy to handle in rough seas

The **rescueME EPIRB1** is ideal for smallller vessels where an automatic release housing is not required. The small size makes it ideal for carry off usage in an emergency, or for packing in a grab bag.

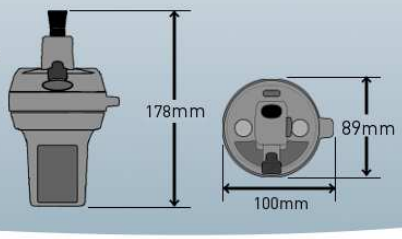
The integrated dual strobe lights ensure maximum alround visibilty.

Specifications

Satellite transmission	406.040MHz, 5Watts
Homing Transmission	121.5MHz, 50mW nominal
Operation Life	>48hrs at -20°C, (-4°F)*
Operating temperature range	-20°C to +55°C (-4°F to +131°F
Weight	422g
Standards	Cospas Sarsat T.001/T.007 IEC61097-2 RTCM SC11000 IC RSS287

*After 12 yerars staorage at no greater than 20°C

EPIRB1 dimensions



www.oceansignal.com

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

info@oceansignal.com
www.oceansignal.com
+44 1843 282930

rescueME EPIRB1 for peace of mind in stormy seas

ocean SIGNAL

Rev 01

Electrical diagramme of the battery pack
Battery cell technical data sheet pack

T.007: 5.g Cell and Battery Data

The data sheet for the cells used in the EPIRB1 and the configuration drawing are attached.

The battery consists of six Q-Lite Lithium CR123A cells connected in two banks of three cells in series

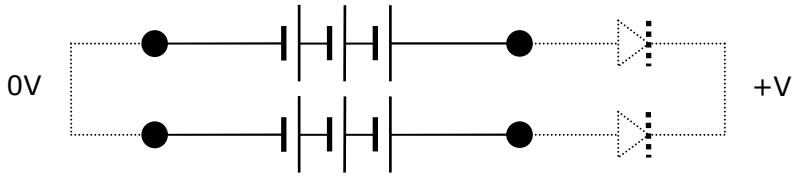


Figure 1: Schematic of EPIRB1 Battery Pack

Dotted lines show internal connection within the EPIRB

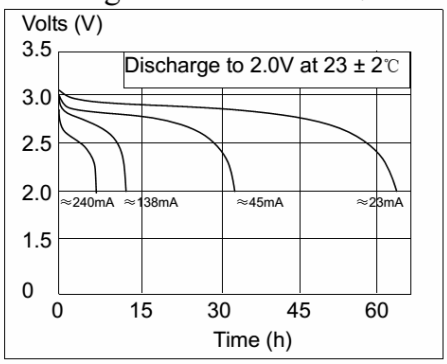
Q-Lite Lithium Battery — CR123A

Chemistry: Lithium Manganese Dioxide

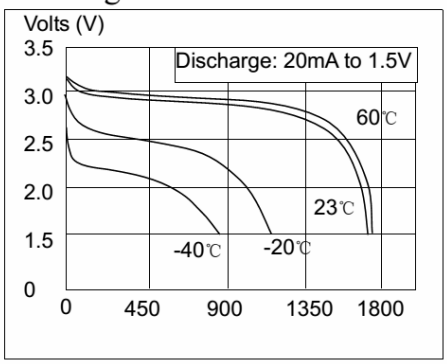
Nominal Voltage:	3.0 V
Nominal Capacity:	1700 mAh
Standard Discharge:	20 mA
End Point Voltage:	2.0 V
Open Circuit Voltage:	≥ 3.0 V
Max. Continuous Discharge:	1000 mA
Max. Pulse Discharge:	1200 mA
Typical Weight:	17 g
Operating Temperature Range:	-40 ~ 60℃
Storage Temperature Range:	-20 ~ 30℃
Humidity Range:	40%~75% RH

Note:
* The nominal capacity base on 20mA to 2.0V at 23℃.
* Typical values refer to cell stored within 3 months at 30℃ and then test at 23℃.
* Lithium content in unit cell: 0.51 gram.

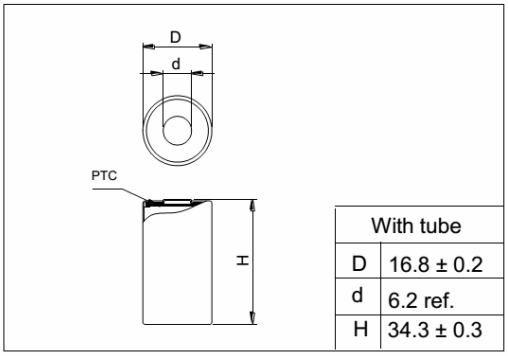
Discharge Characteristics〔Ⅰ〕



Discharge Characteristics〔Ⅱ〕

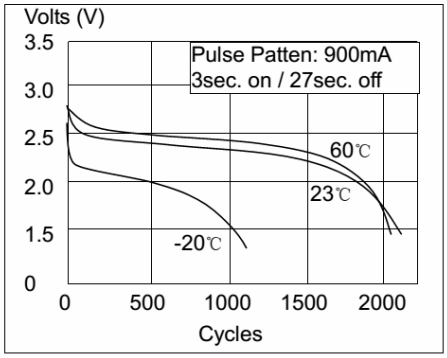


Dimensions (mm)



With tube	
D	16.8 ± 0.2
d	6.2 ref.
H	34.3 ± 0.3

Discharge Characteristics〔Ⅲ〕



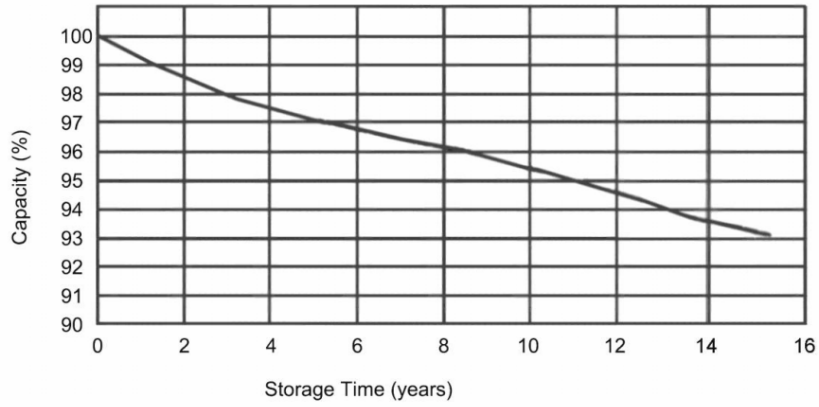
All data contained herein is for single cell and may vary for cell with specific configuration, subject to change without prior notice.

MAD/QHR0206201404, Q-Lite Industrial Limited

1

Figure 2: Q-Lite CR123A Photo Lithium Cell Data Sheet used in the EPIRB1.

Q-Lite CR123A self-discharge reference curves



Note:
1. Equivalent storage at high temperature conditions (60℃ and humidity: 40~75%).

2. Battery at 20mA continuous discharges to 2.0V.

3. The equivalent annual self discharge at a storage temperature of 20 degrees Centigrade is 0.46% of capacity per year.

All data contained herein is for single cell and may vary for cell with specific configuration, subject to

2

Figure 3: Additional Cell Data, showing capacity loss per year

Beacon labels and markings

T.007: 5.h Beacon labels and markings

EPIRB1 Labels

Figure 1: EPIRB1 Product range logo label

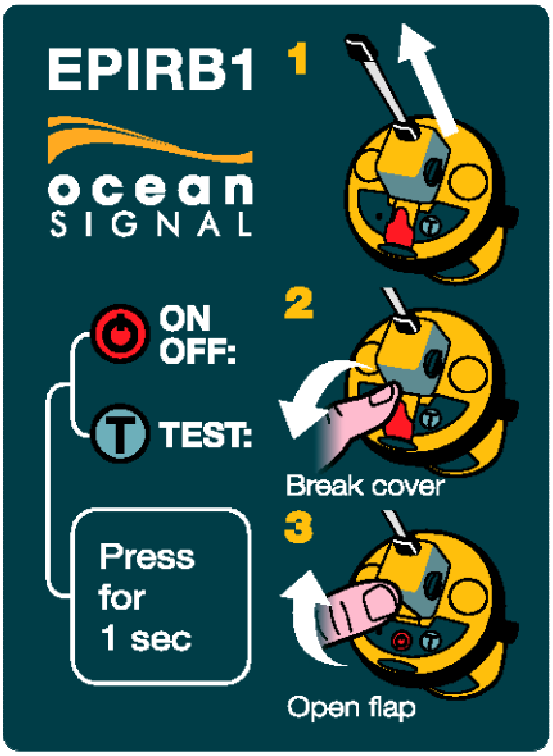


Figure 2: EPIRB1 Front Label with Operating instructions

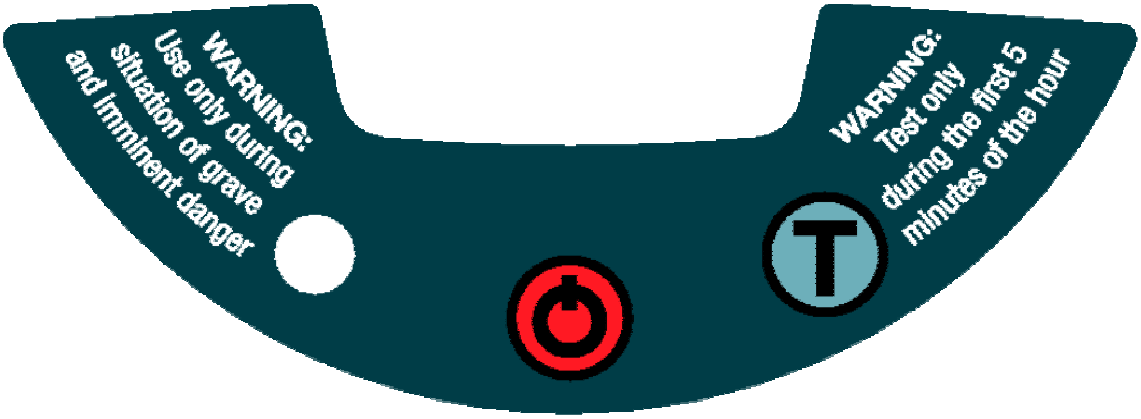


Figure 3: EPIRB1 Top Label with warnings

Figure 4: EPIRB1 Approvals label

Figure 5: EPIRB1 UIN label generic registration information label

Figure 6: EPIRB1 Operating conditions label

Reference oscillator type and specification
Long-term frequency stability (LTS)
Technical data for TCXO
Serial Number and temperature gradient results

T.007: 5.i TCXO Data Sheets

The reference oscillator crystal for the 406MHz transmitter in the rescueME EPIRB1 is made by RAKON Ltd. The following data sheets and sample data are attached.

Figure 1: Reference Crystal Data Sheet - Sheet 1 of 2 2

Figure 2: Reference Crystal Data Sheet - Sheet 2 of 2 3

Figure 3: Rakon Long term Stability declaration 4

Figure 4: Frequency stability plot for crystal used in rescueME EPIRB1 – Unit 002 Rakon Serial №MI5757 (PCB1) 5

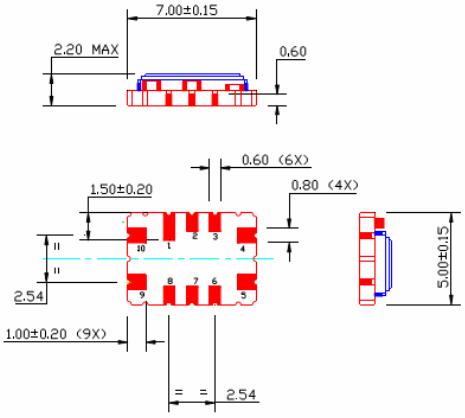
Figure 5: Frequency stability plot for crystal used in rescueME EPIRB1 – Unit 006 Rakon Serial №MI5758 (PCB5) 6

rakon

Oscillator Specification: E5344LF(T)
Issue 1, 24th February 2010

Designed for use in "Cospas-Sarsat" Emergency Beacon Applications

Outline in mm



Pad Connections
1. Do not connect
2. NC
3. Do not connect
4. GND
5. RF Output
6. NC
7. NC
8. Tri-State Control (Enable)*
9. Supply, +Vs
10. Do not connect

* leave unconnected if not required

Weight 170mg (typical)

Marking includes
Manufacturers ID (R)
Manufacturing identifier (X XX)
Pad 1 / Static sensitivity identifier (Δ)
Abbreviated P/N (5344)
Device date code (YW)
Serial number (nnnn)

R X XX
Δ 5344YWnnnn

Electrical

Nominal Frequency, Fo	12.688750 MHz
Supply Voltage, Vs	3.3 V ± 10%
Input Current	≤ 4.0 mA
Output:	
Type	HCMOS
Load	15 pF
Vol	≤ 0.1 * Vs
Voh	≥ 0.9 * Vs
Duty cycle @ 50%	45% to 55%
Rise time, 10% to 90%	≤ 8 ns
Fall time, 90% to 10%	≤ 8 ns
Frequency Stability	
Calibration Tolerance at 25°C	≤ ± 0.5 ppm
Temperature, -20°C to 55°C	≤ ± 0.2 ppm reference to $(F_{MAX}+F_{MIN})/2$
Supply Voltage, ± 10%	≤ ± 0.1 ppm reference to frequency at 3.3V
Load, ± 5pF	≤ ± 0.1 ppm reference to frequency at 15 pF
Allan Variance (tau=100ms)	≤ 1.0 ppb

Page 1 of 2

Figure 1: Reference Crystal Data Sheet - Sheet 1 of 2

rakon

Oscillator Specification: E5344LF(T)
Issue 1, 24th February 2010

Designed for use in "Cospas-Sarsat" Emergency Beacon Applications

Medium Term Stability specified and measured according to C/S T.001 & T.007* (averaged over 18 measurements in 15 minute period, and following 15 minute power up period)	
Mean Slope dF/dt	
Steady state conditions	≤ ± 0.7 ppb/min
During and 15 minutes after variable temperature conditions	≤ ± 1.7 ppb/min (dT/dt ≤ ± 5ºC / hour)
Residual dF from slope	≤ ± 2.0 ppb (dT/dt ≤ ± 5ºC / hour)
Test results shipped with each device, identified by date and serial number, retained for 10 years.	
Reflow soldering	≤ ± 1.0 ppm
Ageing, first year	≤ ± 1.0 ppm
Ageing, 10 years	≤ ± 3.0 ppm
Tri-State	
Pad 8 open circuit or ≥ 0.6Vs	Output Enabled
Pad 8 ≤ 0.2Vs	Output High impedance
In Tri-state mode, the output stage is disabled but the oscillator and compensation circuit are still active (current consumption 1mA typ.).	
Phase Noise (typical values)	-90 dBc/Hz at 10 Hz -115 dBc/Hz at 100 Hz -127 dBc/Hz at 1 kHz -137 dBc/Hz at 10 kHz -143 dBc/Hz at 100 kHz

Environmental

Operating Temperature Range	-20 to +55°C
Storage Temperature Range	-55 to +125°C
Vibration	IEC 60068-2-6 Test Fc, 10-60Hz 1.5mm displacement, at 98.1 ms^{-2}, 30 minutes in each of three mutually perpendicular axes at 1 octave per minute
Shock	IEC 60068-2-27 Test Ea, 980ms^{-2} acceleration for 6ms duration, 3 shocks in each direction along three mutually perpendicular axes
Soldering	SMD product suitable for Convection Reflow soldering. Peak temperature 260°C. Maximum time above 220°C, 60 secs.
Solderability	MIL-STD-202, Method 208, Category 3
RoHS	Parts are fully compliant with the European Union directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment. Note these RoHS compliant parts are suitable for assembly using both Lead-free solders and Tin/Lead solders.
Marking	Laser Marked
Packaging	Parts ordered with suffix 'T' are supplied on Tape-and-Reel.

* COSPAS SARSAT 406MHz distress beacons specification C/S T.001 (Issue 3, Revision 9, OCT 2008) and C/S T.007 (Issue 4, Revision 3, OCT 2008)

Page 2 of 2

Figure 2: Reference Crystal Data Sheet - Sheet 2 of 2

rakon

TEST REPORT

Report number	**2010-029**
Date of issue	**6th July 2010**
Product description	**Temperature Compensated Crystal Oscillator (TCXO)**
Product type	**CFPT-9000**
Rakon Part number	**E5344LFT**
Construction	**Surface mount; 7.0x5.0mm, 10-pad**
Output Frequency	**12.688750 MHz**
Class	**II**
Number tested	**20**

TESTS PERFORMED

Mid Term Frequency stability (MTS) over a 6-month period. Data is used to predict the performance of the device over a 5-year period.

Test sequence
1) Measure MTS over the temperature range -20°C to +55°C to -20°C
2) Store for 1-month at room temperature (+20°C ± 5°C)
3) Measure MTS over the temperature range -20°C to +55°C to -20°C
4) Store for 1-month at room temperature (+20°C ± 5°C)
5) Repeat testing & storage sequence for a further 4 months

Applicable standard: Cospas-Sarsat T.007, issue 4, revision 3

SUMMARY OF TEST RESULTS

TEST	PASS	FAIL	REMARKS
Residual (5-year prediction)	20	0	Minimum Cpk = 1.488
Minimum Static Slope (5-year prediction)	20	0	Minimum Cpk = 5.794
Maximum Static Slope (5-year prediction	20	0	Minimum Cpk = 12.391
Minimum Gradient Slope (5-year prediction)	20	0	Minimum Cpk = 1.431
Maximum Gradient Slope (5-year prediction	20	0	Minimum Cpk = 1.428
Aging Mid Frequency (5-year prediction)	20	0	Minimum Cpk = 28.250

CONCLUSIONS

The conclusion reached following the analysis of the data contained within this report indicates that the failure rate for this product after 5-years operation will be less than 3000 ppm.

Testing conducted by: Ian Payne
Report prepared by: David Lowrie
Report approved by: David R Woodall

Rakon UK Limited
T +44(0)1522 883 500, F +44(0)1522 883 535, Email: info@rakon.co.uk
Dowsett House, Sadler Road, Lincoln, LN6 3RS, England
Registered Office: Mitre House, 160 Aldersgate Street, London EC1A 4DD
Registered Number: 05128090
www.rakon.com

Figure 3: Rakon Long term Stability declaration

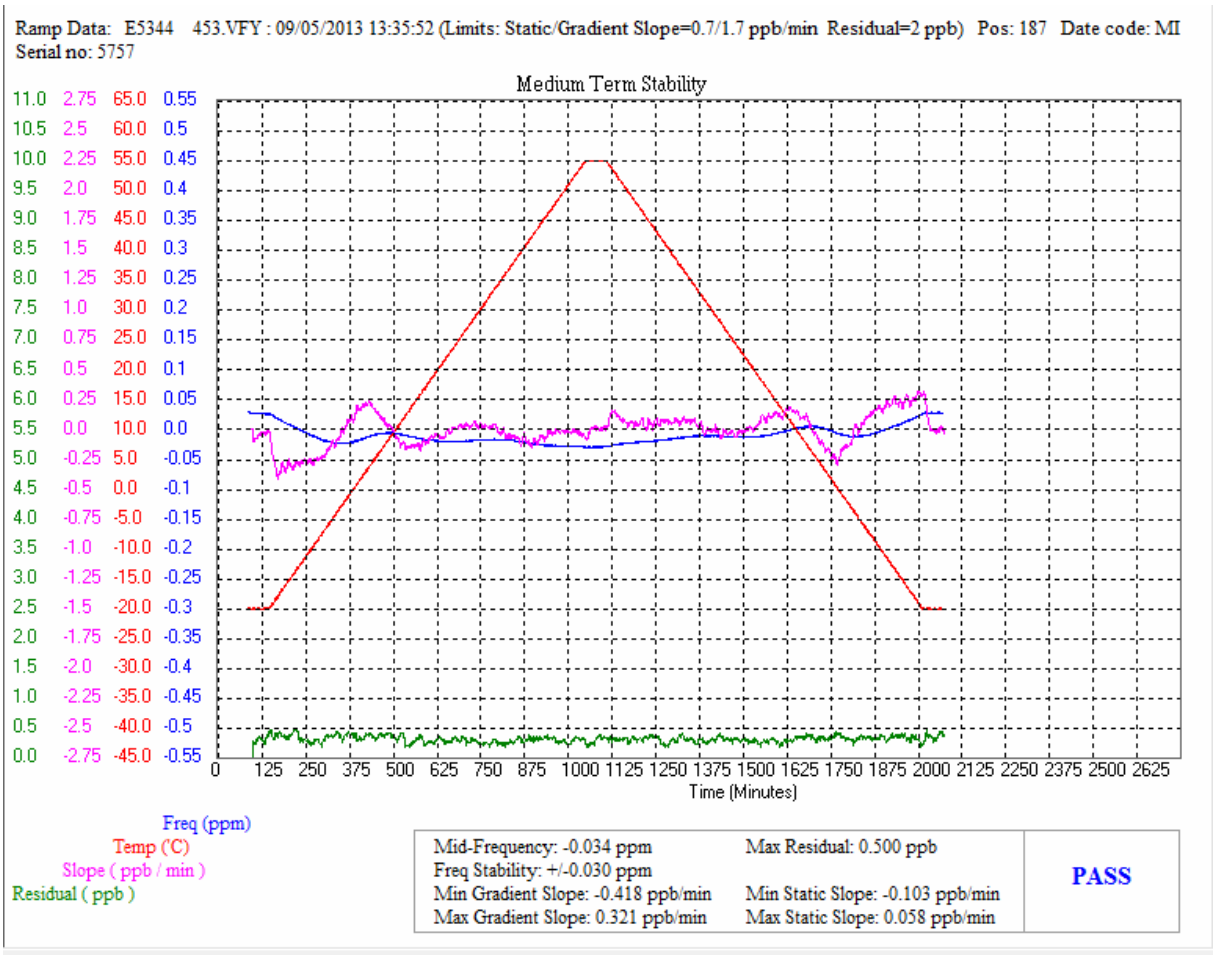


Figure 4: Frequency stability plot for crystal used in rescueME EPIRB1 – Unit 002 Rakon Serial №MI5757 (PCB1)

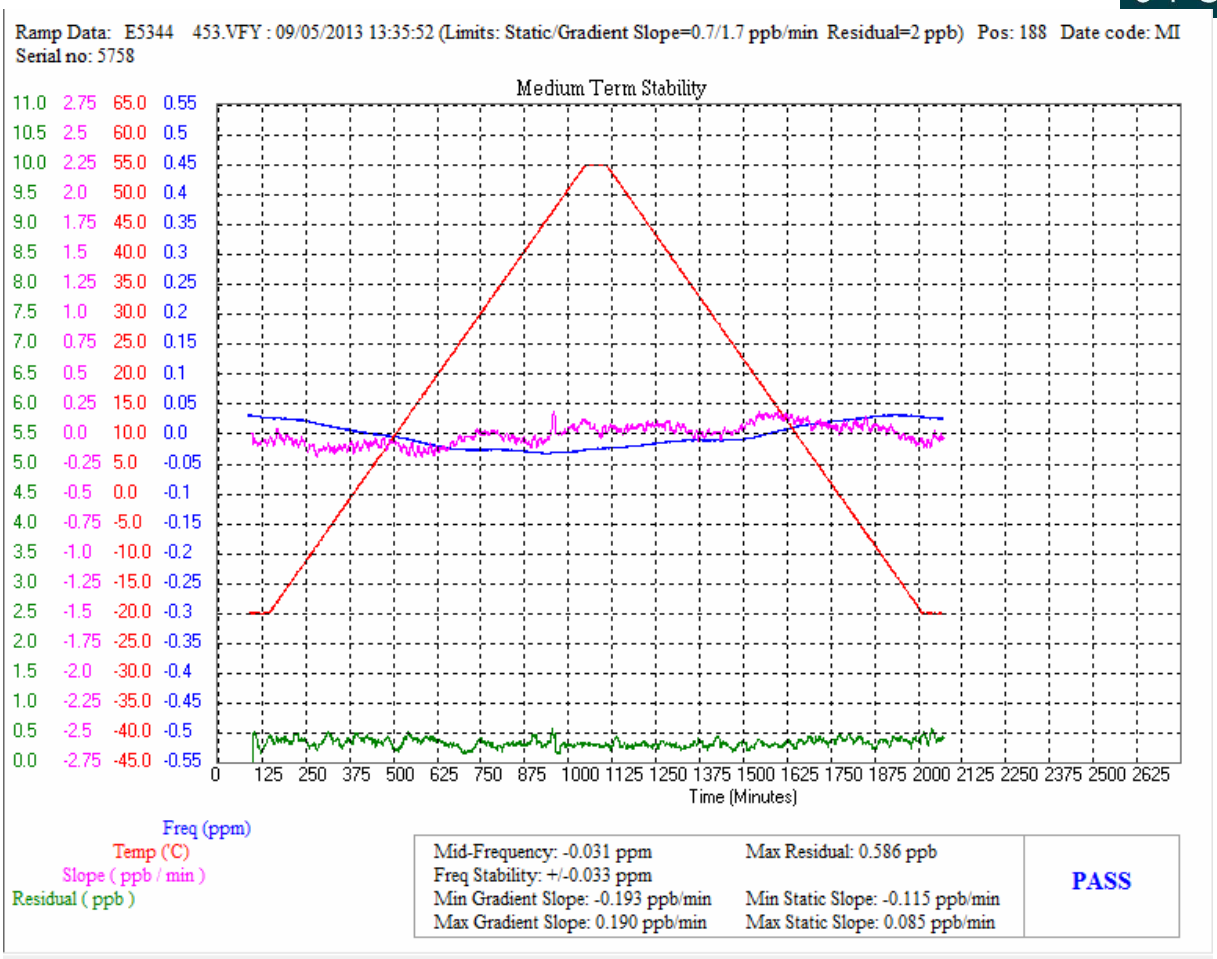


Figure 5: Frequency stability plot for crystal used in rescueME EPIRB1 – Unit 006 Rakon Serial №MI5758 (PCB5)

Compliance Statement

T.007; 5.j Compliance statements

The following statements justify that the design of the rescueME EPIRB1 meets the following criteria.

i. provides protection against continuous transmission (see section A.3.4),

406MHz Transmit Time Out

The precise timing control of a 406MHz transmission is performed by the micro controller, IC4, which controls the application of PA supply voltage. To ensure that a transmission can last no longer than 45 seconds, due to a fault; when the PA supply voltage is switched on, C42 is charged through R25. The time constant of this network is much shorter that the 45seconds limit. This charging voltage is compared to the input threshold of TR3A. When the threshold has been exceeded TR3A switches on, turning TR3B off, this in turn switches TR4 off thus removing the supply voltage from the PA and ending any further transmission.

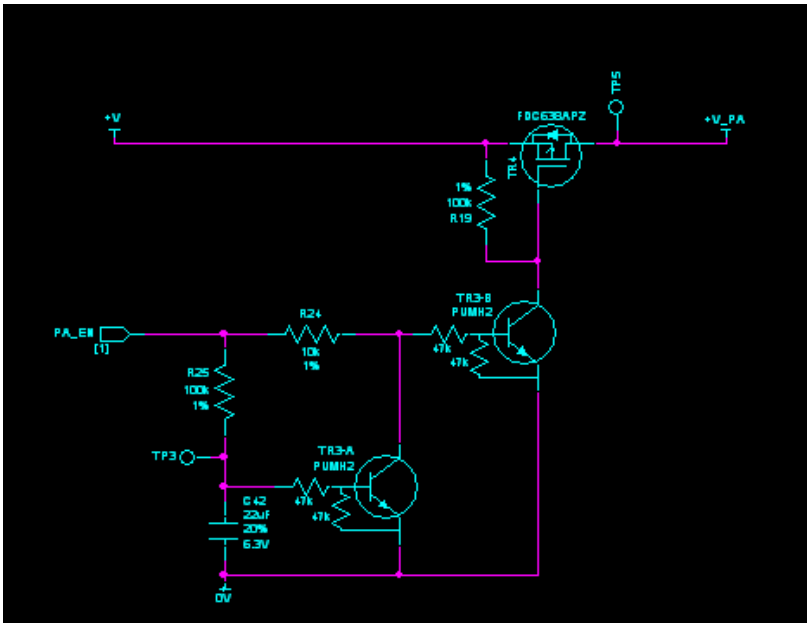


Figure 1: TX Timeout circuitry

ii. meets the frequency stability requirements over 5 years (see section A.3.5),

Statements from Rakon Limited providing evidence of five year stability for the TCXO can be found in Annex 1 of this section.

iii. provides protection from repetitive self-test mode transmissions

a. Beacon Self Test

The self-test function of the PLB is implemented in the following sequence of in-line steps; there is no looping or repetition of any step:

- The 121.5MHz homing beacon is started, the modulation is monitored and after three sweeps of the modulation frequency the beacon is turned off.
- The 406MHz message transmitter is activated and monitored; after one test message has been transmitted the transmitter is turned off.
- The strobe LED light is activated and after one flash it is turned off.
- The indicator LEDs are flashed to indicate pass / fail status.
- The PLB then enters a shutdown mode in which it switches off power from the battery to all parts of the circuit except the micro. It is not possible to start another self-test if the test switch is held down.

To prevent inadvertent lockup of the test mode, during the self-test procedure the switch is continuously monitored by sampling its condition every 10 milliseconds by interrupt under the control of a hardware timer. The operation of the hardware timer and the operational software are continually monitored for integrity by the use of a hardware watchdog timer.

In summary, it is not possible to perform repeated self-tests unless by deliberate action on the part of the user to re-initiate the test.

b. GNSS Receiver Self Test

The GNSS self-test is limited to checking operation of the internal GPS receiver only; there are no test transmissions of either 121.5MHz or 406MHz systems.

The test involves turning on the internal GPS receiver and waiting for a position fix to be obtained, once this condition is met then the PLB will report the status by use of the LEDs and then switch off. At the time that the GPS receiver is turned on a timer is also started, this timer is implemented by counting interrupts generated from a hardware timer which in turn is monitored by the system watchdog. This timer will run for 5 minutes or be stopped by a position fix being obtained, whichever occurs first. If the timer completes its run then the PLB will report a failure by the use of the LEDs. It is not possible to repeat the test or perform any other function if the switch is held down.

In summary the GNSS self-test mode is limited to a maximum duration of 5 minutes and cannot be repeated unless a deliberate action is taken to reinitiate the test.

iv. Self test contains only default position

During the self test, the transmission is coded with the default position data listed in T.007 Annex D. The GPS receiver is not activated during a self test.

No test transmission is transmitted during a a GPS receiver test.

v. Protection against transmitting erroneous position data

The navigation information provided by the GPS receiver is checked to ensure a 2D position is available and that the HDOP value is less than 50, before the position is added to the transmitted message. Otherwise the default values are inserted. (With the quoted accuracy of the Quectel L70 GPS receiver and an HDOP of 50 this equates to a position error of approximately 125m)

Annex 1: Rakon statement on MTS of five year period

rakon

TEST REPORT

Report number	**2010-029**
Date of issue	**6th July 2010**
Product description	**Temperature Compensated Crystal Oscillator (TCXO)**
Product type	**CFPT-9000**
Rakon Part number	**E5344LFT**
Construction	**Surface mount; 7.0x5.0mm, 10-pad**
Output Frequency	**12.688750 MHz**
Class	**II**
Number tested	**20**

TESTS PERFORMED

Mid Term Frequency stability (MTS) over a 6-month period. Data is used to predict the performance of the device over a 5-year period.

Test sequence

1) Measure MTS over the temperature range -20°C to +55°C to -20°C
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3) Measure MTS over the temperature range -20°C to +55°C to -20°C
4) Store for 1-month at room temperature (+20°C ± 5°C)
5) Repeat testing & storage sequence for a further 4 months

Applicable standard: Cospas-Sarsat T.007, issue 4, revision 3

SUMMARY OF TEST RESULTS

TEST	PASS	FAIL	REMARKS
Residual (5-year prediction)	20	0	Minimum Cpk = 1.488
Minimum Static Slope (5-year prediction)	20	0	Minimum Cpk = 5.794
Maximum Static Slope (5-year prediction	20	0	Minimum Cpk = 12.391
Minimum Gradient Slope (5-year prediction)	20	0	Minimum Cpk = 1.431
Maximum Gradient Slope (5-year prediction	20	0	Minimum Cpk = 1.428
Aging Mid Frequency (5-year prediction)	20	0	Minimum Cpk = 28.250

CONCLUSIONS

The conclusion reached following the analysis of the data contained within this report indicates that the failure rate for this product after 5-years operation will be less than 3000 ppm.

Testing conducted by: Ian Payne
Report prepared by: David Lowrie
Report approved by: David R Woodall

Rakon UK Limited
T +44(0)1522 883 500, F +44(0)1522 883 535, Email: info@rakon.co.uk
Dowsett House, Sadler Road, Lincoln, LN6 3RS, England
Registered Office: Mitre House, 160 Aldersgate Street, London EC1A 4DD
Registered Number: 05128090
www.rakon.com

rakon

MEDIUM TERM FREQUENCY STABILITY (MTS) - 5-YEAR PREDICTION				
Device: E5344LFT	Frequency: 12.688750 MHz	Class: II	Package: SM (7x5.0mm),10-pad	Date: 06-July-2010

RESIDUAL (ppb)

Serial Number / Time (Days)	1	30	60	90	150	180	Slope	Intercept	Predicted Residual after 5 years
1	1.07	1.04	0.61	0.45	0.53	0.55	-0.268	1.138	0.267
3	1.06	1.53	1.07	1.00	1.01	1.10	-0.024	1.166	1.089
7	0.64	0.64	0.63	0.62	0.65	0.62	-0.005	0.641	0.626
9	0.38	0.41	0.21	0.31	0.54	0.67	0.063	0.318	0.525
11	0.43	0.43	0.21	0.39	0.56	0.60	0.038	0.376	0.499
13	0.59	0.70	0.61	0.80	0.82	0.77	0.089	0.573	0.861
17	1.34	1.36	1.38	0.56	0.89	1.39	-0.140	1.379	0.922
19	0.59	0.53	0.48	0.53	0.52	0.54	-0.030	0.580	0.483
21	1.62	1.36	0.73	1.13	0.89	0.99	-0.319	1.632	0.595
27	1.27	1.21	0.80	0.98	1.24	1.66	0.018	1.165	1.223
29	0.72	0.80	0.62	0.86	0.83	0.74	0.028	0.717	0.807
31	0.73	0.91	0.64	0.62	0.74	0.93	0.017	0.735	0.789
33	0.89	0.95	0.82	0.96	1.00	1.45	0.123	0.814	1.215
37	0.57	0.59	0.29	1.09	0.82	0.76	0.113	0.505	0.873
44	0.63	0.60	0.55	0.68	0.74	0.74	0.041	0.592	0.723
46	0.90	0.95	0.89	0.85	0.82	0.87	-0.026	0.922	0.837
52	0.43	0.39	0.47	0.38	0.48	0.67	0.051	0.388	0.554
54	0.77	0.76	0.68	0.78	0.82	0.73	-0.002	0.760	0.753
56	0.53	0.53	0.35	0.49	0.63	0.56	0.009	0.500	0.530
60	0.92	0.77	0.65	0.65	0.63	0.97	-0.073	0.882	0.645

Maximum	1.223	
Minimum	0.267	
Mean	0.741	
Standard Deviation	0.249	
Upper Spec. Limit	3.000	
	2 Sigma (95% Conf.)	3 Sigma (99% Conf.)
Calc. Max. value	1.239	1.488
Cpk (Upper)	n/a	3.023

rakon

MEDIUM TERM FREQUENCY STABILITY (MTS) - 5-YEAR PREDICTION				
Device: E5344LFT	Frequency: 12.688750 MHz	Class: II	Package: SM (7x5.0mm),10-pad	Date: 06-July-2010

MINIMUM STATIC SLOPE (ppb/min)

Serial Number / Time (Days)	1	30	60	90	150	180	Slope	Intercept	Predicted Minimum Static Slope after 5 years
1	-0.03	-0.01	-0.01	-0.01	-0.03	-0.03	0.002	-0.024	-0.016
3	-0.11	-0.10	-0.13	-0.12	-0.14	-0.13	-0.011	-0.104	-0.140
7	-0.17	-0.15	-0.25	-0.17	-0.15	-0.16	0.000	-0.176	-0.174
9	-0.08	-0.08	-0.09	-0.07	-0.08	-0.08	0.001	-0.081	-0.079
11	-0.15	-0.14	-0.14	-0.14	-0.13	-0.14	0.006	-0.150	-0.130
13	-0.08	-0.08	-0.08	-0.07	-0.08	-0.07	0.003	-0.081	-0.072
17	-0.19	-0.13	-0.01	-0.01	-0.02	-0.03	0.082	-0.197	0.070
19	-0.08	-0.11	-0.14	-0.10	-0.09	-0.09	-0.007	-0.090	-0.114
21	-0.11	-0.12	-0.08	-0.08	-0.09	-0.08	0.014	-0.115	-0.071
27	-0.08	-0.08	-0.03	-0.05	-0.04	-0.07	0.014	-0.081	-0.036
29	-0.05	-0.05	-0.11	-0.06	-0.07	-0.08	-0.013	-0.049	-0.091
31	-0.08	-0.09	-0.08	-0.08	-0.07	-0.09	0.000	-0.082	-0.081
33	-0.02	-0.06	-0.09	-0.02	-0.05	-0.08	-0.018	-0.024	-0.083
37	-0.10	-0.09	-0.13	-0.10	-0.10	-0.11	-0.004	-0.099	-0.111
44	-0.05	-0.06	-0.05	-0.05	-0.06	-0.06	-0.003	-0.050	-0.060
46	-0.08	-0.09	-0.07	-0.07	-0.07	-0.07	0.005	-0.084	-0.066
52	-0.06	-0.10	-0.12	-0.11	-0.12	-0.11	-0.025	-0.062	-0.145
54	-0.06	-0.08	-0.11	-0.07	-0.08	-0.10	-0.013	-0.062	-0.105
56	-0.08	-0.11	-0.09	-0.11	-0.11	-0.11	-0.013	-0.081	-0.123
60	-0.04	-0.06	-0.07	-0.08	-0.06	-0.07	-0.014	-0.042	-0.086

Maximum	0.070	
Minimum	-0.174	
Mean	-0.086	
Standard Deviation	0.053	
Upper Spec. Limit	1.000	
Lower Spec. Limit	-1.000	
	2 Sigma (95% Conf.)	Sigma (99% Conf.)
Calc. Max. value	0.020	0.072
Calc. Min. value	-0.191	-0.243
Cpk (Upper)	n/a	6.880
Cpk (Lower)	n/a	5.794

rakon

MEDIUM TERM FREQUENCY STABILITY (MTS) - 5-YEAR PREDICTION				
Device: E5344LFT	Frequency: 12.688750 MHz	Class: II	Package: SM (7x5.0mm),10-pad	Date: 06-July-2010

MAXIMUM STATIC SLOPE (ppb/min)

Serial Number / Time (Days)	1	30	60	90	150	180	Slope	Intercept	Predicted Maximum Static Slope after 5 years
1	0.10	0.08	0.19	0.08	0.12	0.09	0.005	0.103	0.118
3	0.12	0.06	0.11	0.07	0.06	0.10	-0.017	0.114	0.059
7	0.05	0.06	0.05	0.06	0.05	0.07	0.004	0.050	0.064
9	0.04	0.05	0.02	0.02	0.05	0.07	0.004	0.035	0.048
11	0.08	0.08	0.05	0.07	0.07	0.11	0.001	0.074	0.079
13	0.06	0.04	0.05	0.08	0.05	0.08	0.004	0.053	0.067
17	0.23	0.21	0.14	0.13	0.11	0.10	-0.057	0.245	0.059
19	0.06	0.09	0.03	0.17	0.05	0.06	0.007	0.066	0.088
21	0.08	0.10	0.06	0.09	0.07	0.08	-0.002	0.084	0.076
27	0.12	0.07	0.07	0.10	0.16	0.12	0.004	0.100	0.113
29	0.09	0.07	0.05	0.08	0.09	0.08	-0.004	0.083	0.070
31	0.06	0.06	0.05	0.05	0.06	0.11	0.008	0.052	0.078
33	0.11	0.07	0.12	0.12	0.13	0.12	0.008	0.099	0.125
37	0.07	0.07	0.04	0.11	0.10	0.08	0.009	0.063	0.094
44	0.01	0.04	0.02	0.03	0.02	0.05	0.010	0.012	0.046
46	0.06	0.05	0.05	0.08	0.05	0.06	0.000	0.058	0.059
52	0.05	0.05	0.08	0.07	0.05	0.08	0.009	0.049	0.078
54	0.05	0.07	0.03	0.06	0.05	0.09	0.007	0.048	0.069
56	0.04	0.05	0.03	0.04	0.06	0.04	0.002	0.039	0.047
60	0.17	0.14	0.19	0.13	0.15	0.11	-0.016	0.174	0.121
							Maximum		**0.125**
							Minimum		**0.046**
							Mean		**0.078**
							Standard Deviation		**0.025**
							Upper Spec. Limit		**1.000**
							Lower Spec. Limit		**-1.000**

	2 Sigma (95% Conf.)	3 Sigma (99% Conf.)
Calc. Max. value	**0.127**	0.152
Calc. Min. value	**0.028**	0.003
Cpk (Upper)	n/a	12.391
Cpk (Lower)	n/a	14.484

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MEDIUM TERM FREQUENCY STABILITY (MTS) - 5-YEAR PREDICTION				
Device: E5344LFT	Frequency: 12.688750 MHz	Class: II	Package: SM (7x5.0mm),10-pad	Date: 06-July-2010

MINIMUM GRADIENT SLOPE (ppb/min)

Serial Number / Time (Days)	1	30	60	90	150	180	Slope	Intercept	Predicted Minimum Gradient Slope after 5 years
1	-1.01	-0.91	-0.90	-0.92	-0.93	-0.95	0.035	-0.993	-0.879
3	-1.01	-1.00	-1.07	-1.00	-0.99	-1.04	-0.005	-1.011	-1.026
7	-0.73	-0.72	-0.78	-0.72	-0.72	-0.74	-0.002	-0.732	-0.738
9	-0.52	-0.50	-0.49	-0.50	-0.50	-0.49	0.012	-0.519	-0.481
11	-0.20	-0.17	-0.22	-0.18	-0.20	-0.22	-0.004	-0.192	-0.205
13	-0.33	-0.28	-0.25	-0.25	-0.24	-0.23	0.043	-0.333	-0.192
17	-0.49	-0.45	-0.60	-0.45	-0.52	-0.55	-0.019	-0.480	-0.541
19	-0.69	-0.66	-0.64	-0.65	-0.66	-0.65	0.018	-0.687	-0.629
21	-1.18	-1.16	-1.16	-1.15	-1.17	-1.19	0.003	-1.173	-1.163
27	-0.97	-0.94	-0.83	-0.90	-1.05	-1.09	-0.023	-0.927	-1.001
29	-0.99	-0.95	-0.94	-0.96	-0.95	-0.94	0.020	-0.987	-0.922
31	-0.83	-0.83	-0.83	-0.84	-0.75	-0.79	0.019	-0.843	-0.780
33	-1.01	-1.03	-0.98	-1.00	-1.03	-1.05	-0.007	-1.005	-1.029
37	-0.26	-0.26	-0.25	-0.26	-0.27	-0.34	-0.016	-0.248	-0.300
44	-0.47	-0.49	-0.54	-0.58	-0.53	-0.55	-0.038	-0.465	-0.590
46	-0.84	-0.83	-0.79	-0.76	-0.71	-0.75	0.048	-0.857	-0.701
52	-0.42	-0.42	-0.44	-0.46	-0.49	-0.48	-0.028	-0.407	-0.497
54	-0.97	-1.00	-1.01	-1.01	-1.03	-1.04	-0.028	-0.966	-1.055
56	-0.35	-0.33	-0.35	-0.37	-0.35	-0.39	-0.010	-0.340	-0.373
60	-0.35	-0.27	-0.29	-0.27	-0.25	-0.30	0.034	-0.342	-0.233

Maximum		-0.192
Minimum		-1.163
Mean		-0.667
Standard Deviation		0.311
Upper Spec. Limit		2.000
Lower Spec. Limit		-2.000
	2 Sigma (95% Conf.)	3 Sigma (99% Conf.)
Calc. Max. value	-0.046	0.265
Calc. Min. value	-1.288	-1.599
Cpk (Upper)	n/a	2.862
Cpk (Lower)	n/a	1.431

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MEDIUM TERM FREQUENCY STABILITY (MTS) - 5-YEAR PREDICTION

Device:	Frequency:	Class:	Package:	Date:
E5344LFT	12.688750 MHz	II	SM (7x5.0mm),10-pad	06-July-2010

MAXIMUM GRADIENT SLOPE (ppb/min)

Serial Number / Time (Days)	1	30	60	90	150	180	Slope	Intercept	Predicted Maximum Gradient Slope after 5 years
1	1.26	0.92	0.97	1.00	1.02	1.02	-0.111	1.210	0.848
3	1.06	1.04	1.01	1.04	1.06	1.05	-0.006	1.052	1.034
7	0.55	0.57	0.60	0.63	0.66	0.68	0.052	0.532	0.700
9	0.45	0.44	0.45	0.44	0.43	0.43	-0.008	0.452	0.427
11	0.19	0.19	0.18	0.19	0.20	0.20	0.003	0.187	0.197
13	0.19	0.19	0.17	0.17	0.17	0.18	-0.008	0.191	0.165
17	1.05	1.06	0.39	0.48	0.52	0.54	-0.270	1.108	0.227
19	0.69	0.68	0.69	0.74	0.69	0.70	0.007	0.687	0.710
21	1.14	1.17	1.16	1.15	1.16	1.18	0.012	1.141	1.179
27	0.69	0.67	0.49	0.45	0.45	0.49	-0.109	0.715	0.360
29	0.99	0.95	0.92	0.92	0.93	0.93	-0.030	0.988	0.891
31	0.86	0.85	0.86	0.91	0.78	0.77	-0.024	0.878	0.798
33	1.08	1.05	1.06	1.06	1.07	1.09	-0.002	1.071	1.066
37	0.28	0.26	0.23	0.24	0.24	0.24	-0.020	0.280	0.216
44	0.44	0.46	0.49	0.51	0.52	0.55	0.042	0.427	0.564
46	0.97	0.87	0.60	0.62	0.62	0.65	-0.166	0.988	0.449
52	0.38	0.39	0.38	0.40	0.41	0.42	0.014	0.374	0.420
54	0.95	0.95	0.95	0.95	0.96	0.97	0.005	0.946	0.964
56	0.33	0.33	0.37	0.37	0.39	0.40	0.029	0.319	0.412
60	0.25	0.26	0.23	0.22	0.22	0.21	-0.017	0.258	0.204

Maximum	1.179
Minimum	0.165
Mean	0.592
Standard Deviation	0.329
Upper Spec. Limit	2.000
Lower Spec. Limit	-2.000

	2 Sigma (95% Conf.)	3 Sigma (99% Conf.)
Calc. Max. value	1.249	1.578
Calc. Min. value	-0.066	-0.395
Cpk (Upper)	n/a	1.428
Cpk (Lower)	n/a	2.628

rakon

MEDIUM TERM FREQUENCY STABILITY (MTS) - 5-YEAR PREDICTION

Device:	Frequency:	Class:	Package:	Date:
E5344LFT	12.688750 MHz	II	SM (7x5.0mm),10-pad	06-July-2010

AGING - MID FREQUENCY (ppm)

Serial Number / Time (Days)	1	30	60	90	150	180	Slope	Intercept	Predicted Aging-Mid Frequency after 5 years
1	-0.19	-0.20	-0.18	-0.19	-0.20	-0.20	-0.003	-0.189	-0.198
3	-0.09	-0.09	-0.12	-0.14	-0.15	-0.16	-0.029	-0.078	-0.173
7	0.07	0.06	0.01	0.00	-0.01	-0.01	-0.037	0.080	-0.042
9	-0.03	-0.03	-0.12	-0.14	-0.15	-0.15	-0.057	-0.011	-0.198
11	0.00	-0.04	-0.07	-0.08	-0.09	-0.09	-0.041	0.005	-0.130
13	0.00	0.01	-0.06	-0.07	-0.08	-0.08	-0.038	0.015	-0.110
17	-0.06	0.06	-0.12	-0.15	-0.15	-0.15	-0.048	-0.018	-0.174
19	0.02	0.00	-0.05	-0.06	-0.07	-0.07	-0.042	0.029	-0.108
21	0.03	0.03	-0.03	-0.04	-0.05	-0.05	-0.038	0.042	-0.081
27	-0.03	-0.03	-0.09	-0.10	-0.12	-0.12	-0.041	-0.015	-0.150
29	0.03	-0.03	-0.03	-0.04	-0.04	-0.04	-0.032	0.027	-0.078
31	-0.04	-0.05	-0.11	-0.12	-0.05	-0.05	-0.015	-0.047	-0.094
33	-0.05	-0.05	-0.17	-0.18	-0.19	-0.20	-0.069	-0.028	-0.255
37	0.08	0.06	0.01	0.00	-0.01	-0.01	-0.042	0.089	-0.048
44	-0.03	-0.04	-0.10	-0.11	-0.12	-0.13	-0.044	-0.017	-0.161
46	0.07	0.07	0.01	0.00	-0.02	-0.02	-0.041	0.085	-0.050
52	0.00	-0.01	-0.07	-0.09	-0.09	-0.10	-0.045	0.013	-0.135
54	0.03	0.03	-0.02	-0.03	-0.03	-0.03	-0.029	0.039	-0.057
56	0.00	-0.01	-0.05	-0.06	-0.06	-0.06	-0.029	0.007	-0.088
60	0.03	0.03	-0.02	-0.03	-0.04	-0.04	-0.033	0.041	-0.066

Maximum	-0.042
Minimum	-0.255
Mean	-0.120
Standard Deviation	0.060
Upper Spec. Limit	4.925
Lower Spec. Limit	-12.315

	2 Sigma (95% Conf.)	3 Sigma (99% Conf.)
Calc. Max. value	0.000	0.059
Calc. Min. value	-0.239	-0.298
Cpk (Upper)	n/a	28.250
Cpk (Lower)	n/a	68.296

Information that confirms that the nominal output impedance of the beacon power amplifier is 50 Ohms

Antenna Matching Analysis

The output impedance of the 406MHz power amplifier on the units with the test connector is nominally 50Ohms. The antenna VSWR has been established by modelling.

(The output impedance of the 121.5MHz power amplifier is 50Ohms.)

The antenna return loss resulting from the computer model is shown below.

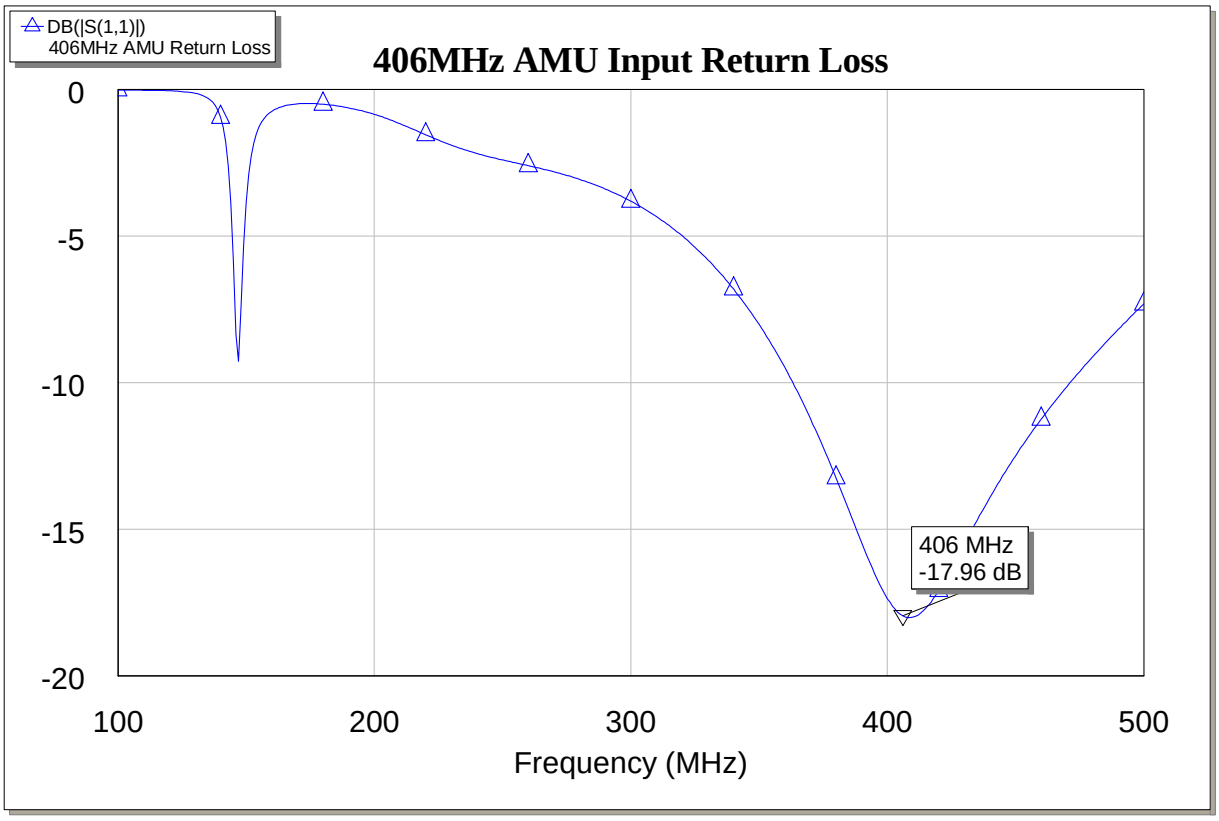


Figure 1: Antenna return loss including matching components.

The measured return loss at 406.040MHz is indicated as -17.96dB.

This gives a calculated VSWR of 1.29:1.

Quality Assurance Plan (Annex L)

ANNEX L

BEACON QUALITY ASSURANCE PLAN

We, manufacturer of Cospas-Sarsat 406 MHz beacons (Manufacturer name and address)

Ocean Signal Ltd

Unit 4, Ocivan Way, Margate, CT9 4NN, United Kingdom

confirm that ALL PRODUCTION UNITS of the following beacon model(s),

EPIRB1 (part no. 900S-01448 issue 01.00, software no. 500S-01449 issue 01.00)

EPIRB1 (AUS/NZ Only) (part no. 900S-01528, software no. 500S-01449 issue 01.00)

(model, hardware part number, firmware part number, software version or part number)

will meet the Cospas-Sarsat specification and technical requirements in a similar manner to the units subjected for type approval testing. To this effect all production units will be subjected to following tests at ambient temperature:

- Digital message
- Bit rate
- Rise and fall times of the modulation waveform
- Modulation Index (positive/negative)
- Output power
- Frequency stability (short, medium)*

Note*: Beacon manufacturer shall provide technical data on the beacon frequency generation to demonstrate that the frequency stability tests at ambient temperature are sufficient for ensuring that each production beacon will exhibit frequency stability performance similar to the beacon submitted for type approval over the complete operating temperature range. If such assurance of adequate performance over the complete operating temperature range cannot be deduced from the technical data provided and the frequency stability test results at ambient temperature, a thermal gradient test shall be performed on all production units.

- Other tests:

All TCXO devices that are received from the TCXO manufacturer (RAKON) for assembly of production beacons will be inspected to ensure that the RAKON factory test data sheets associated with those TCXO parts demonstrate the following performance, when tested against temperature gradient test in accordance with C/S 001:

- *Maximum value of residual frequency variation would not exceed 2.0 ppb;*
- *Maximum and minimum values of MTS-slope, at steady temperature conditions, would not exceed ± 0.7 ppb/min;*
- *Maximum and minimum values of MTS-slope, at changing temperature conditions, would not exceed ± 1.7 ppb/min.*

GNSS receiver test

We confirm that the above tests will be performed as appropriate to ensure that the complete beacon satisfies Cospas-Sarsat requirements, as demonstrated by the test unit submitted for type approval.

We agree to keep the test result sheet of every production beacon for inspection by Cospas - Sarsat, if required, for a minimum of 10 years.

We confirm that Cospas-Sarsat representative(s) have the right to visit our premises to witness the production and testing process of the above-mentioned beacons. We understand that the cost related to the visit is to be borne by Cospas-Sarsat.

We also accept that, upon official notification of Cospas-Sarsat, we may be required to re-submit a unit of the above beacon model selected by Cospas-Sarsat for the testing of parameters chosen at Cospas-Sarsat discretion at a Cospas-Sarsat accepted test facility selected by the Cospas-Sarsat. We understand that the cost of the testing shall be borne by Cospas- Sarsat.

We understand that the Cospas-Sarsat Type Approval Certificate is subject to revocation should the beacon type for which it was issued, or its modifications, cease to meet the Cospas -Sarsat specifications, or Cospas-Sarsat has determined that this quality assurance plan is not implemented in a satisfactory manner.

Dated::6th June 2014 Signed:.David Sheekey, Product and Approvals Manager.....

(Name, Position and Signature of Beacon Manufacturer Representative)

GNSS receiver operating cycle and battery current
Internal GNSS receiver and antenna data sheets

T.007: 5.n GNSS Operation

The EPIRB1 uses a Quectel L70 GPS module to determine its latitude and longitude position.

Every time the EPIRB is switched from off to on the GPS is powered up in a cold start mode to acquire the position.

Once a position has been acquired by the receiver then the position is stored for transmission and the GPS module is turned off to conserve battery capacity. The GPS receiver is powered for a maximum period of five minutes if no position has been received.

The GPS position is considered valid if it was obtain less than four hours from the current time. After the position is four hours old a new GPS position must be obtained or the EPIRB will revert to the default position data message until a new valid GPS position is received.

The GPS is cycled on and off as follows if no GPS fix is obtained.

Elapsed Time	**ON (maximum)**	**Cycle Period**
0 hour up to 1st hour	5mins	10mins
2nd hour	5mins	15mins
3rd hour up to 7th hour	5mins	30mins
8th hour onwards	5mins	2hr

Once the GPS has a fix and has encoded the location into the beacon message. The following applies.

The GPS is cycled on and off as follows after a GPS fix is obtained.

Elapsed Time	**ON (maximum)**	**Cycle Period**
0 up to 6th hour	5mins	30mins
7th hour onwards	5mins	2hr

Without a GPS Signal present the GPS module operates in Acquisition mode which draws the maximum current. With a GPS signal received the unit will move from Acquisition to Tracking mode, once a valid position is achieved (when the GPS HDOP value is less than 50) the GPS module is switched into Standby mode (off). In addition to checking the HDOP value the EPIRB microprocessor also parses the format of the received messages from the GNSS receiver and verifies that the checksum sent from the GNSS receiver is correct before using the data. So the accuracy and format of the data is checked. The content is verified by validating

the checksum preventing corrupted data from being encoded into the burst data.

To determine "worst case conditions" for the beacon operating life testing we must consider both operating the GPS with and without a GPS signal present in the first 6 hours as after this time the timings are identical for with and without a GPS signal present. (When a signal is present we must assume that the fix is obtained in the last instant before the GPS ON {acquisition time is terminated by the beacon processor})*.

Without a GPS signal present the GPS will be ON (Acquisition) for 90 minutes and in OFF (standby) for 270 minutes.

With a GPS signal present the GPS will be ON* (Acquisition) for 60 minutes and in OFF (standby) for 300minutes.

For current consumption figures see sections c. and d.

Quectel L70

Compact GPS Module
Ultra Low Consumption
Fast Positioning

GPS

EASY™ Technology

Ultra Low Power Consumption

Tiny Size

Super Tracking Sensitivity –163dBm

Extended Temperature Range -40°C to +85°C

Anti-Jamming

RoHS Compliant

GPS+QZSS

L70, a SMD type module, brings the high performance of MTK positioning engine to the industrial applications with compact profile, ultra low power consumption and fast positioning capability.

Combining advanced AGPS called EASY™ (Embedded Assist System) and proven AlwaysLocate™ technology, L70 achieves the highest performance and fully meets the industrial standard. EASY™ technology ensures L70 can calculate and predict orbits automatically using the ephemeris data (up to 3 days) stored in internal flash memory, so L70 can fix position quickly even at indoor signal levels with low power consumption. With AlwaysLocate™ technology, L70 can adaptively adjust the on/off time to achieve balance between positioning accuracy and power consumption according to the environmental and motion conditions.

Additional feature of embedded logger function called LOCUS allows L70 to log position information to internal flash memory at default intervals of 15 seconds and provide typically more than 16 hours log capacity without adding cost.

With its tiny design, high precision and sensitivity, L70 is perfectly suitable for a broad range of M2M applications such as portable device, automotive, personal tracking, security and industrial PDA.

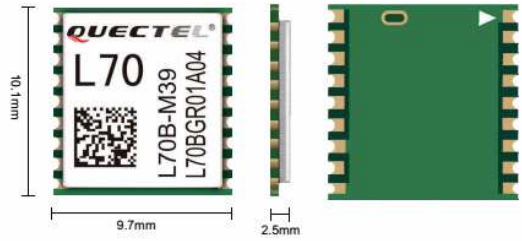
Key benefits

- Extremely compact size: 10.1 x 9.7 x 2.5mm
- EASY™, advanced AGPS technology without external memory
- Ultra low power consumption in tracking mode, 12mA
- AlwaysLocate™, an intelligent controller of periodic mode
- LOCUS, innate logger solution with no need of host and external flash
- High sensitivity -163dBm@Tracking, -148dBm@Acquisition
- 66 acquisition channels, 22 tracking channels
- Support QZSS
- Support DGPS, SBAS(WAAS/EGNOS/MSAS/GAGAN)
- Anti-Jamming, Multi-tone Active Interference Canceller

QUECTEL
Wireless Module Expert

Quectel L70

Compact GPS Module
Ultra Low Consumption
Fast Positioning



General Specifications

L1 Band Receiver (1575.42MHz)	Channel	22 (Tracking) / 66 (Acquisition)
	C/A code	
	SBAS	WAAS, EGNOS MSAS,GAGAN
Horizontal Position Accuracy	Autonomous	<2.5 m CEP
Velocity Accuracy	Without aid	<0.1m/s
Acceleration Accuracy	Without aid	0.1 m/s²
Timing Accuracy	1PPS out	10ns
Reacquisition Time		<1s
TTFF@-130dBm with EASY™	Cold Start	<15s
	Warm Start	<5s
	Hot start	<1s
TTFF@-130dBm without EASY™	Cold Start	<35s
	Warm Start	<30s
	Hot Start	<1s
Sensitivity	Acquisition	-148dBm
	Tracking	-163dBm
	Reacquisition	-160dBm
Environmental	Operating Temperature	-40℃ to 85℃
	Storage Temperature	-45℃ to 125℃
Dynamic Performance	Maximum Altitude	Max.18000m
	Maximum Velocity	Max.515m/s
	Maximum Acceleration	4G
Dimensions	10.1 x 9.7 x 2.5mm	
Weight	Approx. 0.6g	

Power Management

Power supply	2.8V ~ 4.3V
Power Acquisition	18mA
Power Tracking	12mA
Power Saving	Typ.1.4mA @AlwaysLocate™(Note1)
	7uA @Backup Mode
	200uA@Standby Mode
	Periodic Mode
Antenna Type	Active or Passive
Antenna Power	External or Internal VCC_RF

Note1: Measured in GPS system under outdoor static mode.

Serial Interfaces

Serial Interfaces	UART: Adjustable 4800~115200 bps Default: 9600bps
Update rate	1Hz (Default), up to10Hz
I/O Voltage	2.7V ~ 2.9V
Protocols	NMEA 0183 PMTK

QUECTEL
Wireless Module Expert

HQ address: Room 501, Building 13, No.99
Tianzhou Road, Shanghai, China 200233
Tel: +86 21 51086236
Fax: +86 21 54453668
Email: info@quectel.com

Components for GPS Receivers

Dielectric Microwave Antenna Elements

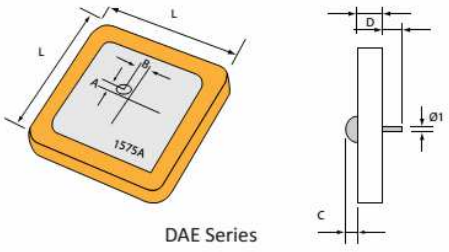
RoHS compliant 2002/95/EC

Standard Specifications

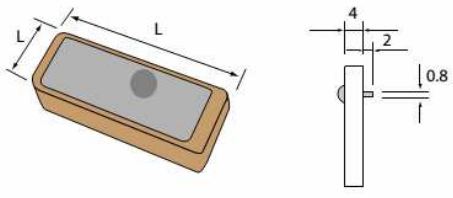
Part Number	Dimensions (mm)							Nominal Centre Frequency (MHz)	-10dB Bandwidth (MHz)	VSWR at CF (Max) (RL at CF dB)	Polarization Model	Impedence (Ω)
	L	H	A	B	C	D	Φ1					
DAE1575R3530A	35x35	3.0	4.5	0	0.6	3.2	0.8	1575.42 ±1.023	15	1.5 (-14.0)	RHCP	50
DAE1575R2540A	25x25	4.0	2.5	0	0.6	3.3	0.8	1575.42 ±1.023	15	1.5 (-14.0)	RHCP	50
DAE1575R2540B	25x25	4.0	1.7	1.9	0.6	3.3	0.8	1575.42 ±1.023	15	1.5 (-14.0)	RHCP	50
DAE1575R2520A	25x25	2.0	2.5	0	0.6	3.0	0.8	1575.42 ±1.023	8.0	1.5 (-14.0)	RHCP	50
DAE1575R2520B	25x25	2.0	1.7	1.9	0.6	3.0	0.8	1575.42 ±1.023	8.0	1.5 (-14.0)	RHCP	50
DAE1575R2040A	20x20	4.0	1.6	0	0.6	3.2	0.8	1575.42 ±1.023	6.0	1.5 (-14.0)	RHCP	50
DAE1575R2020A	20x20	2.0	1.6	0	0.6	3.2	0.8	1575.42 ±1.023	5.0	1.5 (-14.0)	RHCP	50
DAE1575R1840A	18x18	4.0	1.1	0	0.6	1.9	0.8	1575.42 ±1.023	5.0	1.5 (-14.0)	RHCP	50
DAE1575R1840B	18x18	4.0	1.4	0	0.6	3.3	0.8	1575.42 ±1.023	5.0	1.5 (-14.0)	RHCP	50
DAE1575R1820A	18x18	2.0	1.1	0	0.6	1.9	0.8	1575.42 ±1.023	5.0	1.5 (-14.0)	RHCP	50
DAE1575R1820B	18x18	2.0	1.4	0	0.6	3.3	0.8	1575.42 ±1.023	5.0	1.5 (-14.0)	RHCP	50
DAE1575R1540A	15x15	4.0	1.1	0	0.6	1.9	0.8	1575.42 ±1.023	5.0	1.5 (-14.0)	RHCP	50
DAE1575R1520A	15x15	2.0	1.1	0	0.6	1.9	0.8	1575.42 ±1.023	4.0	1.5 (-14.0)	RHCP	50
DAE1575R1340A	13x13	4.0	0.9	0	0.6	1.9	0.8	1575.42 ±1.023	4.0	1.5 (-14.0)	RHCP	50
DAE1575R1340B	13x13	4.0	0.5	0.5	0.6	1.9	0.8	1575.42 ±1.023	4.0	1.5 (-14.0)	RHCP	50
DAE1375R1240A	12x12	4.0	0.7	0	0.6	1.7	0.8	1575.42 ±1.023	4.0	1.5 (-14.0)	RHCP	50
DAE868R2540F	25x25	4.0	1.9	0	0.6	3.3	0.8	868	2.0	1.5 (-14.0)	RHCP	50
DAE925R6150A	61.5x61.5	5.0	7.6	0	0.6	3.2	0.8	925	8.0	1.5 (-14.0)	RHCP	50
DAE925R6170A	61.5x61.5	7.0	7.6	0	0.6	3.2	0.8	925	8.0	1.5 (-14.0)	RHCP	50
DAE953R2540G	25x25	4.0	1.9	0	0.6	3.3	0.8	953	3.0	1.5 (-14.0)	RHCP	50
DAE11762540H	25x25	4.0	2.5	0	0.6	1.9	0.8	1175	10.0	1.5 (-14.0)	RHCP	50
DAE2338L2040C	20x20	4.0	1.6	0	0.6	3.2	0.8	2338	56.0	1.5 (-14.0)	RHCP	50
DAE2338L2540B	25x25	4.0	1.7	1.9	0.6	3.3	0.8	2338	48.0	1.5 (-14.0)	RHCP	50
DAE2338L2540D	25x25	4.0	1.9	0	0.6	3.3	0.8	2338	56.0	1.5 (-14.0)	RHCP	50
DAE2338L2550B	25x25	5.0	1.7	1.9	0.6	3.3	0.8	2338	46.0	1.5 (-14.0)	RHCP	50
DAE2338L2860B	28x28	6.0	3.0	3.0	0.6	3.2	0.8	2338	120.0	1.5 (-14.0)	RHCP	50
DAE2338L2860C	28x28	6.0	5.5	0	0.6	3.3	0.8	2338	220.0	1.5 (-14.0)	RHCP	50
DAE5810R1330C	13x13	3.0	0.9	1.2	0.6	3.3	0.8	5810	400.0	1.5 (-14.0)	RHCP	50

Part Number	Dimensions							Nominal Freq (MHz)	Real Part at CF Ω	Imaginary Part at CF (Ω)	Polarization Model	Impedence (Ω)
	L	H	A	B	C	D	Φ1					
DAL1574X2006A	20x6	4.0				2.0	0.8	1575.42	80 ±10	-45 ±10	Linear	50
DAL1575X1606A	16x6	4.0				2.0	0.8	1575.42	70 ±10	-85 ±10	Linear	50

Dimensions (mm)



DAE Series



DAL1575X

© AEL Crystals Ltd Tel: +44 (0) 1293 789200 Fax: +44 (0) 1293 789490 email: sales@aelcrystals.co.uk

Results of test which conducted by the manufacturer:
Position Data Encoding: Tables F-C.1, F-C.2, F-C.3
Beacon Coding Software: Tables F-D.1 , F-D.2 and F-D.3

Document Type		
	Issue	01.02
Approved:	Date Last Amended	15/5/2014
	Last Amended by	S Nolan
Document Title	EPIRB 1 Navigation System, Beacon and Message Coding Test Results	

Message Coding Protocols
Navigation System Test Results
Beacon Coding Software Results

Product EPIRB 1
Software Issue 00:04
Date 15 May 2014

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

BEACON CODING SOFTWARE RESULTS

Table F-D.1 of C/S T.007 (Issue 4 – Rev. 8 October 2013)

Examples of User Protocol Beacon Messages

Protocol	Operational Message (in hexadecimal including bit	Self-Test Message (in hexadecimal including bit
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)	N/A	N/A
User Test	N/A	N/A

Table F-D.2 of C/S T.007 (Issue 4 – Rev. 8 October 2013)

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 (if applicable, in hexadecimal including bit and frame synchronisation bits)
	Location 'A'	Location 'B'		Location 'A'
Standard Location: EPIRB with MMSI	FFFE2F8C92F423F0334032603 9779B469B07	FFFE2F8C92F423F03340210CC 8F786A4D7C0	FFFED08C92F423F07FDFFB2BF037 83E0F66C	N/A
Standard Location: EPIRB with Serial Number	FFFE2F8C96F9C063334030D92 6779B469B07	FFFE2F8C96F9C063334023B5D 7F786A4D7C0	FFFED08C96F9C0637FDFF992 EF3783E0F66C	N/A
Standard Location: ELT with 24-bit Address	N/A	N/A	N/A	N/A
Standard Location: ELT with Aircraft Operator Designator	N/A	N/A	N/A	N/A
Standard Location: PLB with Serial Number	N/A	N/A	N/A	N/A
Standard Location: Test	FFFE2F8C9EF9C06333403176D CF79B469B07	FFFE2F8C9EF9C0633340221A2 D7786A4D7C0	FFFED08C9EF9C0637FDFF83D15 B783E0F66C	N/A
National Location: EPIRB	FFFE2F8C9A0018CCD601675A6 FF704240E3D	FFFE2F8C9A0018CCD001148B8 83795340DF8	FFFED08C9A0018DFC0FF02AD44 779F3C0010	N/A
National Location: ELT	N/A	N/A	N/A	N/A
National Location: PLB	N/A	N/A	N/A	N/A
National Location: Test	FFFE2F8C9F00C04CD6016385A 0770424F311	FFFE2F8C9F00C04CD00110544 7B79534F0D4	FFFED08C9F00C05FC0FF06728BF 783E0F66C	N/A
RLS Location: (ELT, EPIRB or PLB)	N/A	N/A	N/A	N/A

Table F-D.3 of C/S T.007 (Issue 4 – Rev. 8 October 2013)

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	N/A	N/A	N/A	N/A
Maritime Protocol with Radio Call Sign	FFFE2FCC9526F6F06B268F9F32266A01650C	FFFE2FCC9526F6F06B268F9F322668011965	FFFED0CC9526F6F06B268F9F322FE0FF0146	N/A
Radio Call Sign	FFFE2FCC9DBDBC1A55468ED9F6266A01650C	FFFE2FCC9DBDBC1A55468ED9F62668011965	FFFED0CC9DBDBC1A55468ED9F62FE0FF0146	N/A
Serial User-Location: Float-Free EPIRB	N/A	N/A	N/A	N/A
Serial User-Location: Non Float-Free EPIRB	N/A	N/A	N/A	N/A
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 &	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
User- Location: Test	FFFE2FCC9E00C05FC0FF010D87666A01650C	FFFE2FCC9E00C05FC0FF010D876668011965	FFFED0CC9E00C05FC0FF010D877783E0F66C	N/A

Analysis of Beacon Messages

In all the tests involving a location protocol the following positions where used:

- Location 'A' = **51°21' 51" N, 1° 23' 25" E**
- Location 'B' = **51°16' 38" N, 1° 4' 50" E**
- Distance between locations = **23.6 Km**

The 'Bit Analysis' tables are taken from the '406 MHz Decode Program Version 3.2' available on the Cospas-Sarsat website, and using the '30 Hexadecimal ID' input format for Location.

Standard Location EPIRB with MMSI Location A

Burst-13505.htm

Full Hex FFFE2F8C92F423F03340326039779B469B07

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 201 - **Albania**	27-36	0011001001
Type of location protocol: Standard Location - EPIRB (MMSI)	37-40	0010
MID: 999999	41-60	11110100001000111111
Specific Beacon: 0	61-64	0000
Latitude Sign: North	65	0
Latitude Degrees: 51	66-72	0110011
Latitude Minutes: 15	73-74	01
Longitude Sign: East	75	0
Longitude Degrees: 1	76-83	00000001
Longitude Minutes: 30	84-85	10
BCH 1 Encoded:	86-106	01001100000011100101
BCH 1 Calculated:	N/A	01001100000011100101
Fixed bits (1101): Pass	107-110	1101
Position Data: Encoded Position Data Source From Internal Navigation Device	111	1
Aux Device: 121.5 MHz homer	112	1
Latitude Offset Sign: +	113	1
Latitude Offset Minutes: 6	114-118	00110
Latitude Offset Seconds: 52	119-122	1101
Longitude Offset Sign: -	123	0
Longitude Offset Minutes: 6	124-128	00110
Longitude Offset Seconds: 36	129-132	1001
BCH 2 Encoded:	133-144	101100000111
BCH 2 Calculated:	N/A	101100000111
Composite Latitude: 51.364444444444445 Degrees North	N/A	Composite Longitude: 1.39 Degrees East
15 Hex ID:	N/A	1925E847E0FFBFF

Lat: 51°21’52” N

Long: 1°23’24” E

Standard Location EPIRB with MMSI Location B

Burst-13507.htm

Full Hex FFFE2F8C92F423F03340210CC8F786A4D7C0

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 201 - **Albania**	27-36	0011001001
Type of location protocol: Standard Location - EPIRB (MMSI)	37-40	0010
MID: 999999	41-60	11110100001000111111
Specific Beacon: 0	61-64	0000
Latitude Sign: North	65	0
Latitude Degrees: 51	66-72	0110011
Latitude Minutes: 15	73-74	01
Longitude Sign: East	75	0
Longitude Degrees: 1	76-83	00000001
Longitude Minutes: 0	84-85	00
BCH 1 Encoded:	86-106	00100001100100100011
BCH 1 Calculated:	N/A	00100001100100100011
Fixed bits (1101): Pass	107-110	1101
Position Data: Encoded Position Data Source From Internal Navigation Device	111	1
Aux Device: 121.5 MHz homer	112	1
Latitude Offset Sign: +	113	1
Latitude Offset Minutes: 1	114-118	00001
Latitude Offset Seconds: 40	119-122	1010
Longitude Offset Sign: +	123	1
Longitude Offset Minutes: 4	124-128	00100
Longitude Offset Seconds: 52	129-132	1101
BCH 2 Encoded:	133-144	011111000000
BCH 2 Calculated:	N/A	011111000000
Composite Latitude: 51.27777777777778 Degrees North	N/A	Composite Longitude: 1.0811111111111111 Degrees East
15 Hex ID:	N/A	1925E847E0FFBFF

Lat: 51°16’40” N

Long: 1°4’52” E

Standard Location EPIRB with MMSI Self-Test

Burst-13508.htm

Full Hex FFFED08C92F423F07FDFFB2BF03783E0F66C

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 201 - **Albania**	27-36	0011001001
Type of location protocol: Standard Location - EPIRB (MMSI)	37-40	0010
MID: 999999	41-60	11110100001000111111
Specific Beacon: 0	61-64	0000
Latitude Sign: default	65	0
Latitude Degrees: default	66-72	1111111
Latitude Minutes: default	73-74	11
Longitude Sign: default	75	0
Longitude Degrees: default	76-83	11111111
Longitude Minutes: default	84-85	11
BCH 1 Encoded:	86-106	01100101011111000000
BCH 1 Calculated:	N/A	01100101011111000000
Fixed bits (1101): Pass	107-110	1101
Position Data: Encoded Position Data Source From Internal Navigation Device	111	1
Aux Device: 121.5 MHz homer	112	1
Latitude Offset Sign: default	113	1
Latitude Offset Minutes: default	114-118	00000
Latitude Offset Seconds: default	119-122	1111
Longitude Offset Sign: default	123	1
Longitude Offset Minutes: default	124-128	00000
Longitude Offset Seconds: default	129-132	1111
BCH 2 Encoded:	133-144	011001101100
BCH 2 Calculated:	N/A	011001101100
Composite Latitude: default	N/A	Composite Longitude: default
15 Hex ID:	N/A	1925E847E0FFBFF

Lat: Default

Long: Default

Standard Location EPIRB with Serial Number Location A

Burst-13509.htm

Full Hex FFFE2F8C96F9C063334030D926779B469B07

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 201 - **Albania**	27-36	0011001001
Type of location protocol: Standard Location - EPIRB (Serial)	37-40	0110
Cospas-Sarsat #: 999	41-50	1111100111
Serial Number: 99	51-64	00000001100011
Latitude Sign: North	65	0
Latitude Degrees: 51	66-72	0110011
Latitude Minutes: 15	73-74	01
Longitude Sign: East	75	0
Longitude Degrees: 1	76-83	00000001
Longitude Minutes: 30	84-85	10
BCH 1 Encoded:	86-106	00011011 0010010011001
BCH 1 Calculated:	N/A	00011011 0010010011001
Fixed bits (1101): Pass	107-110	1101
Position Data: Encoded Position Data Source From Internal Navigation Device	111	1
Aux Device: 121.5 MHz homer	112	1
Latitude Offset Sign: +	113	1
Latitude Offset Minutes: 6	114-118	00110
Latitude Offset Seconds: 52	119-122	1101
Longitude Offset Sign: -	123	0
Longitude Offset Minutes: 6	124-128	00110
Longitude Offset Seconds: 36	129-132	1001
BCH 2 Encoded:	133-144	101100000111
BCH 2 Calculated:	N/A	101100000111
Composite Latitude: 51.364444444444445 Degrees North	N/A	Composite Longitude: 1.39 Degrees East
15 Hex ID:	N/A	192DF380C6FFBFF

Lat: 51°21’52” N

Long: 1°23’24” E

Standard Location EPIRB with Serial Number Location B

Burst-13510.htm

Full Hex FFFE2F8C96F9C063334023B5D7F786A4D7C0

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 201 - **Albania**	27-36	0011001001
Type of location protocol: Standard Location - EPIRB (Serial)	37-40	0110
Cospas-Sarsat #: 999	41-50	1111100111
Serial Number: 99	51-64	00000001100011
Latitude Sign: North	65	0
Latitude Degrees: 51	66-72	0110011
Latitude Minutes: 15	73-74	01
Longitude Sign: East	75	0
Longitude Degrees: 1	76-83	00000001
Longitude Minutes: 0	84-85	00
BCH 1 Encoded:	86-106	01110110101110101111
BCH 1 Calculated:	N/A	01110110101110101111
Fixed bits (1101): Pass	107-110	1101
Position Data: Encoded Position Data Source From Internal Navigation Device	111	1
Aux Device: 121.5 MHz homer	112	1
Latitude Offset Sign: +	113	1
Latitude Offset Minutes: 1	114-118	00001
Latitude Offset Seconds: 40	119-122	1010
Longitude Offset Sign: +	123	1
Longitude Offset Minutes: 4	124-128	00100
Longitude Offset Seconds: 52	129-132	1101
BCH 2 Encoded:	133-144	011111000000
BCH 2 Calculated:	N/A	011111000000
Composite Latitude: 51.27777777777778 Degrees North	N/A	Composite Longitude: 1.0811111111111111 Degrees East
15 Hex ID:	N/A	192DF380C6FFBFF

Lat: 51°16’40” N

Long: 1°4’52” E

Standard Location EPIRB with Serial Number Self Test

Burst-13516.htm

Full Hex FFFED08C96F9C0637FDFF992EF3783E0F66C

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 201 - **Albania**	27-36	0011001001
Type of location protocol: Standard Location - EPIRB (Serial)	37-40	0110
Cospas-Sarsat #: 999	41-50	1111100111
Serial Number: 99	51-64	00000001100011
Latitude Sign: default	65	0
Latitude Degrees: default	66-72	1111111
Latitude Minutes: default	73-74	11
Longitude Sign: default	75	0
Longitude Degrees: default	76-83	11111111
Longitude Minutes: default	84-85	11
BCH 1 Encoded:	86-106	00110010010111011100
BCH 1 Calculated:	N/A	00110010010111011100
Fixed bits (1101): Pass	107-110	1101
Position Data: Encoded Position Data Source From Internal Navigation Device	111	1
Aux Device: 121.5 MHz homer	112	1
Latitude Offset Sign: default	113	1
Latitude Offset Minutes: default	114-118	00000
Latitude Offset Seconds: default	119-122	1111
Longitude Offset Sign: default	123	1
Longitude Offset Minutes: default	124-128	00000
Longitude Offset Seconds: default	129-132	1111
BCH 2 Encoded:	133-144	011001101100
BCH 2 Calculated:	N/A	011001101100
Composite Latitude: default	N/A	Composite Longitude: default
15 Hex ID:	N/A	192DF380C6FFBFF

Lat: Default

Long: Default

Standard Location Test EPIRB Location A

Burst-13513.htm

Full Hex FFFE2F8C9EF9C06333403176DCF79B469B07

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 201 - **Albania**	27-36	0011001001
Type of location protocol: Standard Location - Test	37-40	1110
Test Protocol: Test Protocol (No Decode information in bits 41 to 64)	41-64	11111001110000000110011
Latitude Sign: North	65	0
Latitude Degrees: 51	66-72	0110011
Latitude Minutes: 15	73-74	01
Longitude Sign: East	75	0
Longitude Degrees: 1	76-83	00000001
Longitude Minutes: 30	84-85	10
BCH 1 Encoded:	86-106	00101110110110111 0011
BCH 1 Calculated:	N/A	00101110110110111 0011
Fixed bits (1101): Pass	107-110	1101
Position Data: Encoded Position Data Source From Internal Navigation Device	111	1
Aux Device: 121.5 MHz homer	112	1
Latitude Offset Sign: +	113	1
Latitude Offset Minutes: 6	114-118	00110
Latitude Offset Seconds: 52	119-122	1101
Longitude Offset Sign: -	123	0
Longitude Offset Minutes: 6	124-128	00110
Longitude Offset Seconds: 36	129-132	1001
BCH 2 Encoded:	133-144	101100000111
BCH 2 Calculated:	N/A	101100000111
Composite Latitude: 51.364444444444445 Degrees North	N/A	Composite Longitude: 1.39 Degrees East
15 Hex ID:	N/A	193DF380C6FFBFF

Lat: 51°21’52” N

Long: 1°23’24” E

Standard Location Test EPIRB Location B

Burst-13514.htm

Full Hex FFFE2F8C9EF9C0633340221A2D7786A4D7C0

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 201 - **Albania**	27-36	0011001001
Type of location protocol: Standard Location - Test	37-40	1110
Test Protocol: Test Protocol (No Decode information in bits 41 to 64)	41-64	111110011100000001100011
Latitude Sign: North	65	0
Latitude Degrees: 51	66-72	0110011
Latitude Minutes: 15	73-74	01
Longitude Sign: East	75	0
Longitude Degrees: 1	76-83	00000001
Longitude Minutes: 0	84-85	00
BCH 1 Encoded:	86-106	01000011010001011010 1
BCH 1 Calculated:	N/A	01000011010001011010 1
Fixed bits (1101): Pass	107-110	1101
Position Data: Encoded Position Data Source From Internal Navigation Device	111	1
Aux Device: 121.5 MHz homer	112	1
Latitude Offset Sign: +	113	1
Latitude Offset Minutes: 1	114-118	00001
Latitude Offset Seconds: 40	119-122	1010
Longitude Offset Sign: +	123	1
Longitude Offset Minutes: 4	124-128	00100
Longitude Offset Seconds: 52	129-132	1101
BCH 2 Encoded:	133-144	011111000000
BCH 2 Calculated:	N/A	011111000000
Composite Latitude: 51.27777777777778 Degrees North	N/A	Composite Longitude: 1.0811111111111111 Degrees East
15 Hex ID:	N/A	193DF380C6FFBFF

Lat: 51°16’40” N

Long: 1°4’52” E

Standard Location Test EPIRB Self Test

Burst-13515.htm

Full Hex FFFED08C9EF9C0637FDFF83D15B783E0F66C

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 201 - **Albania**	27-36	0011001001
Type of location protocol: Standard Location - Test	37-40	1110
Test Protocol: Test Protocol (No Decode information in bits 41 to 64)	41-64	11111001110000000110011
Latitude Sign: default	65	0
Latitude Degrees: default	66-72	1111111
Latitude Minutes: default	73-74	11
Longitude Sign: default	75	0
Longitude Degrees: default	76-83	11111111
Longitude Minutes: default	84-85	11
BCH 1 Encoded:	86-106	00000111101000101010
BCH 1 Calculated:	N/A	00000111101000101010
Fixed bits (1101): Pass	107-110	1101
Position Data: Encoded Position Data Source From Internal Navigation Device	111	1
Aux Device: 121.5 MHz homer	112	1
Latitude Offset Sign: default	113	1
Latitude Offset Minutes: default	114-118	00000
Latitude Offset Seconds: default	119-122	1111
Longitude Offset Sign: default	123	1
Longitude Offset Minutes: default	124-128	00000
Longitude Offset Seconds: default	129-132	1111
BCH 2 Encoded:	133-144	011001101100
BCH 2 Calculated:	N/A	011001101100
Composite Latitude: default	N/A	Composite Longitude: default
15 Hex ID:	N/A	193DF380C6FFBFF

Lat: Default

Long: Default

National Location EPIRB Location A

Burst-13517.htm

Full Hex FFFE2F8C9A0018CCD601675A6FF704240E3D

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 201 - **Albania**	27-36	0011001001
Type of location protocol: National Location - EPIRB	37-40	1010
Serial Number: 99	41-58	000000000001100011
Latitude Flag: North	59	0
Latitude (Degrees): 51	60-66	0110011
Latitude (Minutes): 22	67-71	01011
Longitude Flag: East	72	0
Longitude (Degrees): 1	73-80	00000001
Longitude (Minutes): 24	81-85	01100
BCH 1 Encoded:	86-106	11101011010011011111
BCH 1 Calculated:	86-106	11101011010011011111
Fixed bits (110): Pass	107-109	110
Bits 113 - 132 provides offset data location	110	1
Position Data: Encoded Position Data Source From Internal Navigation Device	111	1
Aux Loc. Device: 121.5 MHz homer	112	1
Latitude Offset Sign: -	113	0
Latitude Offset Minutes: 0	114-115	00
Latitude Offset Seconds: 8	116-119	0010
Longitude Offset Sign: -	120	0
Longitude Offset Minutes: 0	121-122	00
Longitude Offset Seconds: 36	123-126	1001
Additional Id (Nat Use)	127-132	000000
BCH 2 Encoded:	133-144	111000111101
BCH 2 Calculated:	N/A	111000111101
Composite Latitude: 51.364444444444445 Degrees North	N/A	Composite Longitude: 1.39 Degrees East
15 Hex ID:	N/A	19340031BF81FE0

Lat: 51°21’52” N

Long: 1°23’24” E

National Location EPIRB Location B

Burst-13518.htm

Full Hex FFFE2F8C9A0018CCD001148B883795340DF8

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 201 - **Albania**	27-36	0011001001
Type of location protocol: National Location - EPIRB	37-40	1010
Serial Number: 99	41-58	000000000001100011
Latitude Flag: North	59	0
Latitude (Degrees): 51	60-66	0110011
Latitude (Minutes): 16	67-71	01000
Longitude Flag: East	72	0
Longitude (Degrees): 1	73-80	00000001
Longitude (Minutes): 4	81-85	00010
BCH 1 Encoded:	86-106	10010001011100010000
BCH 1 Calculated:	86-106	10010001011100010000
Fixed bits (110): Pass	107-109	110
Bits 113 - 132 provides offset data location	110	1
Position Data: Encoded Position Data Source From Internal Navigation Device	111	1
Aux Loc. Device: 121.5 MHz homer	112	1
Latitude Offset Sign: +	113	1
Latitude Offset Minutes: 0	114-115	00
Latitude Offset Seconds: 40	116-119	1010
Longitude Offset Sign: +	120	1
Longitude Offset Minutes: 0	121-122	00
Longitude Offset Seconds: 52	123-126	1101
Additional Id (Nat Use)	127-132	000000
BCH 2 Encoded:	133-144	110111111000
BCH 2 Calculated:	N/A	110111111000
Composite Latitude: 51.27777777777778 Degrees North	N/A	Composite Longitude: 1.0811111111111111 Degrees East
15 Hex ID:	N/A	19340031BF81FE0

Lat: 51°16’40” N

Long: 1°4’52” E

National Location EPIRB Self Test

Burst-13519.htm

Full Hex FFFED08C9A0018DFC0FF02AD44779F3C0010

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 201 - **Albania**	27-36	0011001001
Type of location protocol: National Location - EPIRB	37-40	1010
Serial Number: 99	41-58	000000000001100011
Latitude Flag: default	59	0
Latitude (Degrees): default	60-66	1111111
Latitude (Minutes): default	67-71	00000
Longitude Flag: default	72	0
Longitude (Degrees): default	73-80	11111111
Longitude (Minutes): default	81-85	00000
BCH 1 Encoded:	86-106	01010101101010010001
BCH 1 Calculated:	86-106	01010101101010010001
Fixed bits (110): Pass	107-109	110
Bits 113 - 132 provides offset data location	110	1
Position Data: Encoded Position Data Source From Internal Navigation Device	111	1
Aux Loc. Device: 121.5 MHz homer	112	1
Latitude Offset Sign: default	113	1
Latitude Offset Minutes: default	114-115	00
Latitude Offset Seconds: default	116-119	1111
Longitude Offset Sign: default	120	1
Longitude Offset Minutes: default	121-122	00
Longitude Offset Seconds: default	123-126	1111
Additional Id (Nat Use)	127-132	000000
BCH 2 Encoded:	133-144	000000010000
BCH 2 Calculated:	N/A	000000010000
Composite Latitude: default	N/A	Composite Longitude: default
15 Hex ID:	N/A	19340031BF81FE0

Lat: Default

Long: Default

National Location Test EPIRB Location A

Burst-13520.htm

Full Hex FFFE2F8C9F00C04CD6016385A0770424F311

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 201 - **Albania**	27-36	0011001001
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 769	41-58	000000001100000001
Latitude Flag: North	59	0
Latitude (Degrees): 51	60-66	0110011
Latitude (Minutes): 22	67-71	01011
Longitude Flag: East	72	0
Longitude (Degrees): 1	73-80	00000001
Longitude (Minutes): 24	81-85	01100
BCH 1 Encoded:	86-106	01110000101101000001
BCH 1 Calculated:	86-106	01110000101101000001
Fixed bits (110): Pass	107-109	110
Bits 113 - 132 provides offset data location	110	1
Position Data: Encoded Position Data Source From Internal Navigation Device	111	1
Aux Loc. Device: 121.5 MHz homer	112	1
Latitude Offset Sign: -	113	0
Latitude Offset Minutes: 0	114-115	00
Latitude Offset Seconds: 8	116-119	0010
Longitude Offset Sign: -	120	0
Longitude Offset Minutes: 0	121-122	00
Longitude Offset Seconds: 36	123-126	1001
Additional Id (Nat Use)	127-132	001111
BCH 2 Encoded:	133-144	001100010001
BCH 2 Calculated:	N/A	001100010001
Composite Latitude: 51.364444444444445 Degrees North	N/A	Composite Longitude: 1.39 Degrees East
15 Hex ID:	N/A	193E0180BF81FE0

Lat: 51°21’52” N

Long: 1°23’24” E

National Location Test EPIRB Location B

Burst-13521.htm

Full Hex FFFE2F8C9F00C04CD001105447B79534F0D4

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 201 - **Albania**	27-36	0011001001
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 769	41-58	000000001100000001
Latitude Flag: North	59	0
Latitude (Degrees): 51	60-66	0110011
Latitude (Minutes): 16	67-71	01000
Longitude Flag: East	72	0
Longitude (Degrees): 1	73-80	00000001
Longitude (Minutes): 4	81-85	00010
BCH 1 Encoded:	86-106	00001010100010011110
BCH 1 Calculated:	86-106	00001010100010011110
Fixed bits (110): Pass	107-109	110
Bits 113 - 132 provides offset data location	110	1
Position Data: Encoded Position Data Source From Internal Navigation Device	111	1
Aux Loc. Device: 121.5 MHz homer	112	1
Latitude Offset Sign: +	113	1
Latitude Offset Minutes: 0	114-115	00
Latitude Offset Seconds: 40	116-119	1010
Longitude Offset Sign: +	120	1
Longitude Offset Minutes: 0	121-122	00
Longitude Offset Seconds: 52	123-126	1101
Additional Id (Nat Use)	127-132	001111
BCH 2 Encoded:	133-144	000011010100
BCH 2 Calculated:	N/A	000011010100
Composite Latitude: 51.27777777777778 Degrees North	N/A	Composite Longitude: 1.0811111111111111 Degrees East
15 Hex ID:	N/A	193E0180BF81FE0

Lat: 51°16’40” N

Long: 1°4’52” E

National Location Test EPIRB Self Test

Burst-13522.htm

Full Hex FFFED08C9F00C05FC0FF06728BF783E0F66C

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 201 - **Albania**	27-36	0011001001
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 769	41-58	000000001100000001
Latitude Flag: default	59	0
Latitude (Degrees): default	60-66	1111111
Latitude (Minutes): default	67-71	00000
Longitude Flag: default	72	0
Longitude (Degrees): default	73-80	11111111
Longitude (Minutes): default	81-85	00000
BCH 1 Encoded:	86-106	11001110010100010111 1
BCH 1 Calculated:	86-106	11001110010100010111 1
Fixed bits (110): Pass	107-109	110
Bits 113 - 132 provides offset data location	110	1
Position Data: Encoded Position Data Source From Internal Navigation Device	111	1
Aux Loc. Device: 121.5 MHz homer	112	1
Latitude Offset Sign: +	113	1
Latitude Offset Minutes: 0	114-115	00
Latitude Offset Seconds: 4	116-119	0001
Longitude Offset Sign: +	120	1
Longitude Offset Minutes: 3	121-122	11
Longitude Offset Seconds: 32	123-126	1000
Additional Id (Nat Use)	127-132	001111
BCH 2 Encoded:	133-144	011001101100
BCH 2 Calculated:	N/A	011001101100
Composite Latitude: default	N/A	Composite Longitude: default
15 Hex ID:	N/A	193E0180BF81FE0

Lat: Default

Long: Default

User-Location Maritime Protocol with Radio Call Sign Location A

Burst-13523.htm

Hex FFFE2FCC9526F6F06B268F9F32266A01650C

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201 - **Albania**	27-36	0011001001
User type: Maritime User	37-39	010
Radio Call Sign (6 digits): XPA02	40-75	1001001101111011011110000011010110 01
Specific bcn: 0	76-81	001101
Spare	82-83	00
Aux radio device: 121.5 MHz	84-85	01
Encoded BCH 1:	86-106	11110011110011001000
Calculated BCH 1:	N/A	11110011110011001000
Encoded Position Data Source From Internal Navigation Device	107	1
North	108	0
Latitude (degrees): 51	109-115	0110011
Latitude (minutes): 20	116-119	0101
East	120	0
Longitude (degrees): 1	121-128	00000001
Longitude (minutes): 24	129-132	0110
Encoded BCH 2:	133-144	010100001100
Calculated BCH 2:	N/A	010100001100
15 Hex ID:	N/A	992A4DEDE0D64D1

Lat: 51°20’ N

Long: 1°24’ E

User-Location Maritime Protocol with Radio Call Sign Location B

Burst-13524.htm

Hex FFFE2FCC9526F6F06B268F9F322668011965

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201 - **Albania**	27-36	0011001001
User type: Maritime User	37-39	010
Radio Call Sign (6 digits): XPA02	40-75	1001001101111011011110000011010110 01
Specific bcn: 0	76-81	001101
Spare	82-83	00
Aux radio device: 121.5 MHz	84-85	01
Encoded BCH 1:	86-106	11110011111001100 1000
Calculated BCH 1:	N/A	11110011111001100 1000
Encoded Position Data Source From Internal Navigation Device	107	1
North	108	0
Latitude (degrees): 51	109-115	0110011
Latitude (minutes): 16	116-119	0100
East	120	0
Longitude (degrees): 1	121-128	00000001
Longitude (minutes): 4	129-132	0001
Encoded BCH 2:	133-144	100101100101
Calculated BCH 2:	N/A	100101100101
15 Hex ID:	N/A	992A4DEDE0D64D1

Lat: 51°16’ N

Long: 1° 4’ E

User-Location Maritime Protocol with Radio Call Sign Self Test

Burst-13525.htm

Hex FFFED0CC9526F6F06B268F9F322FE0FF0146

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201 - **Albania**	27-36	0011001001
User type: Maritime User	37-39	010
Radio Call Sign (6 digits): XPA02	40-75	1001001101111011011110000011010110 01
Specific bcn: 0	76-81	001101
Spare	82-83	00
Aux radio device: 121.5 MHz	84-85	01
Encoded BCH 1:	86-106	11110011111001100 1000
Calculated BCH 1:	N/A	11110011111001100 1000
Encoded Position Data Source From Internal Navigation Device	107	1
default	108	0
Latitude (degrees): default	109-115	1111111
Latitude (minutes): default	116-119	0000
default	120	0
Longitude (degrees): default	121-128	11111111
Longitude (minutes): default	129-132	0000
Encoded BCH 2:	133-144	000101000110
Calculated BCH 2:	N/A	000101000110
15 Hex ID:	N/A	992A4DEDE0D64D1

Lat: Default

Long: Default

User-Location Protocol with Radio Call Sign Location A

Burst-13526.htm

Hex FFFE2FCC9DBDBC1A55468ED9F6266A01650C

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201 - **Albania**	27-36	0011001001
User type: Radio Call Sign	37-39	110
Radio Call Sign Identification: XPA02	40-75	1101111011011110000011010010101010
Specific bcn: 0	76-81	001101
Spare	82-83	00
Aux radio device: 121.5 MHz	84-85	01
Encoded BCH 1:	86-106	11011011001111101 1000
Calculated BCH 1:	N/A	11011011001111101 1000
Encoded Position Data Source From Internal Navigation Device	107	1
North	108	0
Latitude (degrees): 51	109-115	0110011
Latitude (minutes): 20	116-119	0101
East	120	0
Longitude (degrees): 1	121-128	00000001
Longitude (minutes): 24	129-132	0110
Encoded BCH 2:	133-144	010100001100
Calculated BCH 2:	N/A	010100001100
15 Hex ID:	N/A	993B7B7834AA8D1

Lat: 51°20' N

Long: 1°24' E

User-Location Protocol with Radio Call Sign Location B

Burst-13527.htm

Hex FFFE2FCC9DBDBC1A55468ED9F62668011965

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201 - **Albania**	27-36	0011001001
User type: Radio Call Sign	37-39	110
Radio Call Sign Identification: XPA02	40-75	1101111011011110000011010010101010
Specific bcn: 0	76-81	001101
Spare	82-83	00
Aux radio device: 121.5 MHz	84-85	01
Encoded BCH 1:	86-106	11011011001111011000
Calculated BCH 1:	N/A	11011011001111011000
Encoded Position Data Source From Internal Navigation Device	107	1
North	108	0
Latitude (degrees): 51	109-115	0110011
Latitude (minutes): 16	116-119	0100
East	120	0
Longitude (degrees): 1	121-128	00000001
Longitude (minutes): 4	129-132	0001
Encoded BCH 2:	133-144	100101100101
Calculated BCH 2:	N/A	100101100101
15 Hex ID:	N/A	993B7B7834AA8D1

Lat: 51°16' N

Long: 1° 4' E

User-Location Protocol with Radio Call Sign Self Test

Burst-1328.htm

Hex FFFED0CC9DBDBC1A55468ED9F62FE0FF0146

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201 - **Albania**	27-36	0011001001
User type: Radio Call Sign	37-39	110
Radio Call Sign Identification: XPA02	40-75	1101111011011110000011010010101010
Specific bcn: 0	76-81	001101
Spare	82-83	00
Aux radio device: 121.5 MHz	84-85	01
Encoded BCH 1:	86-106	11011011001111011000
Calculated BCH 1:	N/A	11011011001111011000
Encoded Position Data Source From Internal Navigation Device	107	1
default	108	0
Latitude (degrees): default	109-115	1111111
Latitude (minutes): default	116-119	0000
default	120	0
Longitude (degrees): default	121-128	11111111
Longitude (minutes): default	129-132	0000
Encoded BCH 2:	133-144	000101000110
Calculated BCH 2:	N/A	000101000110
15 Hex ID:	N/A	993B7B7834AA8D1

Lat: Default

Long: Default

User Location Test Location A

Burst-13529.htm

Hex FFFE2FCC9E00C05FC0FF010D87666A01650C

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201 - **Albania**	27-36	0011001001
User type: Test User	37-39	111
National Use, Hex value: 00602FE07F80	40-85	0000000001100000001011111110000001111111100000
15 Hex ID:	N/A	993C0180BF81FE0
Encoded BCH 1:	86-106	00100001101100011101
Calculated BCH 1:	N/A	00100001101100011101
Encoded Position Data Source From Internal Navigation Device	107	1
North	108	0
Latitude (degrees): 51	109-115	0110011
Latitude (minutes): 20	116-119	0101
East	120	0
Longitude (degrees): 1	121-128	00000001
Longitude (minutes): 24	129-132	0110
Encoded BCH 2:	133-144	010100001100
Calculated BCH 2:	N/A	010100001100
15 Hex ID:	N/A	993C0180BF81FE0

Lat: 51°20' N

Long: 1°24' E

User Location Test Location B

Burst-13530.htm

Hex FFFE2FCC9E00C05FC0FF010D876668011965

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201 - **Albania**	27-36	0011001001
User type: Test User	37-39	111
National Use, Hex value: 00602FE07F80	40-85	0000000001100000001011111110000001111111100000
15 Hex ID:	N/A	993C0180BF81FE0
Encoded BCH 1:	86-106	00100001011000011101
Calculated BCH 1:	N/A	00100001011000011101
Encoded Position Data Source From Internal Navigation Device	107	1
North	108	0
Latitude (degrees): 51	109-115	0110011
Latitude (minutes): 16	116-119	0100
East	120	0
Longitude (degrees): 1	121-128	00000001
Longitude (minutes): 4	129-132	0001
Encoded BCH 2:	133-144	100101100101
Calculated BCH 2:	N/A	100101100101
15 Hex ID:	N/A	993C0180BF81FE0

Lat: 51°16' N

Long: 1° 4' E

User Location Test Self Test

Burst-13531.htm

Hex FFFED0CC9E00C05FC0FF010D877783E0F66C

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201 - **Albania**	27-36	0011001001
User type: Test User	37-39	111
National Use, Hex value: 00602FE07F80	40-85	0000000001100000001011111110000001111111100000
15 Hex ID:	N/A	993C0180BF81FE0
Encoded BCH 1:	86-106	00100001101100011101
Calculated BCH 1:	N/A	00100001101100011101
Encoded Position Data Source From Internal Navigation Device	107	1
South	108	1
Latitude (degrees): 60	109-115	0111100
Latitude (minutes): 4	116-119	0001
West	120	1
Longitude (degrees): 224	121-128	11100000
Longitude (minutes): 60	129-132	1111
Encoded BCH 2:	133-144	011001101100
Calculated BCH 2:	N/A	011001101100
15 Hex ID:	N/A	993C0180BF81FE0

Lat: Default

Long: Default

NAVIGATION SYSTEM TEST RESULTS

Table F-C.1 of C/S T.007 (Issue 4 Rev. 8 October 2013)

Position Data encoding Results User Location Protocol

Script Reference (See Table D.2)	Value of Encoded Location Bits Transmitted by Beacon (Hexadecimal)	Confirmation that BCH Correct (✓)
1	Bits 108 – 132 = **0FE0FF0**	✓
2	Bits 108 – 132 = **1001000** Number of seconds after providing navigation data that beacon transmitted the above encoded location information: **33.8**	✓
3	Bits 108 – 132 = **0000000**	✓
4	Bits 108 – 132 = **0006B3C**	✓
5	Bits 108 – 132 = **1007B3C**	✓
6	Bits 108 – 132 = **1B28590**	✓
7	Bits 108 – 132 = **1B29590**	✓
8	Bits 108 – 132 = **0B41B40**	✓
9	Bits 108 – 132 = **0B3CB40**	✓
10	Bits 108 – 132 = **14918A7**	✓
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11	Bits 108 – 132 = **0FE0FF0**	✓
12	Bits 108 – 132 = **0FE0FF0**	✓

Table F-C.2 of C/S T.007 (Issue 4 Rev. 8 October 2013)

Position Data encoding Results Standard Location Protocol

Script Reference (See Table D.2)	Value of Encoded Location Bits Transmitted by Beacon (Hexadecimal)	Confirmation that BCH Correct (✓)
1	Bits 65 – 85 = **0FFBFF** Bits 113 – 132 = **83E0F**	✓
2	Bits 65 – 85 = **100400** Bits 113 – 132 = **8420E** Number of seconds after providing navigation data that beacon transmitted the above encoded location information: **30.08**	✓
3	Bits 65 – 85 = **000000** Bits 113 – 132 = **8360D**	✓
4	Bits 65 – 85 = **000ACF** Bits 113 – 132 = **0F222**	✓
5	Bits 65 – 85 = **0012CE** Bits 113 – 132 = **93A60**	✓
6	Bits 65 – 85 = **100ECF** Bits 113 – 132 = **0FA10**	✓
7	Bits 65 – 85 = **1B2964** Bits 113 – 132 = **80A00**	✓
8	Bits 65 – 85 = **1B2D64** Bits 113 – 132 = **84E00**	✓
9	Bits 65 – 85 = **0B46D0** Bits 113 – 132 = **03801**	✓
10	Bits 65 – 85 = **0B42D0** Bits 113 – 132 = **08009**	✓
11	Bits 65 – 85 = **14962A** Bits 113 – 132 = **80200**	✓
Self-Test Navigation Test Scripts (C/S T.007 Issue 4 Rev. 8 October 2013)		
12	Bits 65 – 85 = **0FFBFF** Bits 113 – 132 = **83E0F**	✓
13	Bits 65 – 85 = **0FFBFF** Bits 113 – 132 = **83E0F**	✓

Table F-C.3 of C/S T.007 (Issue 4 Rev. 8 October 2013)

Position Data encoding Results National Location Protocol

Script Reference (See Table D.3)	Value of Encoded Location Bits Transmitted by Beacon (Hexadecimal)	Confirmation that BCH Correct (✓)
1	Bits 59 – 85 = **3F81FE0** Bits 113 – 126 = **27CF**	✓
2	Bits 59 – 85 = **4002000** Bits 113 – 126 = **284E** Number of seconds after providing navigation data that beacon transmitted the above encoded location information: **41.8**	✓
3	Bits 59 – 85 = **0000000** Bits 113 – 126 = **26CD**	✓
4	Bits 59 – 85 = **0019678** Bits 113 – 126 = **060D**	✓
5	Bits 59 – 85 = **001567A** Bits 113 – 126 = **2710**	✓
6	Bits 59 – 85 = **401B677** Bits 113 – 126 = **0740**	✓
7	Bits 59 – 85 = **6CA0B20** Bits 113 – 126 = **06C0**	✓
8	Bits 59 – 85 = **6CA2B20** Bits 113 – 126 = **21C0**	✓
9	Bits 59 – 85 = **2D03680** Bits 113 – 126 = **0701**	✓
10	Bits 59 – 85 = **2CF5680** Bits 113 – 126 = **2009**	✓
11	Bits 59 – 85 = **523F14F** Bits 113 – 126 = **2040**	✓
Self-Test Navigation Test Scripts (C/S T.007 Issue 4 Rev. 8 October 2013)		
12	Bits 59 – 85 = **3F81FE0** Bits 113 – 126 = **27CF**	✓
13	Bits 59 – 85 = **3F81FE0** Bits 113 – 126 = **27CF**	✓

ANNEX A

Navigation System Test Script Reference

User Location Protocol Test results

Script	Tester File Name	Hex Code
1	Burst-13571.htm	FFFE2FCC94186186186689DE52AFE0FF0146
2 (33.8s)	Burst-13572.htm	FFFE2FCC94186186186689DE52B00100084B
3	Burst-13573.htm	FFFE2FCC94186186186689DE52A000000E27
4	Burst-13574.htm	FFFE2FCC94186186186689DE52A006B3C2F3
5	Burst-13575.htm	FFFE2FCC94186186186689DE52B007B3C49F
6	Burst-13576.htm	FFFE2FCC94186186186689DE52BB28590C48
7	Burst-13577.htm	FFFE2FCC94186186186689DE52BB295907AB
8	Burst-13578.htm	FFFE2FCC94186186186689DE52AB41B400FA
9	Burst-13579.htm	FFFE2FCC94186186186689DE52AB3CB4095C
10	Burst-13580.htm	FFFE2FCC94186186186689DE52B4918A7EF2
11	Burst-13617.htm	FFFED0CC94186186186689DE52AFE0FF0146
12	Burst-13618.htm	FFFED0CC94186186186689DE52AFE0FF0146

Standard Location Protocol Test results

Script	Tester File Name	Hex Code
1	Burst-13581.htm	FFFE2F8C96F9C0637FDFF992EF3783E0F66C
2 (30.08s)	Burst-13582.htm	FFFE2F8C96F9C063802000E2FF778420EDF0
3	Burst-13583.htm	FFFE2F8C96F9C063000005DAAE778360D373
4	Burst-13584.htm	FFFE2F8C96F9C06300567C8315770F2220AE
5	Burst-13585.htm	FFFE2F8C96F9C06300967714DAF793A602AA
6	Burst-13586.htm	FFFE2F8C96F9C063807679BB44770FA10C2D
7	Burst-13587.htm	FFFE2F8C96F9C063D94B204CB6B780A00F76
8	Burst-13588.htm	FFFE2F8C96F9C063D96B2467C3B784E007A2
9	Burst-13589.htm	FFFE2F8C96F9C0635A3686FB0977038016F7
10	Burst-13590.htm	FFFE2F8C96F9C0635A1682D07C77080098C0

11	Burst-13591.htm	FFFE2F8C96F9C063A4B151B249F78020001B
12	Burst-13592.htm	FFFED08C96F9C0637FDFF992EF3783E0F66C
13	Burst-13593.htm	FFFED08C96F9C0637FDFF992EF3783E0F66C

National Location Protocol Test results

Script	Tester File Name	Hex Code
1	Burst-13604.htm	FFFE2F8C9A0018DFC0FF02AD44779F3C0010
2 (41.8s)	Burst-13605.htm	FFFE2F8C9A0018E00100011ABD37A1380347
3	Burst-13606.htm	FFFE2F8C9A0018C00000065448F79B340105
4	Burst-13607.htm	FFFE2F8C9A0018C00CB3C75F91F718340B28
5	Burst-13608.htm	FFFE2F8C9A0018C00AB3D6522BF79C400767
6	Burst-13609.htm	FFFE2F8C9A0018E00DB3B817B0B71D00029F
7	Burst-13610.htm	FFFE2F8C9A0018F65059066854F71B00059E
8	Burst-13611.htm	FFFE2F8C9A0018F6515901EA1FF787000A6C
9	Burst-13612.htm	FFFE2F8C9A0018D681B400BA34F71C040195
10	Burst-13613.htm	FFFE2F8C9A0018D67AB40067B8F7802408F2
11	Burst-13614.htm	FFFE2F8C9A0018E91F8A7F0960B781000D6D
12	Burst-13615.htm	FFFED08C9A0018DFC0FF02AD44779F3C0010
13	Burst-13616.htm	FFFED08C9A0018DFC0FF02AD44779F3C0010

Manufacturer’s letter regarding software issue numbering

Unit 4
Ocivan Way
Margate
Kent
CT9 4NP

telephone
+44 (0)1843 282930

email
info@oceansignal.com

web
www.oceansignal.com

COSPAS – SARSAT
700 de la Gauchetiere West,
Suite 2450
Montreal
Quebec,
H3B 5M2
Canada

4th May 2014

Dear Andryey Zhitenev,

Please accept this letter as confirmation of the embedded software issue number used during testing of the rescueME EPIRB1.

The software submitted for type approval of this product by Ocean Signal was issue 00.04. No changes to the software in the EPIRB1 were made during the type approval process.

Please note that in accordance with the Ocean Signal quality procedures the final version of the software will be released at issue 01.00. The code for this issue will be identical to the tested software, with the sole exception of the embedded issue number.

Yours sincerely

D C Sheekey

David Sheekey
Product and Approvals Manager

Registration No
6627101

Vat No
938 4374 89

Registered Office
27 New Dover Road
Canterbury
Kent
CT1 3DN

CR123A Data Sheet

Q-Lite Lithium Battery CR123A

Chemistry: Lithium Manganese Dioxide

Nominal Voltage: 3.0 V

Nominal Capacity: 1700 mAh

Standard Discharge: 20 mA

End Point Voltage: 2.0 V

Open Circuit Voltage: ≥ 3.0 V

Max. Continuous Discharge: 1000 mA

Max. Pulse Discharge: 1200 mA

Typical Weight: 17 g

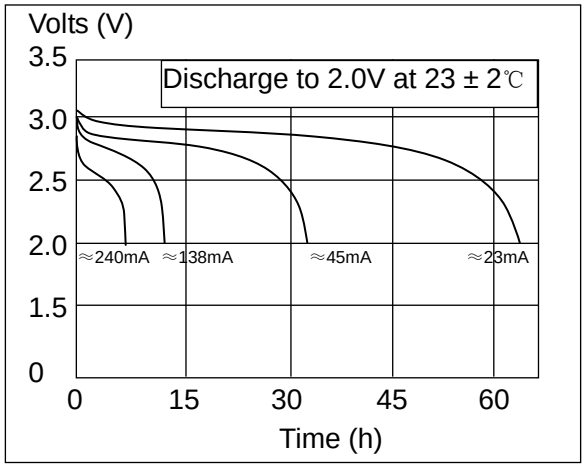
Operating Temperature Range: -40 ~ 60℃

Storage Temperature Range: -20 ~ 30℃

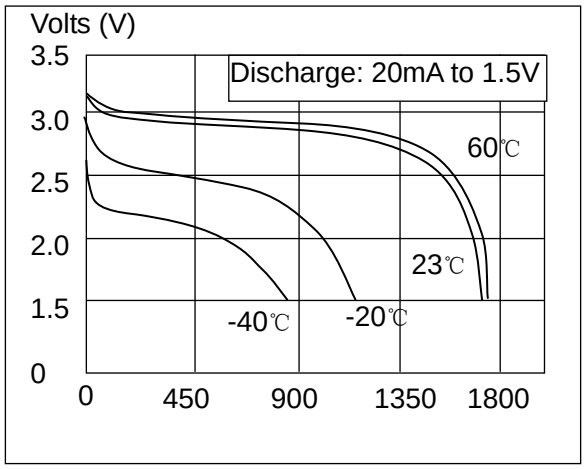
Humidity Range: 40%~75% RH

Note:
* The nominal capacity base on 20mA to 2.0V at 23℃.
* Typical values refer to cell stored within 3 months at 30℃ and then test at 23℃.
* Lithium content in unit cell: 0.51 gram.

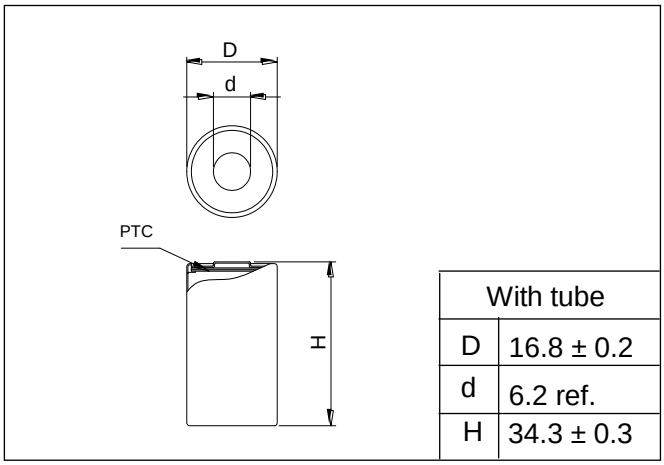
Discharge Characteristics〔Ⅰ〕



Discharge Characteristics〔Ⅱ〕

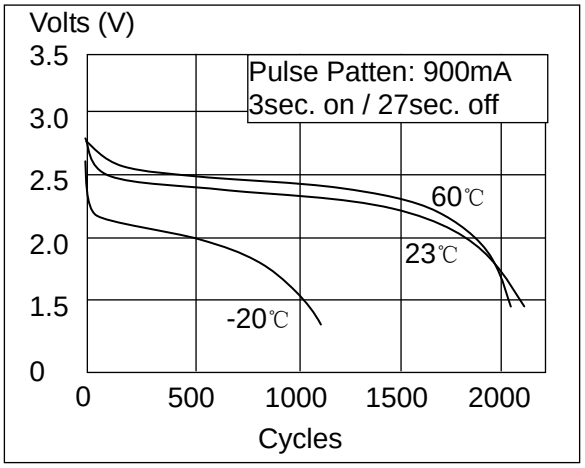


Dimensions (mm)



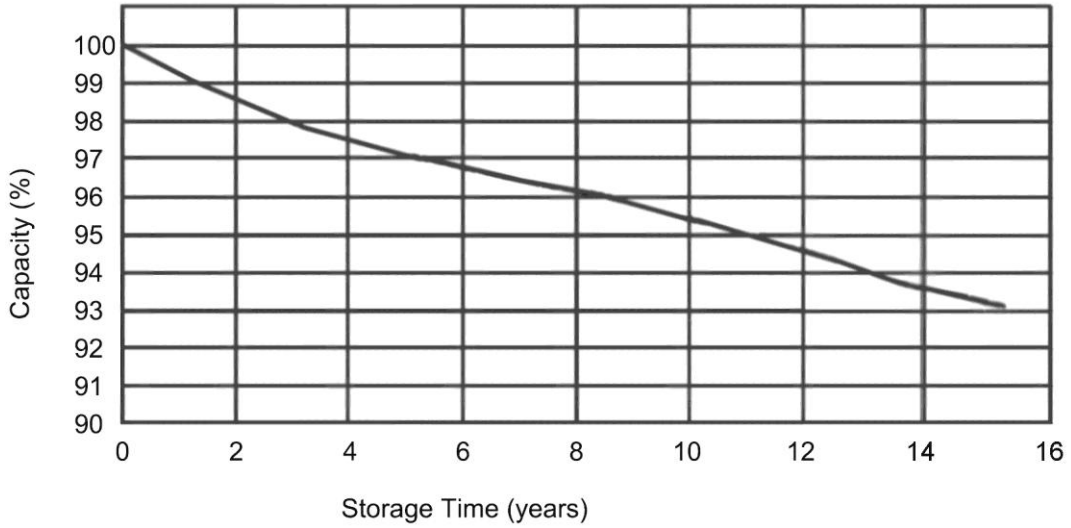
With tube	
D	16.8 ± 0.2
d	6.2 ref.
H	34.3 ± 0.3

Discharge Characteristics〔Ⅲ〕



All data contained herein is for single cell and may vary for cell with specific configuration, subject to change without prior notice. MAD/QHR0206201404, Q-Lite Industrial Limited

Q-Lite CR123A self-discharge reference curves



Note:
1. Equivalent storage at high temperature conditions (60℃ and humidity: 40~75%).

2. Battery at 20mA continuous discharges to 2.0V.

3. The equivalent annual self discharge at a storage temperature of 20 degrees Centigrade is 0.46% of capacity per year.