CHAPTER 11

COSPAS - SARSAT
TYPE APPROVAL TESTS REPORT

	Name	Date	Signature
Written by	ESQUEVIN F.	11/09/09	
Checked by	TEYROU G.	11/10/09	
Approved by	BERGE R.	11/12/09	

Toulouse, 15 September 2009

INTESPACE reference : E9788-CS

C/S T.A. TEST REPORT OF 406 MHz DISTRESS BEACON

MANUFACTURER :	KANNAD
BEACON MODEL :	SafeLink Auto/Manual+

Written : 15 September 2009
By : Gérard PEYROU
Visa :

Approved : 25 September 2009
By : Remi BERGE
Visa :

Quality Control : 25. September 2009
By : Christian BERLANDA
Visa :

Distribution :

- Mr	Stephane JINCHELEAU	KANNAD	(1 copy)
- Mr	Dany St PIERRE	COSPAS/SARSAT Sec	(1 copy)
- INTESPACE		ITS/ES (RLS)	(1 copy)

1 - ADMINISRATION

1.1. WORK ORDER

Manufacturer : KANNAD
Address ZI des Cinq Chemins,
BP23, 56520 GUIDEL

Represented by : Mr Stephane JINCHELEAU

1.2. INTESPACE TEST CENTER

The test operations have been conducted by : Gérard PEYROU

1.3. SCHEDULE

Start of t 22 June 2009
End of te 15 September 2009

1.4. WORK REFERENCE : **E9788-CS**

1.5. EQUIPMENT UNDER TEST

The results from this test report concern only the equipment here after referenced :

- Beacon Manufacturer : KANNAD
- Beacon Model : SafeLink Auto/Manual+
- Other Model Name : SafeLink Manual+
- Sérial number: EUT 12

2 - TEST FACILITIES

- Intespace ARGOS - COSPAS/SARSAT Certification Test Bench.
- Intespace Anechoic chamber for antenna test .
- CST CNES MCC .

3 -TEST OBJECTIVE

To perform a Cospas/Sarsat Type approval Test Sequence

4 - STANDARDS AND TEST PROCEDURES APPLICABLE

COSPAS-SARSAT standards :

- "C/S T. 001- Issue 3 - Revision 9 - November 2008 "
- "C/S T. 007- Issue 4 - Revision 3 - October 2008"

INTESPACE Radio Beacon Test Procédures :

- " COSPAS-SARSAT Certification Te	Réf. ITS : PO 572
- " 406 MHz Caracteristic Antenna Tes	Réf. ITS : PO 566
- " Radio Beacon Test Report "	Réf. ITS : 579

5 - RESULTS

See the following pages :

- C/S Annex G : Application form for a COSPAS-SARSAT 406 MHz beacon Type Approval Certificate
- Summary of 406 MHz beacon test results
- Operational Temperature Test results : data and graphs
- Estimate of Medium Term Frequency Stability Ageing following C/S Interim Procedure
- Satellite Qualitative Test Report
- AntennaTest Report
- Navigation System Test Report
- Annex I : List of Test Laboratory Equipments and Table of Laboratory Measurement Uncertainties
- Annex II : C/S Annex L - Beacon Quality Assurance Plan
- Annex III : Manufacturer technical data - Ref DOC09060

ANNEX G

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

G.1 INFORMATION PROVIDED BY THE BEACON MANUFACTUREUR

Beacon Manufacturer and Beacon Model

Beacon manufacturer	KANNAD
Beacon model	SafeLink Auto
Other Model Names	SafeLink Manual+ (same beacon without the automatic release container)

Beacon type and operational configurations

Beacon type	**Beacon used while :**	**Tick where appropriate**
EPIRB	Floating in water or on deck or in a safety raft	X
PLB	On ground and above ground	
	On ground and above ground and floating in water	
ELT survival	On ground and above ground	
	On ground and above ground and floating in water	
ELT auto fixed	Fixed ELT with aircraft external antenna	
ELT auto portable	In aircraft with an external antenna	
	On ground, above ground, or in a safety raft with an integrated antenna	
ELT auto deployable	Deployable ELT with attached antenna	
Other (specify)		

Beacon characteristics

Characteristic	**Specification**
Operating temperature range	Tmin=-20 °C Tmax= +55°C
Operating lifetime	48 hours
Battery chemistry	Lithium

Characteristic	Specification
Battery cell model name, size and number of cells	CR123 / 9
Battery cell manufacturer	PANASONIC
Battery pack manufacturer and part number	Williamson / P/N=0146030
Oscillator type (e.g. OCXO, MCXO, TCXO)	TCXO
Oscillator manufacturer	RAKON
Oscillator part name and number	E4217LF
Oscillator satisfies long-term frequency stability requirements (Yes or No)	YES
Antenna type: Integral or Other (e.g. External, Detachable – specify type)	Integral (printed on the PCB)
Antenna manufacturer	KANNAD
Antenna part name and number	N/A (printed on the PCB)
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 ensures erroneous position data is not encoded into the beacon message (Yes, No or N/A)	NO
Navigation device capable of supporting global coverage (Yes, No or N/A)	YES
For internal navigation devices	
- geodetic reference system (WGS84 or GTRF)	WGS84
- GNSS receiver cold start forced at every beacon activation (Yes or No)	YES
- Navigation device manufacturer	FASTRAX
- Navigation device model name and part number	UC322
- GNSS system supported (e.g. GPS, GLONASS, Galileo)	GPS

Characteristic	Specification	
For external navigation devices - Data protocol for GNSS receiver to beacon interface - Physical interface for beacon to navigation device - Electrical interface for beacon to navigation device - Navigation device model and manufacturer (if beacon designed to use specific devices)	NOT APPLICABLE	
Self-test mode characteristics:	Self-Test Mode	Optional GNSS Self-Test Mode
- self-test has separate switch position (Yes or No)	YES	NA
- Self-test switch automatically returns to normal position when released (Yes or No)	YES	NA
- Self-test activation can cause an operational mode transmission (Yes or No)	NO	NA
- Self-test causes a single beacon self-test message burst only regardless of how long the self-test activation mechanism applied (Yes or No)	YES	NA
- Results of self-test indicated by (e.g. Pass / Fail indicator Light, Strobe light, etc.)	Pass/Fail indicator light	NA
- Self-test can be activated from beacon remote activation points (Yes or No)	NO	NA
- Self-test performs an internal check and indicates that RF power emitted at 406 MHz and 121.5 MHz if beacon includes a 121.5 MHz homer (Yes or No)	YES	NA
- Self-test transmits a signal(s) other than at 406 MHz (Yes & details or No)	NO	NA
- Self-test can be activated directly at beacon (Yes or No)	YES	NA
- List of items checked by self-test	Battery voltage RF power at 406 MHz Phase locked loop	NA
- Self-test transmission burst duration (440 or 520 ms)	520ms	NA
- Self-test format bit ("0" or "1")	1	NA
- Maximum duration of GNSS Self Test	N/A	NA
- Maximum number of GNSS Self Tests (beacons with internal navigation devices only)	N/A	NA

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 24-bit Adress
		PLB with Serial Number
		National (Short Message Format)
		National (Long Message Format)
Standard Location Protocol (tick where appropriate)	X	EPIRB with MMSI
	X	EPIRB with Serial Number
		ELT with 24-bit Address
		ELT with Aircraft Operator designator
		ELT with Serial Number
		PLB with Serial Number
National Location Protocol (tick where appropriate)	X	National Location: EPIRB
		National Location: ELT
		National Location: PLB
User Location Protocol (tick where appropriate)	X	Maritime with MMSI
	X	Maritime with Radio Call Sign
	X	EPIRB Float Free with Serial Number
	X	EPIRB Non Float Free with Serial Number
	X	Radio Call Sign
		Aviation
		ELT with Serial Number
		ELT with Aircraft Operator and Serial Number
		ELT with Aircraft 24-bit Address
		PLB with Serial Number
Beacon includes a homer transmitter (if yes identify frequency of transmission)	121.5 MHz ±3kHz	
- Homer transmit power	50mW ± 3dB PERP	
- Homer duty cycle	95 %	
- Duty cycle of homer swept tone	34 %	

Characteristic	Specification
Beacon includes a strobe light (Yes or No)	YES
- Strobe light intensity	0,75Cd
- Strobe light flash rate	23/min
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 distributer on the interval 47.5 to 52.5 seconds (Yes or No)	YES
Other ancillary devices (e.g. voice transceiver). 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 (HAMMAR H20)
Beacon includes software or hardware features and functions not listed above and non-related to 406 MHz (Yes or No) List features and use a separate sheet if insufficient space	NO

Dated : 29/05/2009 Signed : Stéphane JINCHELEAU, Technical manager LP SAR marine
(Name, Position and signature of Beacon Manufacturer Representative)

KANNAD
SAS au capital de 2.000.000 €
ZI des Cinq Chemins - 56520 GUIDEL (France)
BP 23
Tél. : 02 97 02 49 49
Fax : 02 97 65 00 20
RCS Lorient 500 055 744
TVA FR 87 500 055 744
SIRET 500 055 744 00014 - APE 2790 Z

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

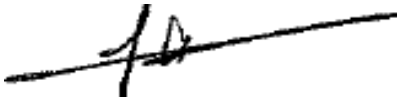
Name and Location of Beacon Test Facility: INTESPACE

Date of submission for Testing: 22 June 2009

Applicable C/S Standards:

Document	Issue	Revision
C/S T.001	3	9
C/S T.007	4	3

I hereby confirm that the 406 MHz beacon described above has been successfully tested in accordance with the COSPAS-SARSAT 406 MHz Beacon Type Approval Standard (C/S T.007) and complies with the Specification for Cospas-Sarsat 406 MHz Distress Beacons (C/S T.001) as demonstrated in the attached report.

Dated : 15 September 2009 Signed : 

Gérard PEYROU
Intespace Distress Beacon Test Responsible

PARAMÈTRES TO BE MEASURED DURING TESTS		RANGE OF SPECIFICATION	UNITS	TEST RESULTS			COMMENTS
				$T_{min.}$ -20°C (±3)	$T_{amb.}$ 22°C (±3)	$T_{max.}$ 55°C (±3)	
1 - POWER OUTPUT							
o transmitter power output		35 - 39	dBm	36,7	36,5	35,9	
o Power output rise time		< 5	ms	0,47	0,56	1,58	Graphs p, 25, 28 and 31
o power output 1 ms before burst		< -10 dBm	√ [1]	√	√	√	Graphs pages 18 to 21
2 - DIGITAL MESSAGE	Bits number						Data and graphs pages 23 to 31
o bit sync	1-15	15 bits "1"	√	√	√	√	
o frame sync	16-24	9 bits (000101111)	√	√	√	√	
o format flag	25	1 bit	bit value	1	1	1	
o protocol flag	26	1 bit	bit value	0	0	0	
o identification/position code	27-85	59 bits	√	√	√	√	
o BCH code	86-106	21 bits	√	√	√	√	
o emerg. code/nat. use/supplem. data	107-112	6 bits	bit value	110111	110111	110111	
o additional data/BCH (if applicable)	113-144	32 bits	√	√	√	√	
o position error (if applicable)		< 5	km	0,060 km	0,060 km	0,080 km	

[1] Indicate that testing demonstrated conformance to the requirements by placing the √ symbol in Table F.1.

PARAMÈTRES TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS			COMMENTS
			$T_{min.}$ -20°C (±3)	$T_{amb.}$ 22°C (±3)	$T_{max.}$ 55°C (±3)	
3 - DIGITAL MESSAGE GENERATOR						Data and graphs pages 23 to 31
o repetition rate T_R :						
average T_R =	48,5 - 51,5	sec	49,81	50,09	49,91	
minimum T_R =	$47,5 \leq T_R \leq 48,0$	sec	47,7	47,7	47,9	
maximum T_R =	$52,0 \leq T_R \leq 52,5$	sec	52,2	52,2	52,1	
standard deviation =	0,5 - 2,0	sec	1,30	1,31	1,38	
o bit rate						
minimum f_b =	≥ 396	bits/sec	401,04	401,06	401,52	
maximum f_b =	≤ 404	bits/sec	401,06	401,09	401,55	
o total transmission time :						
short message =	435.6 - 444.4	ms				
long message =	514.8 - 525.2	ms	520,13	520,15	519,34	
o unmodulated carrier						
minimum T_1 =	≥ 158,4	ms	159,72	159,72	159,34	
maximum T_1 =	≤ 161,6	ms	159,72	159,73	159,37	
o first burst delay	≥ 47,5	sec	60,5 sec	61,3 sec	59,7 sec	

PARAMÈTRES TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS			COMMENTS
			$T_{min.}$ -20°C (±3)	$T_{amb.}$ 22°C (±3)	$T_{max.}$ 55°C (±3)	
4 - MODULATION						Data and graphs
o biphase-L		√	√	√	√	pages 23 to 31
o rise time	50 - 250	µsec	100	120	100	
o fall time	50 - 250	µsec	100	110	100	
o phase deviation : positive	+ (1.0 to 1.2)	radians	+ 1,08	+ 1,08	+ 1,08	
o phase deviation : negative	- (1.0 to 1.2)	radians	- 1,08	- 1,08	- 1,08	
o symmetry measurement	≤ 0.05	√	√	√	√	
5 - 406 MHz TRANSMITTED FREQUENCY						Data pages 23, 26 and 29
o nominal value	C/S T.001	MHz	406,0379327	406,0379129	406,0379186	
o short term stability	≤ 2×10^{-9}	/100 ms	1,14E-10	2,66E-10	1,06E-10	
o medium term stability						
. slope	(-1 to +1) x 10^{-9}	/min	1,04E-12	1,30E-11	2,23E-11	
. residual frequency variation	≤ 3×10^{-9}		1,26E-10	1,10E-10	1,02E-10	
6 - SPURIOUS EMISSION [1] (into 50 ohms) o in-band (406.0 - 406.1 MHz)	C/S T.001 mask	√	√	√	√	See graphs pages 32 to 35

[1] Include spectral plots of the 406,0-406,1 MHz band, showing the transmit signal and emission mask as defined in C/S T.001.

PARAMÈTRES TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS			COMMENTS
			$T_{min.}$ -20°C (±3)	$T_{amb.}$ 22°C (±3)	$T_{max.}$ 55°C (±3)	
7 - 406 MHz VSWR CHECK after open circuit, short cicuit, then while VSWR is 3:1, measure :						See data and graphs pages 36 to 42
o nominal transmitted frequency	C/S T.001	MHz	406,0379321	406,0379046	406,0379327	
o Modulation :						
- rise time	50 - 250	µsec.	89,8	99,8	99,8	
- fall time	50 - 250	µsec.	99,8	109,8	99,8	
- phase deviation : positive	+ (1.0 to 1.2)	radians	1,08	1,07	1,08	
- phase deviation : negative	- (1.0 to 1.2)	radians	-1,08	-1,09	-1,08	
- symmetry measurement	≤ 0.05	√	+ 0,0000	+ 0,0040	+ 0,0080	
- digital message	correct	√	√	√	√	
8(a) - SELF-TEST MODE						Data pages 41 to 43
o frame sync	"011010000"	√		√		
o format flag	1/0	bit value		1		
o single radiated burst	≤ 440 /520 (+1%)	ms		520,08		
o default position data (if applicable)	must be correct	√		√		
o description provided		√		√		
o design data provided on protection against repetitive self-test mode transmissions	protection provided	√		√		Manufacturer doc. Annex III
o single burst verification	one burst	√		√		
o provides for beacon 15 Hex ID	correct	√		√		Data page 44
o 121,5 MHz RF power (if applicable)	self-test checks that RF power emitted	√		√		
o 406 MHz RF power	self-test checks that RF power emitted	√		√		

PARAMÈTRES TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS
9 - THERMAL SHOCK[1] (30° C change)				Data and graphs pages 45 to 54
o Soak temperature :		°C	Tsoak = 22	
o Measurement temperature :		°C	TMeas = -10	
the following parameters are to be met within 15 minutes of beacon and maintained for 2 hours				
o Transmitted frequency :				
- nominal value	as specified in C/S T.001 and C/S T.012	MHz	406,036913 / 406,03693	
- short term stability	≤ 2 x 10^{-9}	/100 ms	< 1,9E-10	
- medium term stability :				
. slope	(-2 to +2) x 10^{-9}	/minute	8E-12 / 2,8E-09	
. residual frequency variation	≤ 3 x 10^{-9}		< 1,58E-09	
o Transmitted power output	35 - 39	dBm	36,6 / 36,8	
o Digital message	must be corect	√	√	

1 Attach graphs depicting test results.

PARAMÈTRES TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS		COMMENTS
10 - OPERATING LIFETIME AT MINIMUM TEMPERATURE[1]					Data and graphs pages 55 to 70
o Duration	> 24	hours	50,7 hours at Tmin = -20 °C		
o Transmitted frequency :					
- nominal value	as specified in C/S T.001 and C/S T.012	MHz	406,0369342 / 406,0369782		F.E.1 table page56
- short term stability	≤ 2 x 10^{-9}	/100 ms	4,9E-10		
- medium term stability			during Warm Up Time	after Warm Up Time	
. slope	(-1 to +1) x 10^{-9}	/minute	-7E-09 / 4E-11	-2,3E-10 / 5,6E-11	
. residual frequency variation	≤ 3 x 10^{-9}		1,7E-08	8,7E-10	
o Pt_{EOL}=minimum transmitter power output observed during lifeti at minimum temperatureTransmitted power	35 - 39	dBm	36,2 / 36,8		
o Digital message	must be corect	√	√		
11 - TEMPERATURE GRADIENT (5° C/hr)[1]			-8E-09 / 2E-10 2E-08		Data and graphs pages 71 to 80
o Transmitted frequency :					
- nominal value	as specified in C/S T.001 and C/S T.012	MHz	406,036891 / 406,036938		M.T. Ageing page 81
- short term stability	≤ 2 x 10^{-9}	/100 ms	1,6E-10		
- medium term stability			during Warm Up Time	after Warm Up Time	
. Slope (A to B, C+15 to D, and E+15 to F)	(-1 to +1) x 10^{-9}	/minute	-8E-09 / 2E-10	-2,0E-10 / 2,0E-10	
. Slope (B to C+15, and D to E+15)	(-2 to +2) x 10^{-9}	/minute			
. residual frequency variation	≤ 3 x 10^{-9}		1,8E-08	3,3E-10	
o Transmitted power output	35 - 39	dBm	35,6 / 36,6		
o Digital message	must be corect	√	√		
12 - OSCILLATOR AGING (data provided)	C/S T.001	KHz	≤ ± 2,03 kHz in 10 years		Manufacturer explanations in Annex III See page 81 for Medium Term Ageing results

1 Attach graphs depicting test results.

PARAMÈTRES TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS
13 - PROTECTION AGAINST CONTINUOUS TRANSMISSION o Description provided	≤ 45	seconds	≤ 17 seconds	Manufacturer explanations in Annex III
14 - SATELLITE QUALITATIVE TESTS[1] (results provided)	15 Hex ID provided by LUT and position within 5 km 80% of time	√	√	Satellite C/S Table F-A pages 84 to 90
15 - ANTENNA CHARACTERISTICS				Antenna test report pages 91 to 102
o Polarization	linear or RHCP		Linear	
o VSWR	≤ 1.5		N/A	
o ERPLOSS		dB	0	
o ERPmax EOL	≤ 43	dBm	41,5	
o ERPmin EOL	≥ 32, or	dBm	32,1	
	≥ 30	dBm	31,4	≥30 dBm for antenna tested in Figure B.5 configuration
16 - BEACON CODING SOFTWARE[2] o sample message provided for each coding option of the applicable coding types	correct	√	√	Tables F.D. pages 126, 125
o sample self-test message provided for each coding option of the applicable coding types	correct	√	√	

1 Attach a satellite qualitative test summary report (Appendix A to Annex F) for each test configuration.
2 Attach examples of each requested coding option as per Appendix D to Annex F.

PARAMÈTRES TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS
17 - NAVIGATION SYSTEM[1]				See data page 103 to 131
o position data default values	correct	√	√	
o position acquisition time	< 10 / 1	minutes		Table F.C.4: page 110
o position accuracy	C/S T.001			
o encoded positon data update interval	> 5	minutes		
o positon clearance after deactivation	cleared	√		
o positon data input update interval (as applicable)	20 / 1	minutes		
o positon data encoding	correct	√		Tables F.C: page 123 to 125
o retained last valid position after navigation input lost	240 (± 5)	min	4:04:08	
o default position data transmitted after 240(± 5) minutes without valid position data	cleared	√	√	
o information provided on protection against beacon degradation due to navigation device, interface or signal failure or malfunction		√	√	Manufacturer explanations in Annex III

[1] Attach navigation system test results as per Appendix C to Annex F

TRANSMITTER OUTPUT POWER RISE TIME TEST RESULT ON KANNAD Epirb

SafeLink Auto/Manual+

N° EUT 12

(1 ms before 10 % of the burst)

at -20° C, 22° C and 55° C

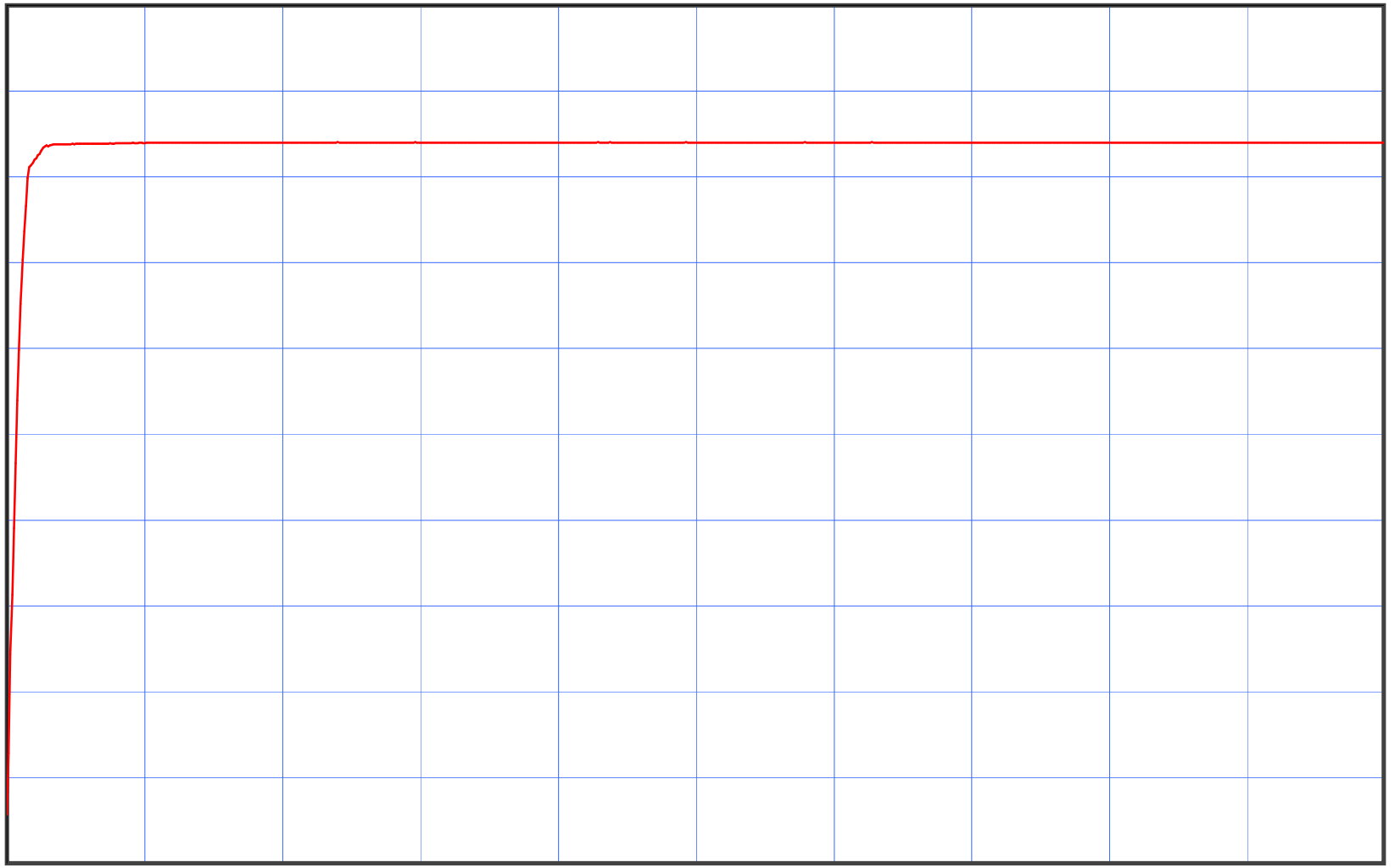
Output Power Risetime at -20°C

CF : 406,037 MHz **Output Power Risetime (1 ms before the burst) : -45,58 dBm** **SP : 0 KHz**

Rb : 1 KHz **10 dB/div.** **St : 0,05 S**

Output Power Risetime at 22°C

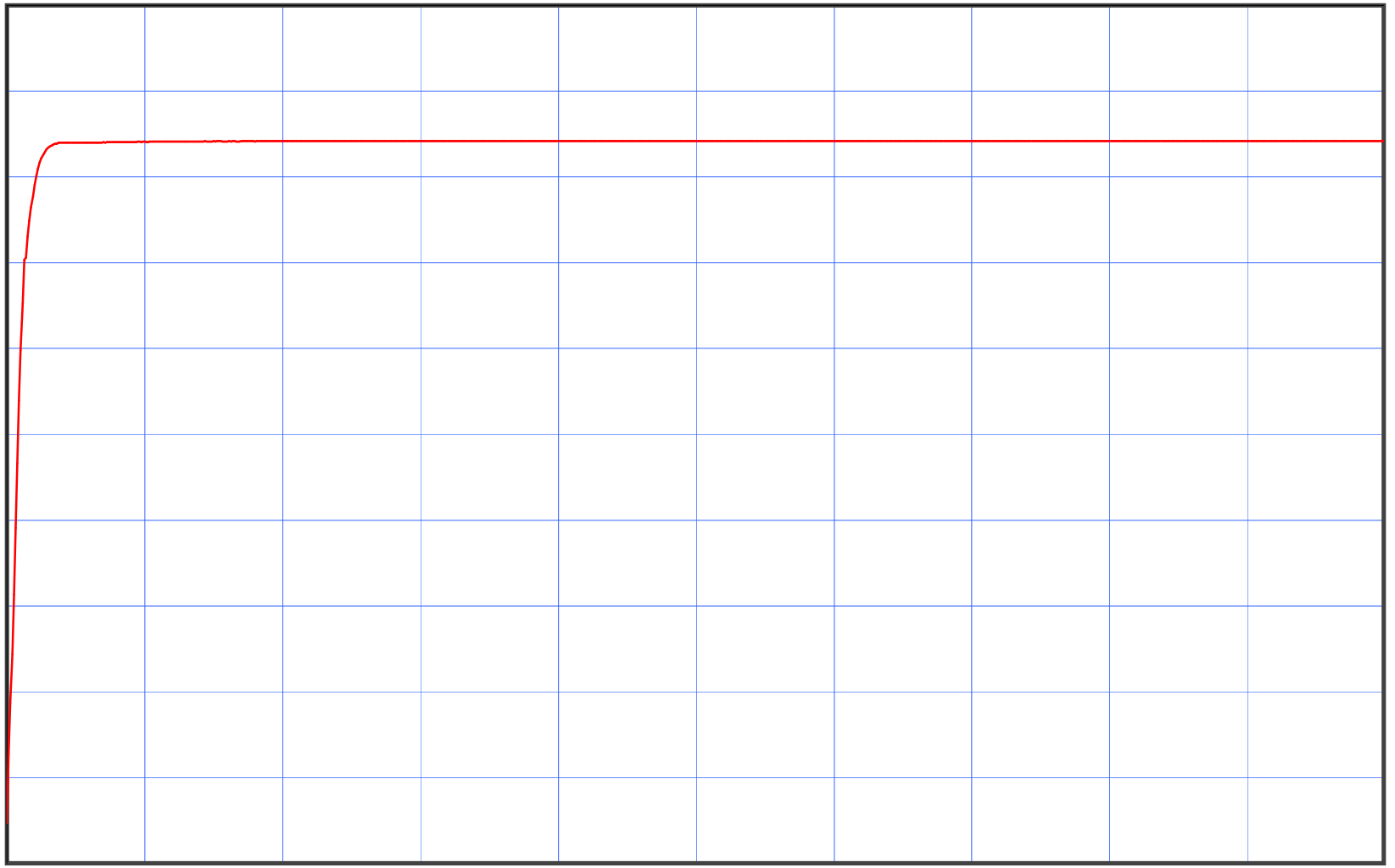
CF : 406,037 MHz **Output Power Risetime (1 ms before the burst) : -44,05 dBm** **SP : 0 KHz**



Rb : 1 KHz **10 dB/div.** **St : 0,05 S**

Output Power Risetime at 55°C

CF : 406,037 MHz **Output Power Risetime (1 ms before the burst) : -43,32 dBm** **SP : 0 KHz**



Rb : 1 KHz **10 dB/div.** **St : 0,05 S**

CERTIFICATION TEST RESULTS ON
KANNAD Epirb
SafeLink Auto/Manual+
N° EUT 12
at -20° C, 22° C and 55° C

Certification Test at -20°C Date of test : 31-juil-09

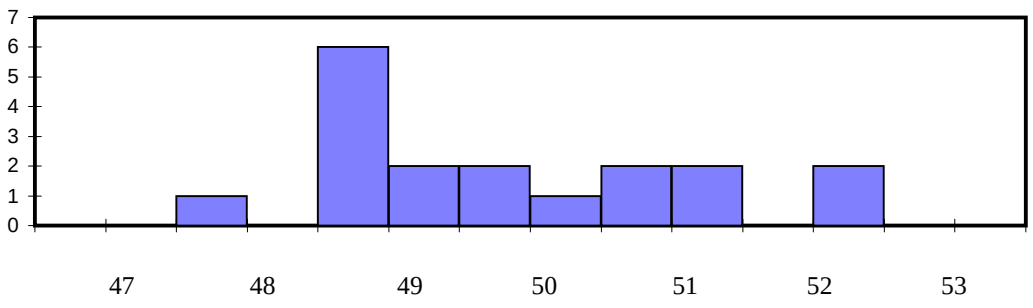
Manufacturer : KANNAD
Beacon Type : SAFELINK
Number : EUT 12

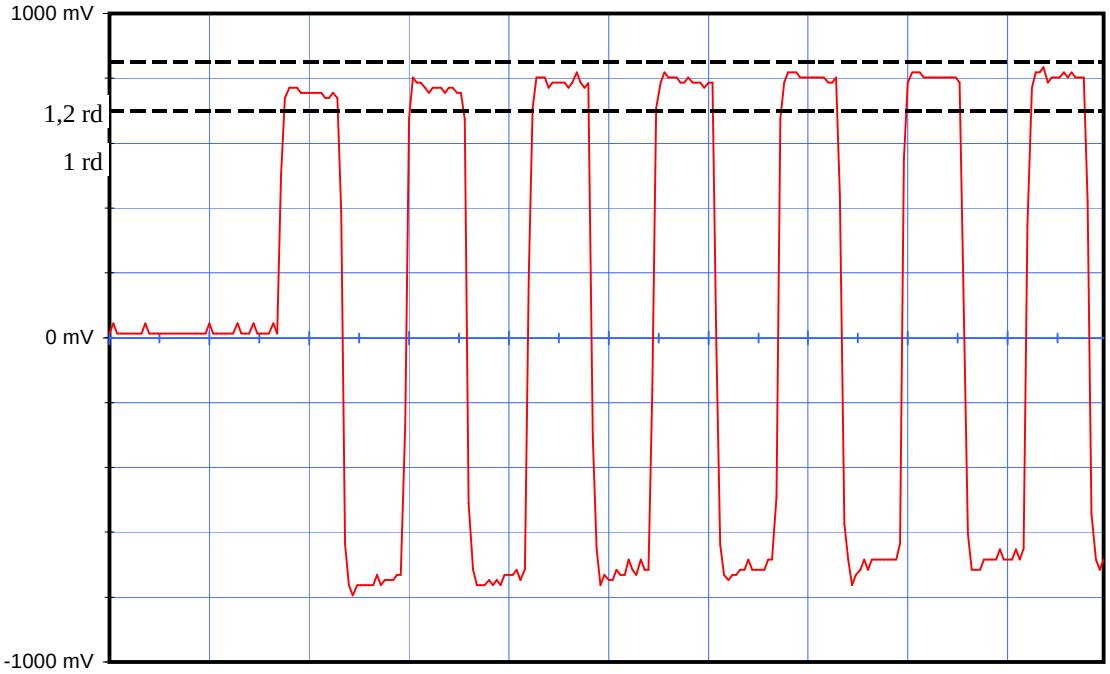
Message

Message received		FFFE2F8E3F00000AE2017508A9B70F2800DF	
Format Flag	25	1	
Protocol flag	26	0	
Ident./Position code	27-85	0	
Country Code/Country	27-36	227 / FRANCE	
Protocol Code : U/Std-Nat	37-39/37-40	1111	
Protocol Code Used	37-39/37-40	National Location - Test	
Identification Data	40-85/41-64/41-58		
Identification Used		0	
Calculated BCH1	25-85	1422A6	
Encoded BCH1	86-106	1422A6	
Homing	112	1	
Em.cod/nat.use/supp.data	107-112	110111	
Encod pos data	111	1	Internal
Fixed Data "1"	108	1	Pass
Calculated BCH2	107-132	0DF	
Encoded BCH2	133-144	0DF	
Latitude position		North 43° 33' 32"	
Longitude position		East 1° 28' 40"	
Delta position		0,060 km	

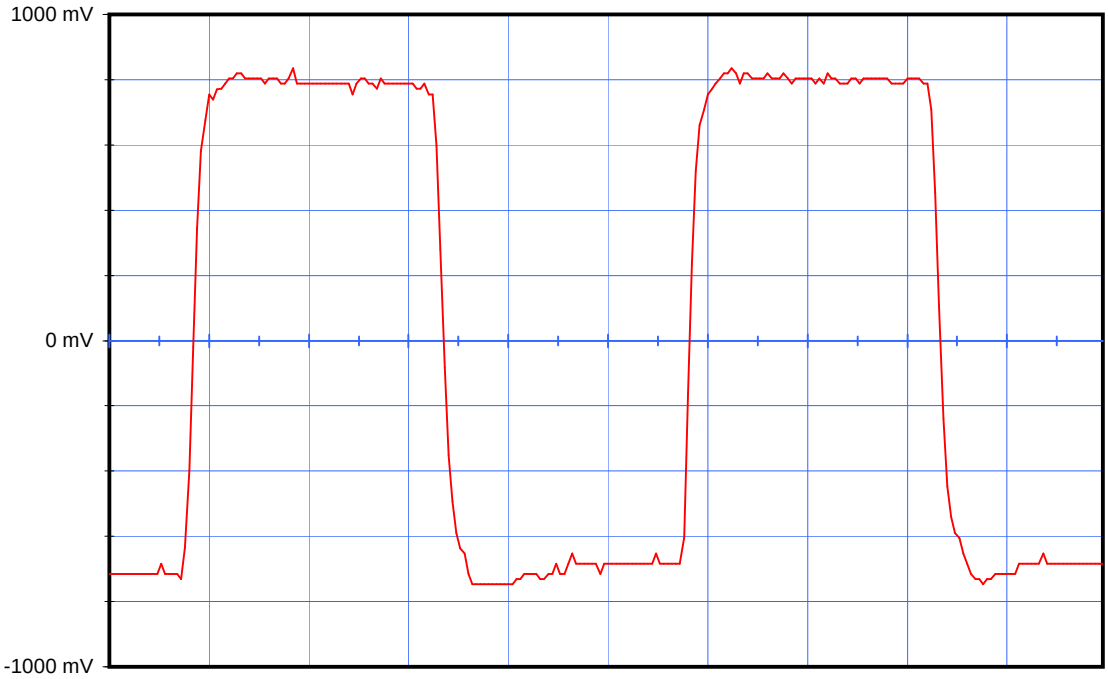
Electrical and other parameters

CW preamble	ms 158,4 <	< 161,6	159,72
Total transmission time	ms 514,8 <	<525,2	520,13
Modulation frequency	Hz 396<	< 404	401,05
Phase deviation : total	rd	<=2,40	2,16
Phase deviation : positive	rd 1,00 <	< 1,20	1,08
Phase deviation : negative	rd -1,20 <	< -1,00	-1,08
Symmetry measurement	%	<=5 %	0,81
Nominal frequency : F2	Hz		406037932,65
Short term2			1,14E-10
Short term3			7,75E-11
Slope			1,04E-12
Residual			1,26E-10
406 MHz power output	dBm		36,7
Homing frequency	MHz		121,50
121,5 MHz power output	dBm		15,5
Soak temperature	°C		-20,2
Extra feature			No
First Burst Delay	> 47,5 sec		60,5 sec

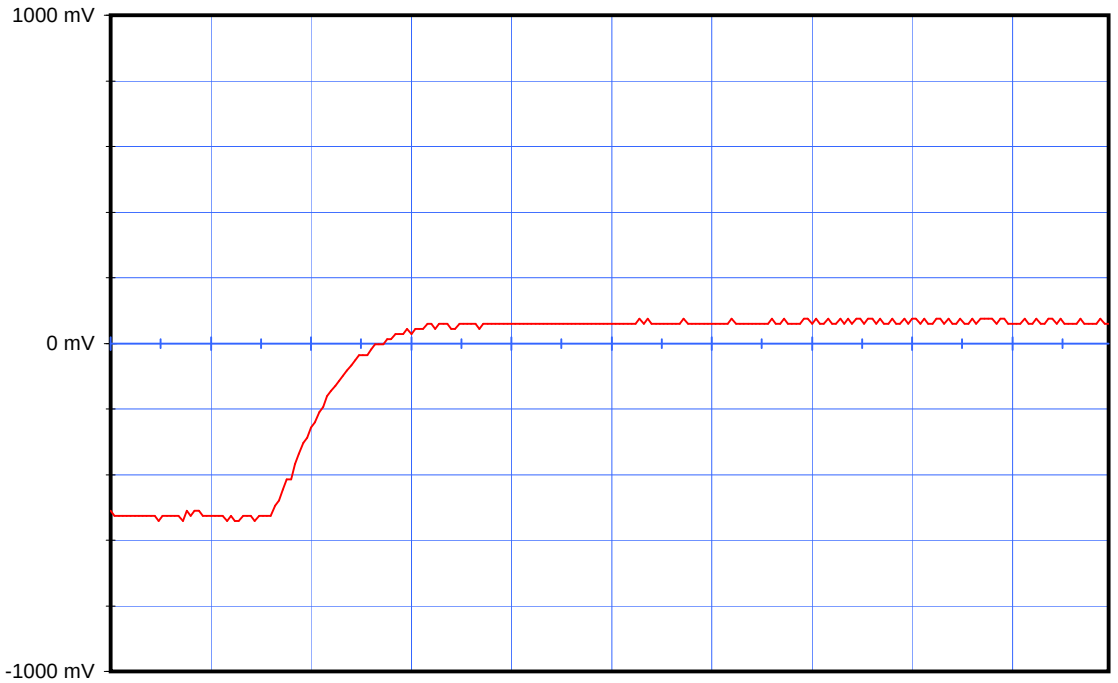




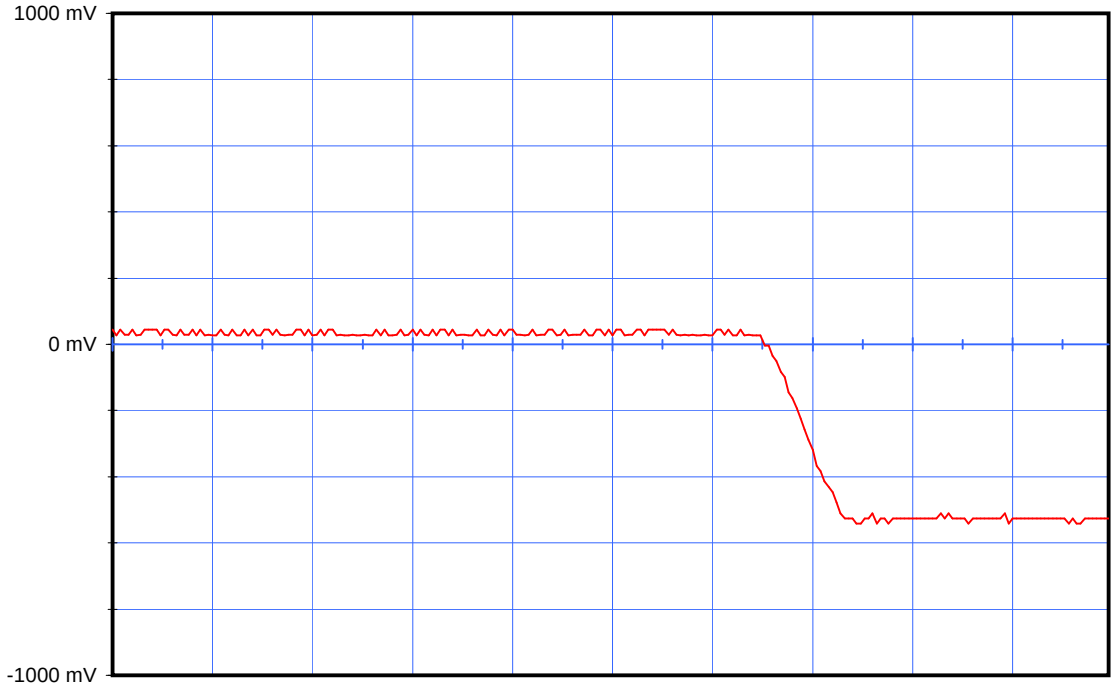
0 ms 10 ms 20 ms
Vmarker1 850 mv ==> 1,2 rd 2 ms/div.
Vmarker2 700 mv ==> 1 rd



8 ms 10,5 ms 13 ms
Duty Cycle : 0,008068524 0,5 ms/div.
falltime(1)<= 99,8005 us risetime(1)<= 99,7996 us
+width(1) 1,24751 ms -widht(1) 1,22754 ms



-1 ms 1,5 ms 4 ms
risetime(1)<= 469,062 us 0,5 ms/div.



-3,5 ms -1 ms 1,5 ms
falltime(1)<= 329,342 us 0,5 ms/div.

Certification Test at 22°C Date of test : 24-juil-2009

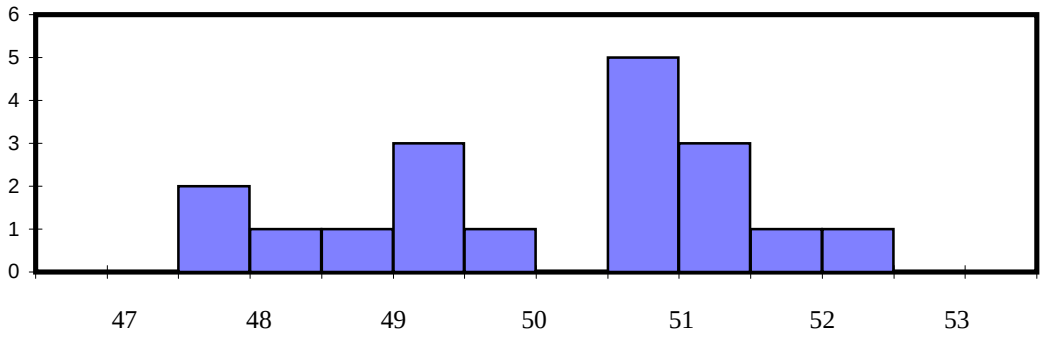
Manufacturer : KANNAD
Beacon Type : SAFELINK
Number : EUT 12

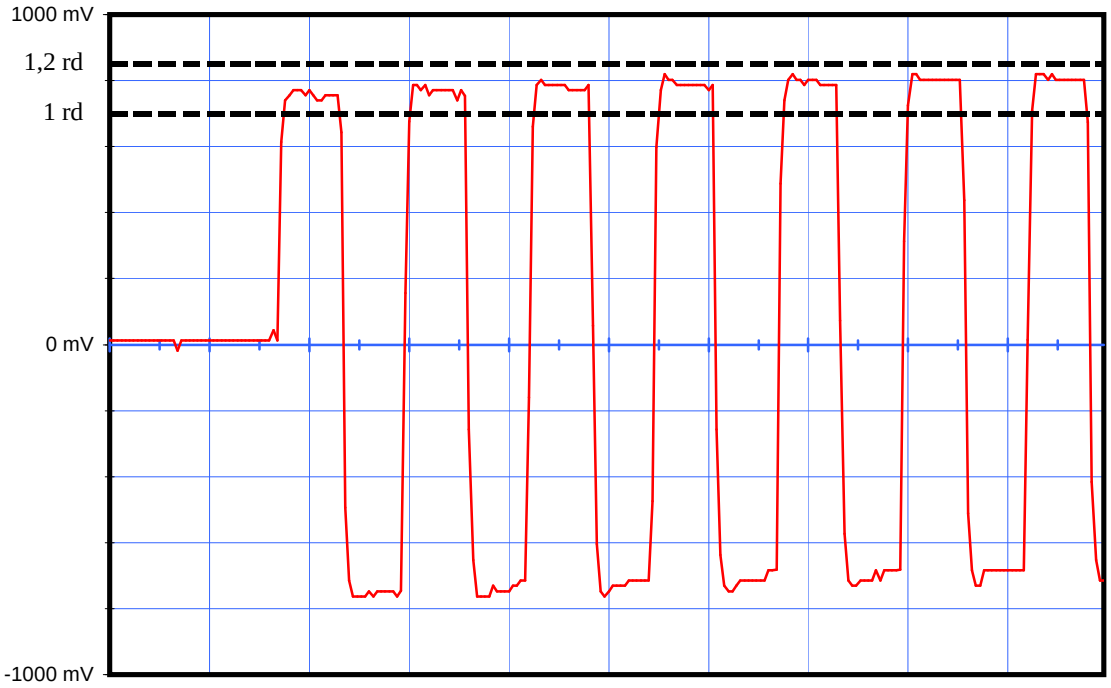
Message

Message received		FFFE2F8E3F00000AE2017508A9B70F2800DF	
Format Flag	25	1	
Protocol flag	26	0	
Ident./Position code	27-85	0	
Country Code/Country	27-36	227 / FRANCE	
Protocol Code : U/Std-Nat	37-39/37-40	1111	
Protocol Code Used	37-39/37-40	National Location - Test	
Identification Data	40-85/41-64/41-58		
Identification Used		0	
Calculated BCH1	25-85	1422A6	
Encoded BCH1	86-106	1422A6	
Homing	112	1	
Em.cod/nat.use/supp.data	107-112	110111	
Encod pos data	111	1	Internal
Fixed Data "1"	108	1	OK
Calculated BCH2	107-132	0DF	
Encoded BCH2	133-144	0DF	
Latitude position		North 43° 33' 32"	
Longitude position		East 1° 28' 40"	
Delta position		0,060 km	

Electrical and other parameters

CW preamble	ms 158,4 <	< 161,6	159,73
Total transmission time	ms 514,8 <	<525,2	520,15
Modulation frequency	Hz 396<	< 404	401,07
Phase deviation : total	rd	<=2,40	2,16
Phase deviation : positive	rd 1,00 <	< 1,20	1,08
Phase deviation : negative	rd -1,20 <	< -1,00	-1,08
Symmetry measurement	%	<=5 %	0,40
Nominal frequency : F2	Hz		406037912,86
Short term2			2,66E-10
Short term3			6,49E-11
Slope			1,30E-11
Residual			1,10E-10
406 MHz power output	dBm		36,5
Homing frequency	MHz		121,50
121,5 MHz power output	dBm		16,4
Soak temperature	°C		22,0
Extra feature			No
First Burst Delay	> 47,5 sec		61,3 sec





0 ms 10 ms 20 ms

Vmarker1 850 mv ==> 1,2 rd 2 ms/div.

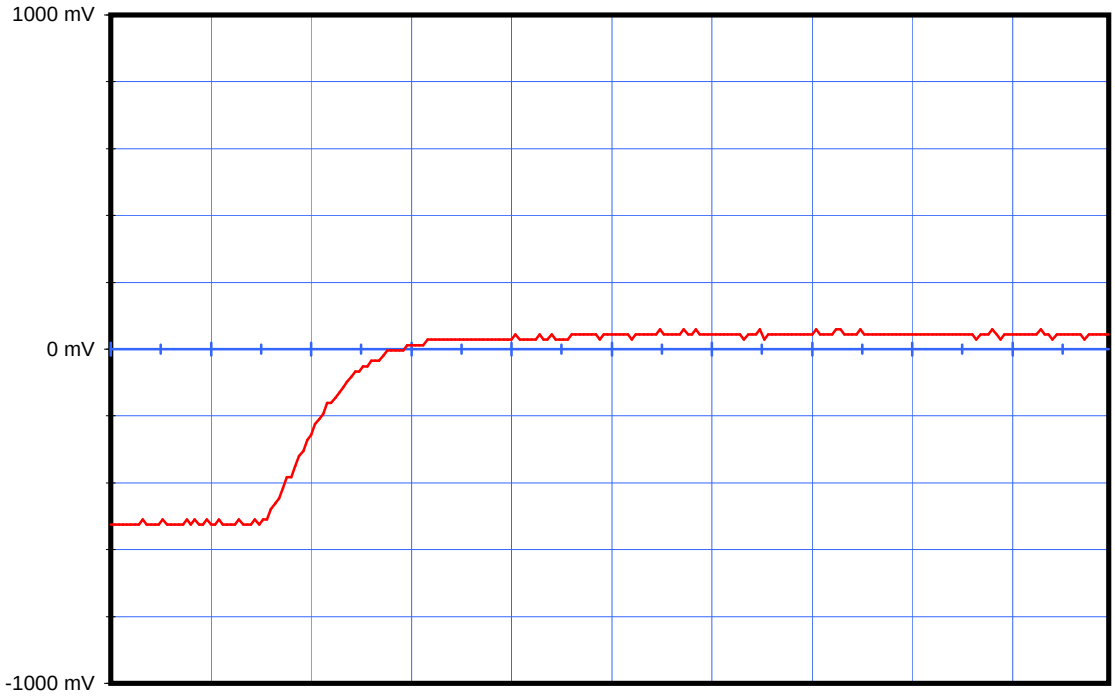
Vmarker2 700 mv ==> 1 rd

8 ms 10,5 ms 13 ms

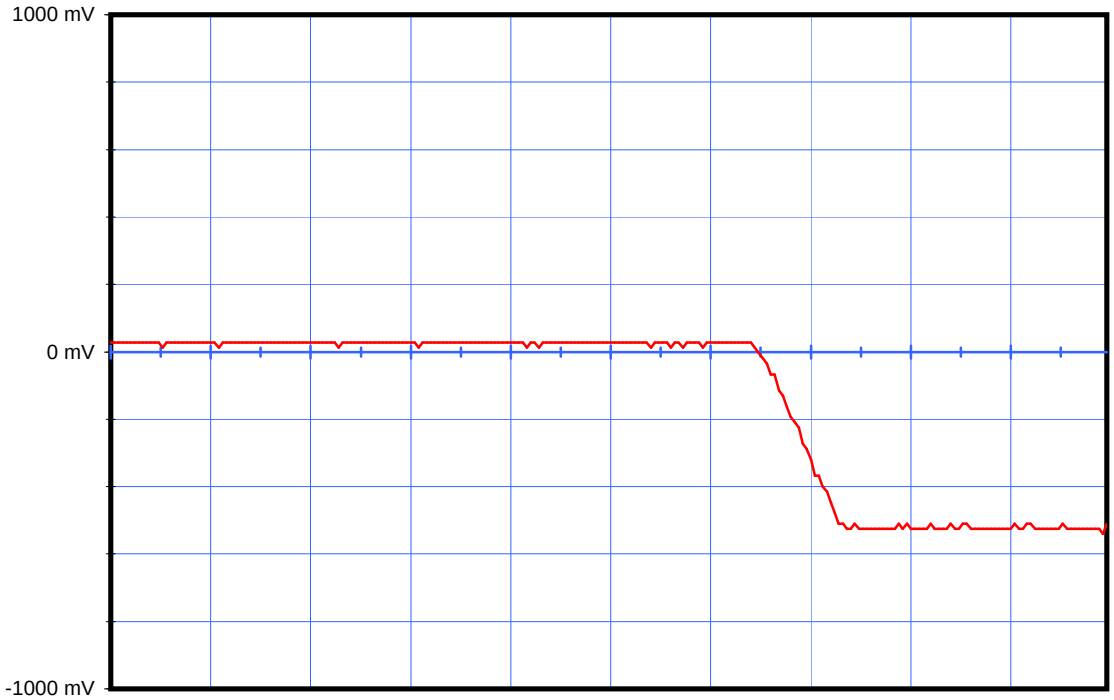
Duty Cycle : 0,004020072 0,5 ms/div.

falltime(1)<= 109,781 us risetime(1)<= 119,76 us

+width(1) 1,24751 ms -widht(1) 1,23752 ms



-1 ms 1,5 ms 4 ms
risetime(1)<= 558,882 us 0,5 ms/div.



-3,5 ms -1 ms 1,5 ms
falltime(1)<= 349,301 us 0,5 ms/div.

Certification Test at 55°C Date of test : 23-juil-2009

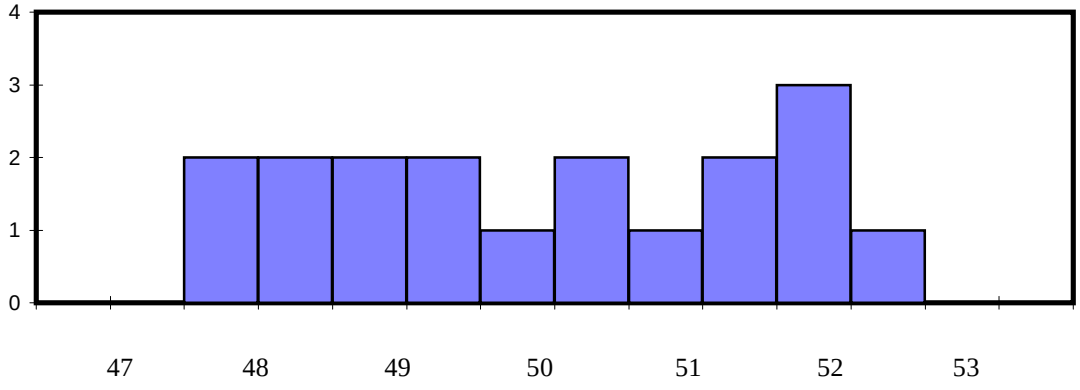
Manufacturer : KANNAD
Beacon Type : SAFELINK
Number : EUT 12

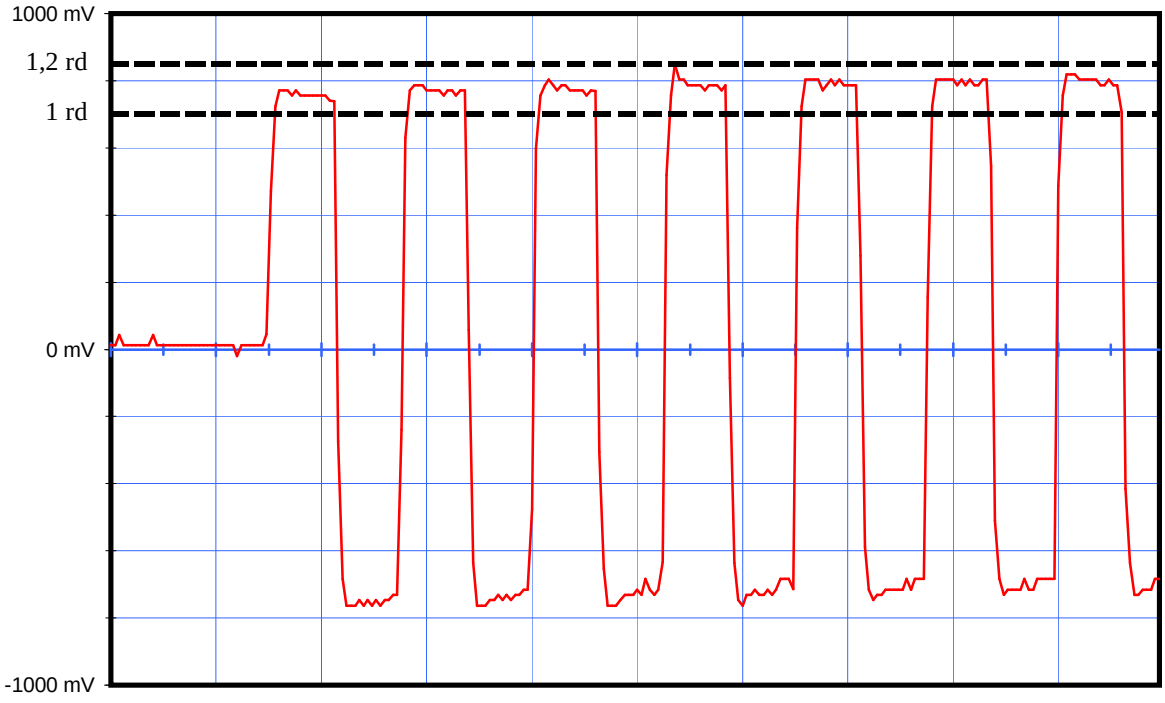
Message

Message received		FFFE2F8E3F00000AE2017508A9B70D280220	
Format Flag	25	1	
Protocol flag	26	0	
Ident./Position code	27-85	0	
Country Code/Country	27-36	227 / FRANCE	
Protocol Code : U/Std-Nat	37-39/37-40	1111	
Protocol Code Used	37-39/37-40	National Location - Test	
Identification Data	40-85/41-64/41-58		
Identification Used		0	
Calculated BCH1	25-85	1422A6	
Encoded BCH1	86-106	1422A6	
Homing	112	1	
Em.cod/nat.use/supp.data	107-112	110111	
Encod pos data	111	1	Internal
Fixed Data "1"	108	1	OK
Calculated BCH2	107-132	220	
Encoded BCH2	133-144	220	
Latitude position		North 43° 33' 36"	
Longitude position		East 1° 28' 40"	
Delta position		0,080 km	

Electrical and other parameters

CW preamble	ms 158,4 <	< 161,6	159,36
Total transmission time	ms 514,8 <	<525,2	519,34
Modulation frequency	Hz 396<	< 404	401,54
Phase deviation : total	rd	<=2,40	2,16
Phase deviation : positive	rd 1,00 <	< 1,20	1,08
Phase deviation : negative	rd -1,20 <	< -1,00	-1,08
Symmetry measurement	%	<=5 %	0,40
Nominal frequency : F2	Hz		406037918,61
Short term2			1,06E-10
Short term3			6,66E-11
Slope			2,23E-11
Residual			1,02E-10
406 MHz power output	dBm		35,9
Homing frequency	MHz		121,50
121,5 MHz power output	dBm		16,6
Soak temperature	°C		54,9
Extra feature			No
First Burst Delay	> 47,5 sec		59,7 sec

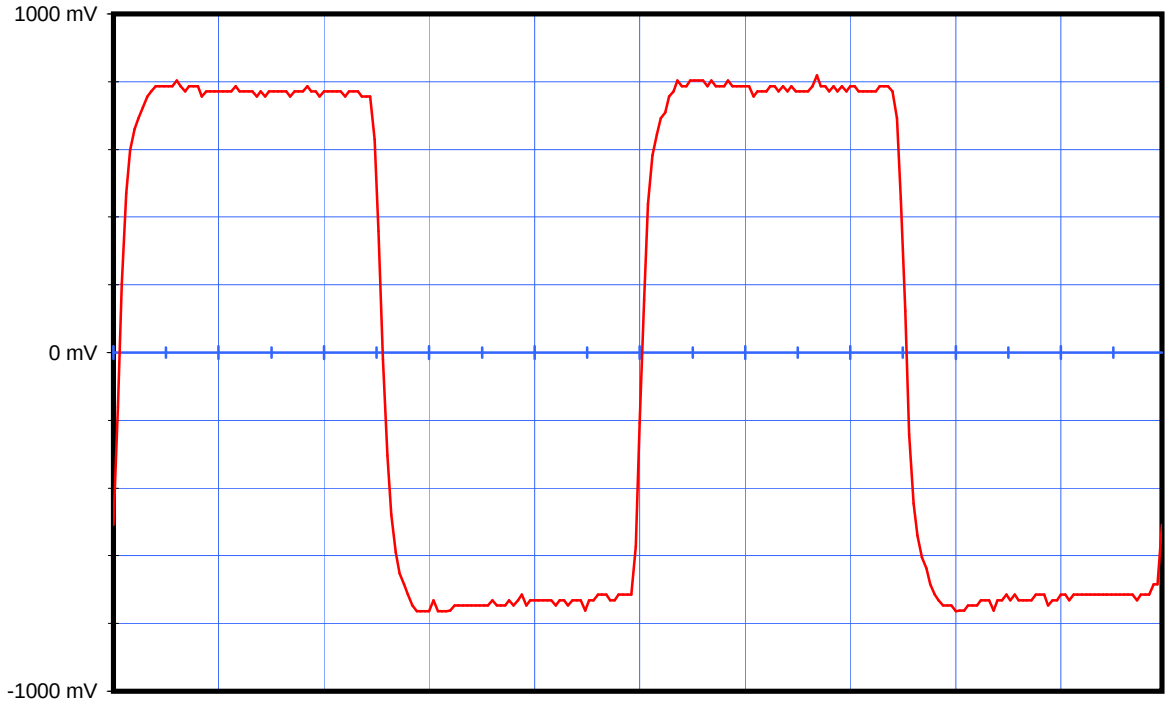




0 ms 10 ms 20 ms

Vmarker1 850 mv ==> 1,2 rd 2 ms/div.

Vmarker2 700 mv ==> 1 rd

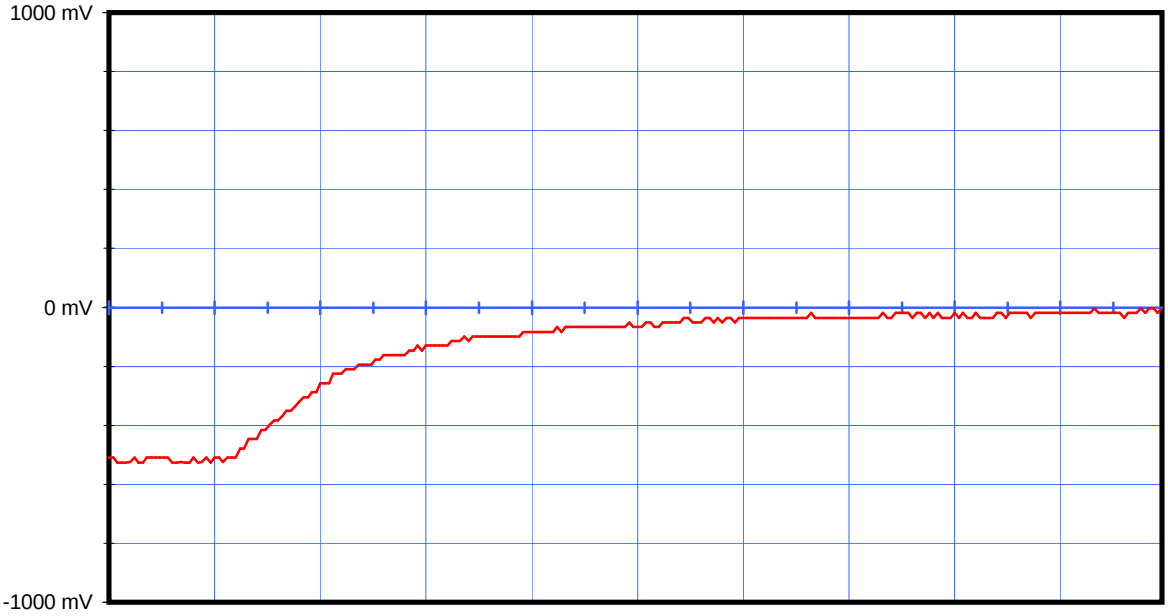


8 ms 10,5 ms 13 ms

Duty Cycle : 0,004012024 0,5 ms/div.

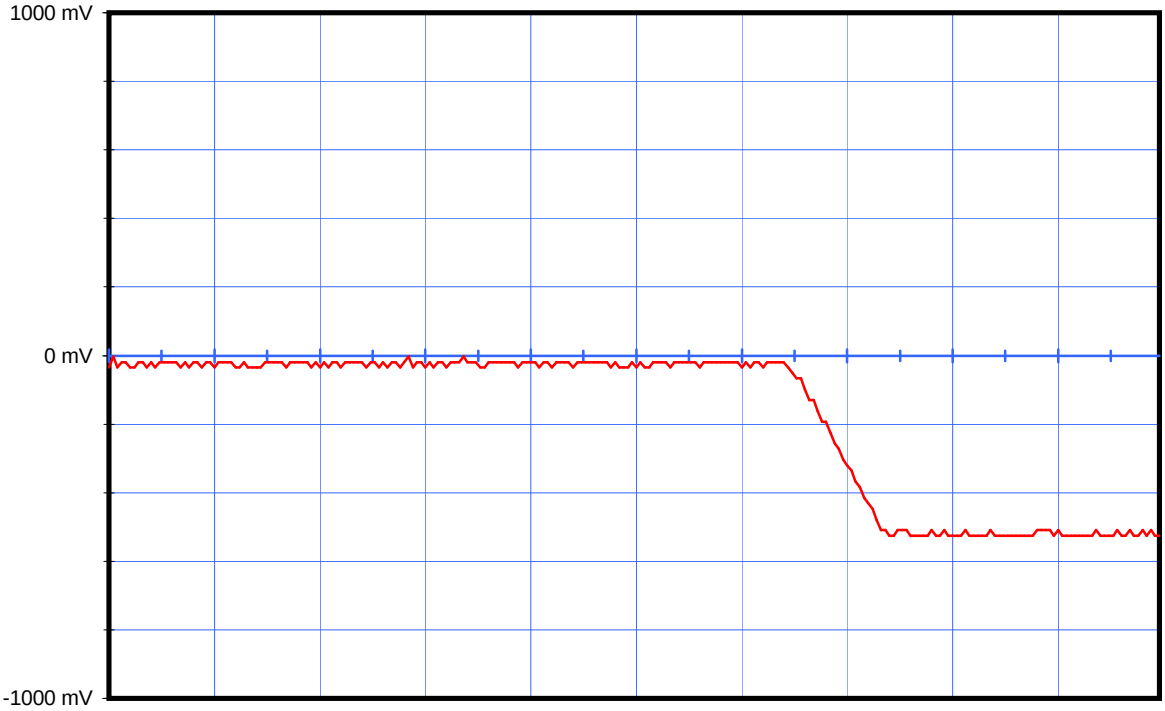
falltime(1)<= 99,8005 us risetime(1)<= 99,8005 us

+width(1) 1,2475 ms -widht(1) 1,23753 ms



-1 ms 1,5 ms 4 ms

risetime(1)<= 1576,85 us 0,5 ms/div.



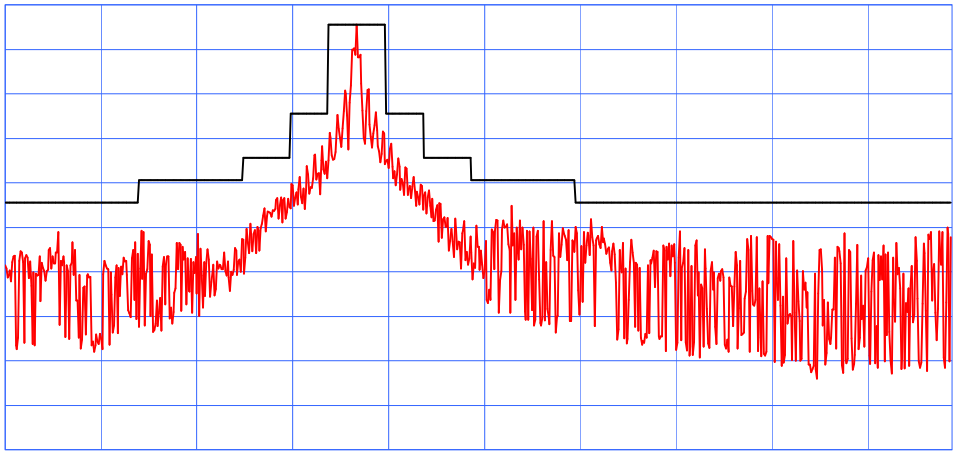
-3,5 ms -1 ms 1,5 ms

falltime(1)<= 389,222 us 0,5 ms/div.

SPURIOUS EMISSIONS RESULTS
KANNAD Epirb
SafeLink Auto/Manual+
N° EUT 12
at -20° C, 22° C and 55° C

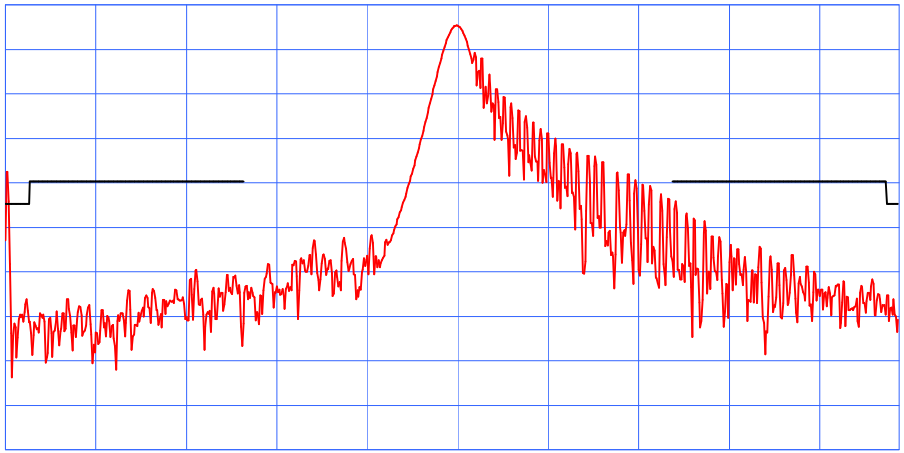
KANNAD
SafeLink Auto/Manual+
EUT 12
Certification nominale
406 MHz
-20 °C

CF : 406,05 MHz SP : 100 KHz



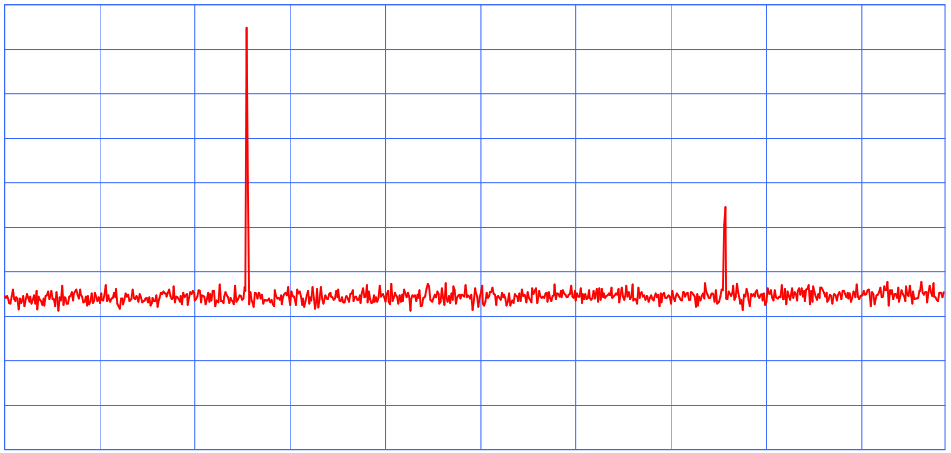
Rb : 0,1 KHz 10 dB/div. St : 30 S

CF : 406,037 MHz SP : 50 KHz



Rb : 1 KHz 10 dB/div. St : 0,305 S

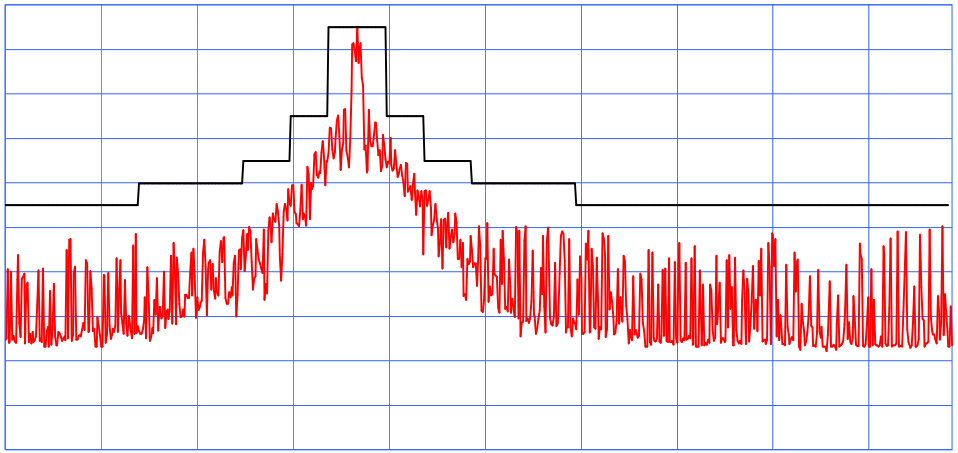
CF : 600 MHz Delta : -40,31 dB SP : 800000 KHz



Rb : 100 KHz 10 dB/div. St : 0,24 S

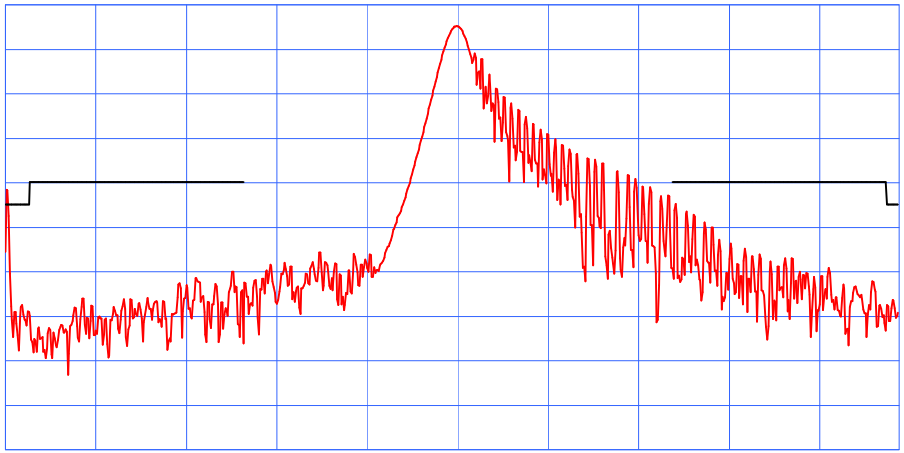
KANNAD
SafeLink Auto/Manual+
EUT 12
Certification nominale
406 MHz
22 °C

CF : 406,037 MHz SP : 2900000 KHz



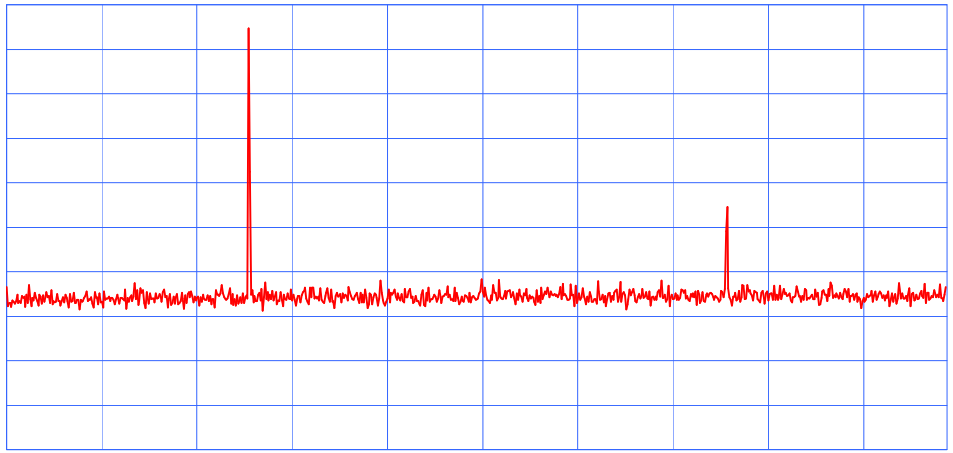
Rb : 0,1 KHz 10 dB/div. St : 1000 S

CF : 406,037 MHz SP : 50 KHz



Rb : 1 KHz 10 dB/div. St : 0,305 S

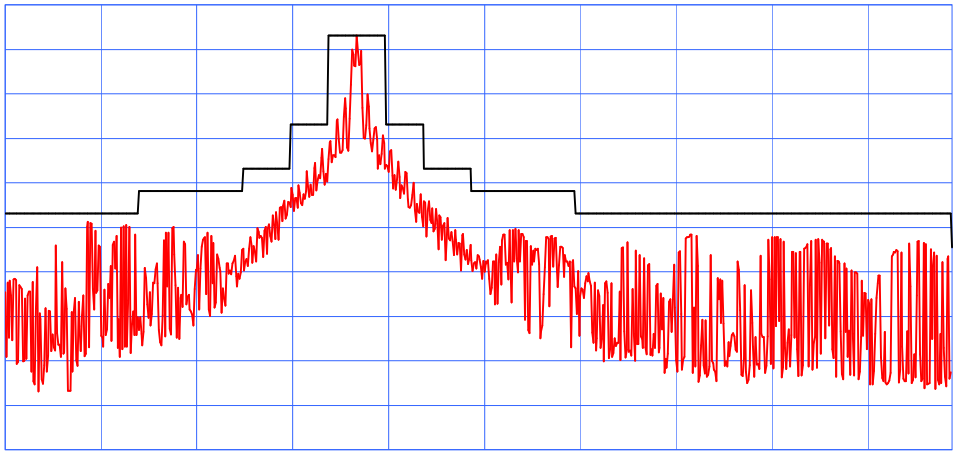
CF : 600 MHz Delta : -40,26 dB SP : 800000 KHz



Rb : 100 KHz 10 dB/div. St : 0,24 S

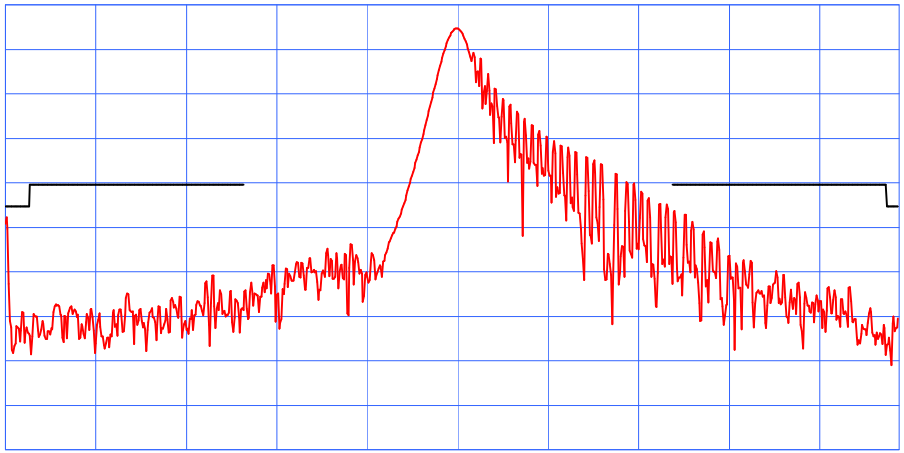
KANNAD
SafeLink Auto/Manual+
EUT 12
Certification nominale
406 MHz
55 °C

CF : 406,05 MHz SP : 100 KHz



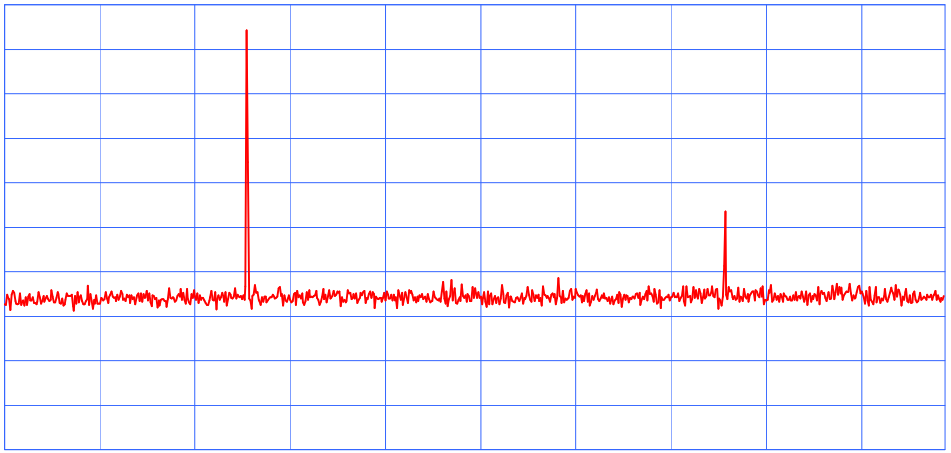
Rb : 0,1 KHz 10 dB/div. St : 30 S

CF : 406,037 MHz SP : 50 KHz



Rb : 1 KHz 10 dB/div. St : 0,305 S

CF : 600 MHz Delta : -40,7 dB SP : 800000 KHz



Rb : 100 KHz 10 dB/div. St : 0,24 S

406 MHz VSWR 3:1 TEST RESULTS ON
KANNAD Epirb
SafeLink Auto/Manual+
N° EUT 12
at -20° C, 22° C and 55° C

Certification Test VSWR at -20°C Date of test : 30-juil-09

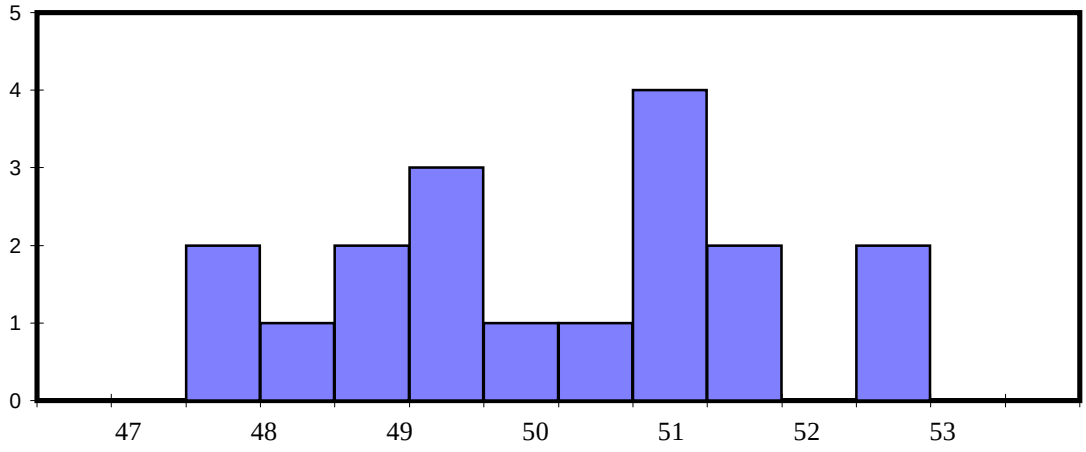
Manufacturer : KANNAD
Beacon Type : SAFELINK
Number : EUT 12

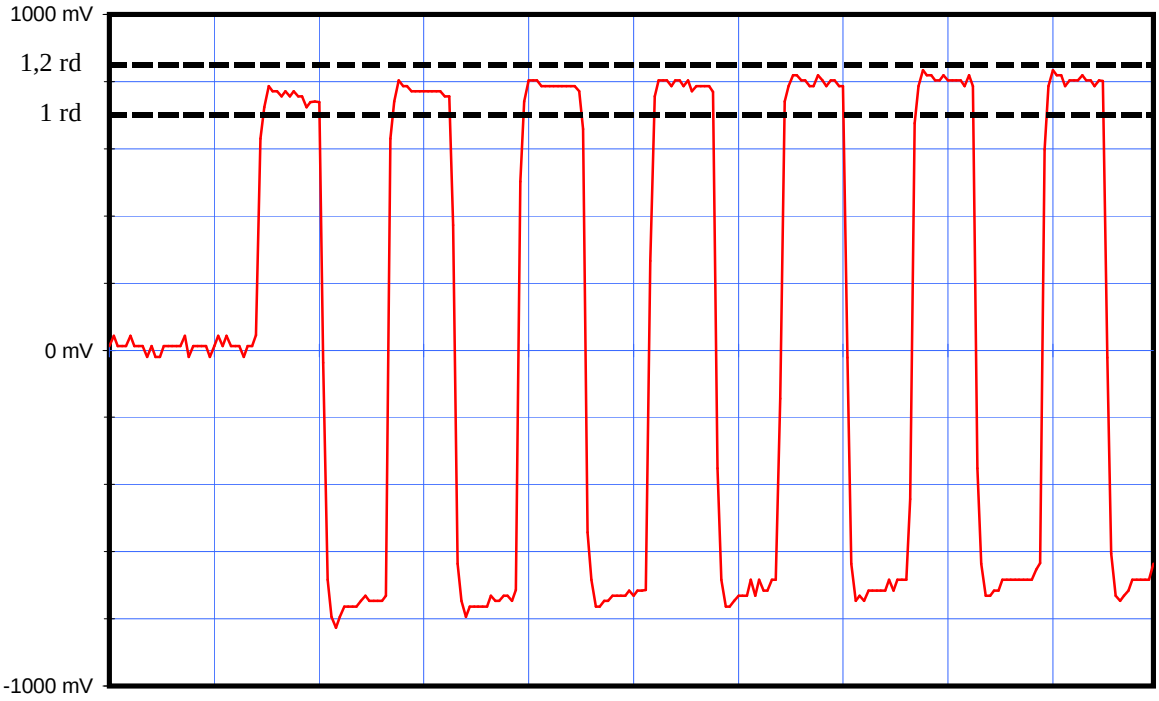
Message

Message received		FFFE2F8E3F00000AE2017508A9B70D280220
Format Flag	25	1
Protocol flag	26	0
Ident./Position code	27-85	0
Country Code/Country	27-36	227 / FRANCE
Protocol Code : U/Std-Nat	37-39/37-40	1111
Protocol Code Used	37-39/37-40	National Location - Test
Identification Data	40-85/41-64/41-58	
Identification Used		0
Calculated BCH1	25-85	1422A6
Encoded BCH1	86-106	1422A6
Homing	112	1
Em.cod/nat.use/supp.data	107-112	110111
Encod pos data	111	1 Internal
Fixed Data "1"	108	1
Calculated BCH2	107-132	220
Encoded BCH2	147-144	220
Latitude position		North 43° 33' 36"
Longitude position		East 1° 28' 40"
Delta position		0,080 km

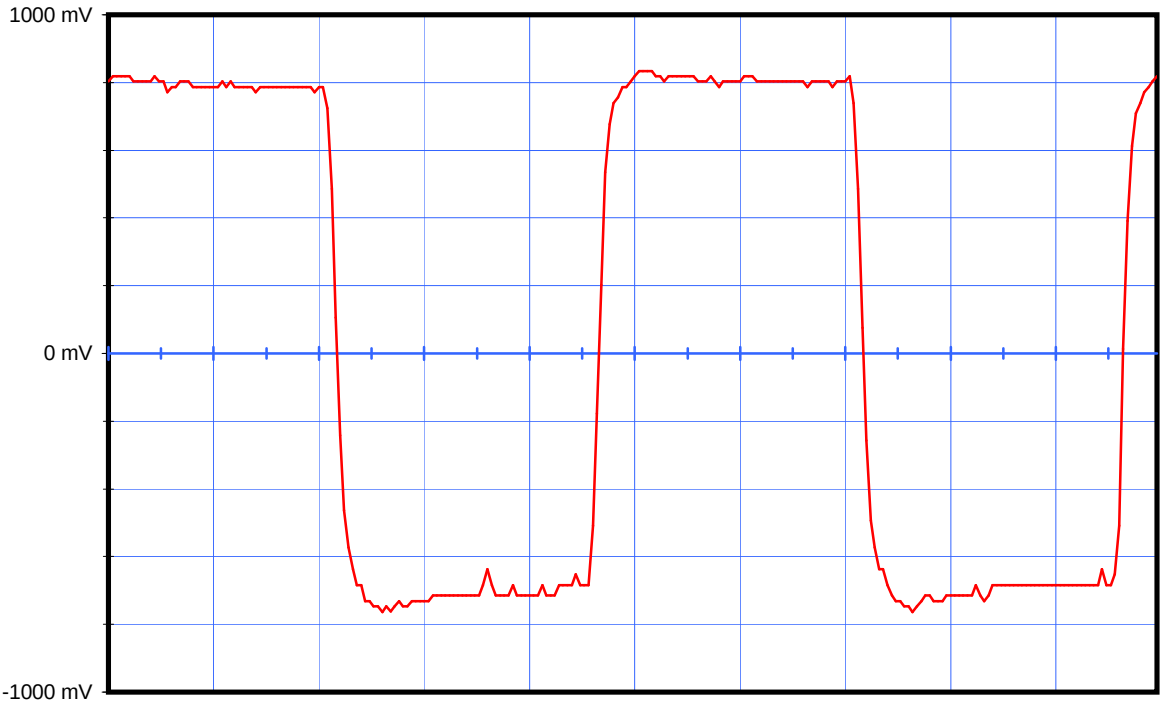
Electrical and other parameters

Rise time Modulation	ms			0,0898
Fall time Modulation	ms			0,0998
Phase deviation :positive	rd	1,00 <	< 1,20	1,08
Phase deviation : negative	rd	-1,20 <	< -1,00	-1,08
Symmetry measurement	%		<=5 %	0,00
Nominal frequency : F2	Hz			406037932,15





Vmarker1 850 mv ==> 1,2 rd 2 ms/div.
Vmarker2 700 mv ==> 1 rd



Duty Cycle : 0 0,5 ms/div.
falltime(1)<= 99,8005 us risetime(1)<= 89,8205 us
+width(1) 1,2475 ms -widht(1) 1,2475 ms

Certification Test VSWR at 22°C Date of test : 31 juil 2009

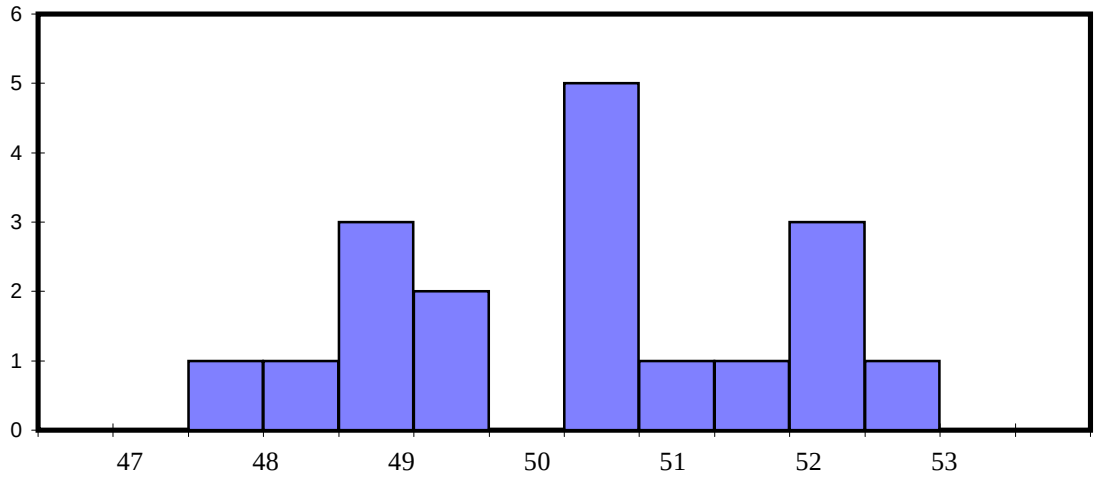
Manufacturer : KANNAD
Beacon Type : SAFELINK
Number : EUT 12

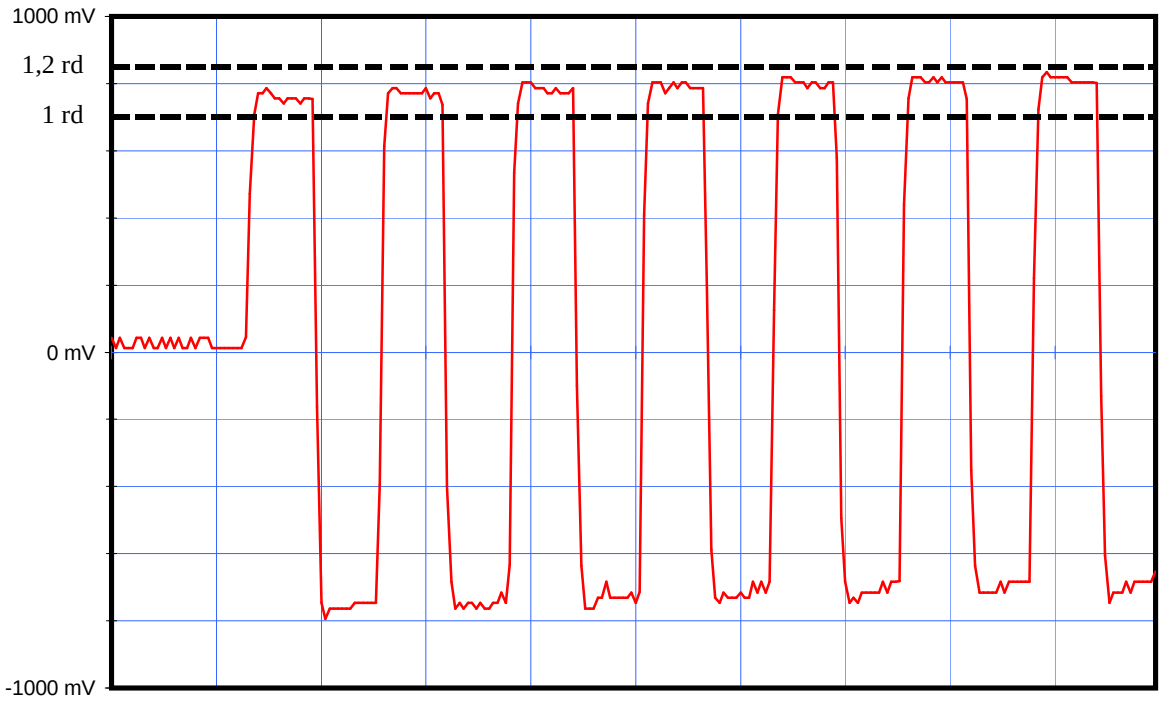
Message

Message received		FFFE2F8E3F00000AE2017508A9B70F2C0836
Format Flag	25	1
Protocol flag	26	0
Ident./Position code	27-85	0
Country Code/Country	27-36	227 / FRANCE
Protocol Code : U/Std-Nat	37-39/37-40	1111
Protocol Code Used	37-39/37-40	National Location - Test
Identification Data	40-85/41-64/41-58	
Identification Used		0
Calculated BCH1	25-85	1422A6
Encoded BCH1	86-106	1422A6
Homing	112	1
Em.cod/nat.use/supp.data	107-112	110111
Encod pos data	111	1 Internal
Fixed Data "1"	108	1
Calculated BCH2	107-132	836
Encoded BCH2	147-144	836
Latitude position		North 43° 33' 32"
Longitude position		East 1° 28' 44"
Delta position		0,070 km

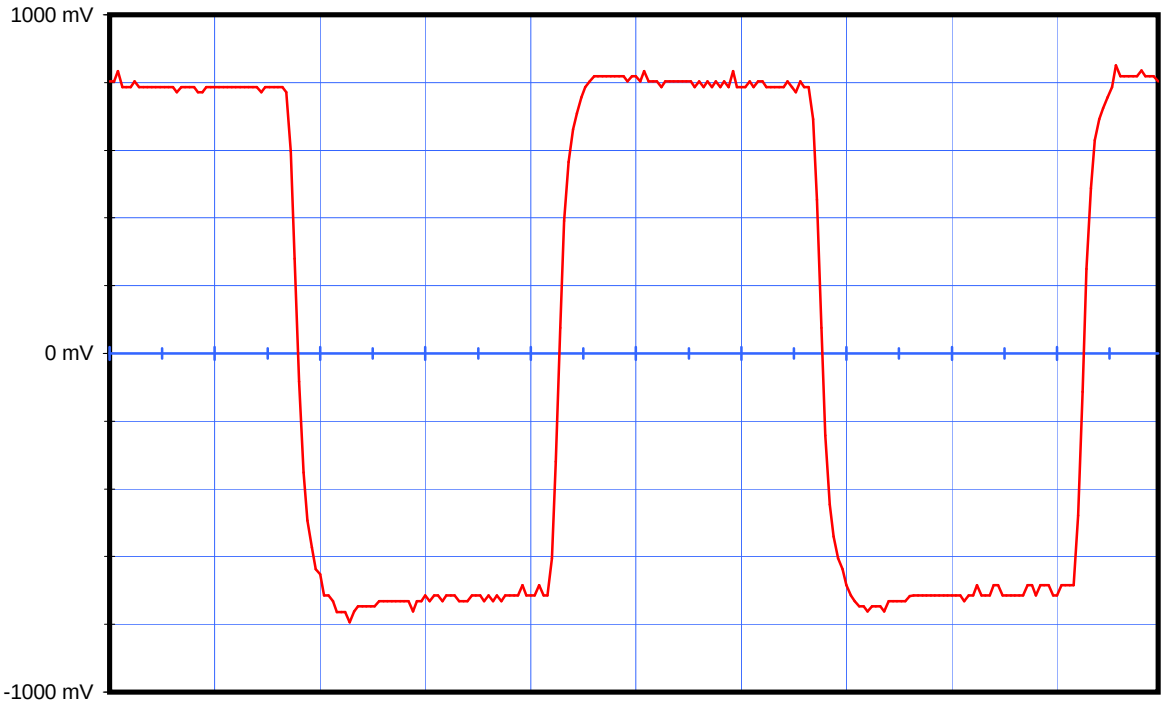
Electrical and other parameters

Rise time Modulation	ms			0,0998
Fall time Modulation	ms			0,1098
Phase deviation :positive	rd	1,00 <	< 1,20	1,07
Phase deviation : negative	rd	-1,20 <	< -1,00	-1,09
Symmetry measurement	%		<=5 %	0,40
Nominal frequency : F2	Hz			406037904,58





Vmarker1 850 mv ==> 1,2 rd 2 ms/div.
Vmarker2 700 mv ==> 1 rd



Duty Cycle : 0,004020072 0,5 ms/div.
falltime(1)<= 109,781 us risetime(1)<= 99,8005 us
+width(1) 1,24751 ms -widht(1) 1,23752 ms

Certification Test VSWR at 55°C Date of test : 30 juil 2009

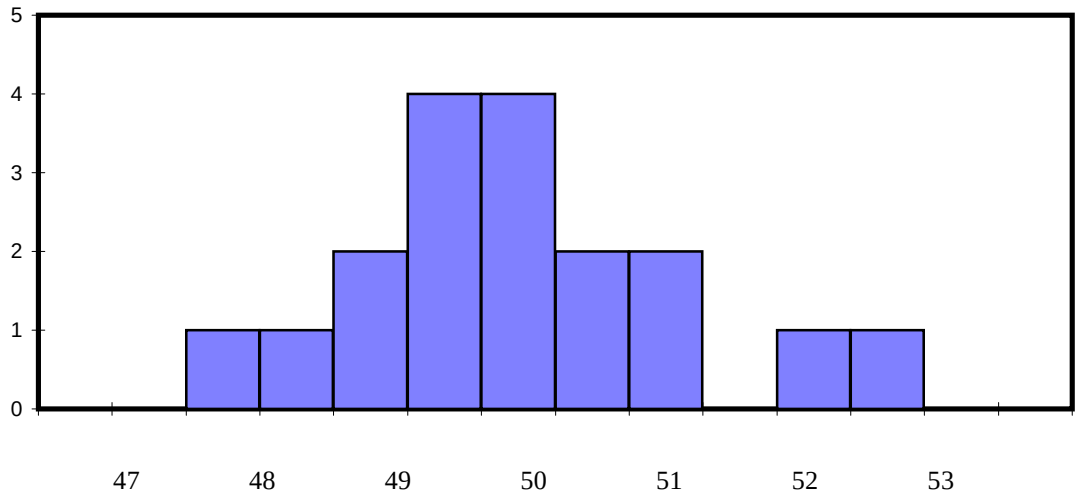
Manufacturer : KANNAD
Beacon Type : SAFELINK
Number : EUT 12

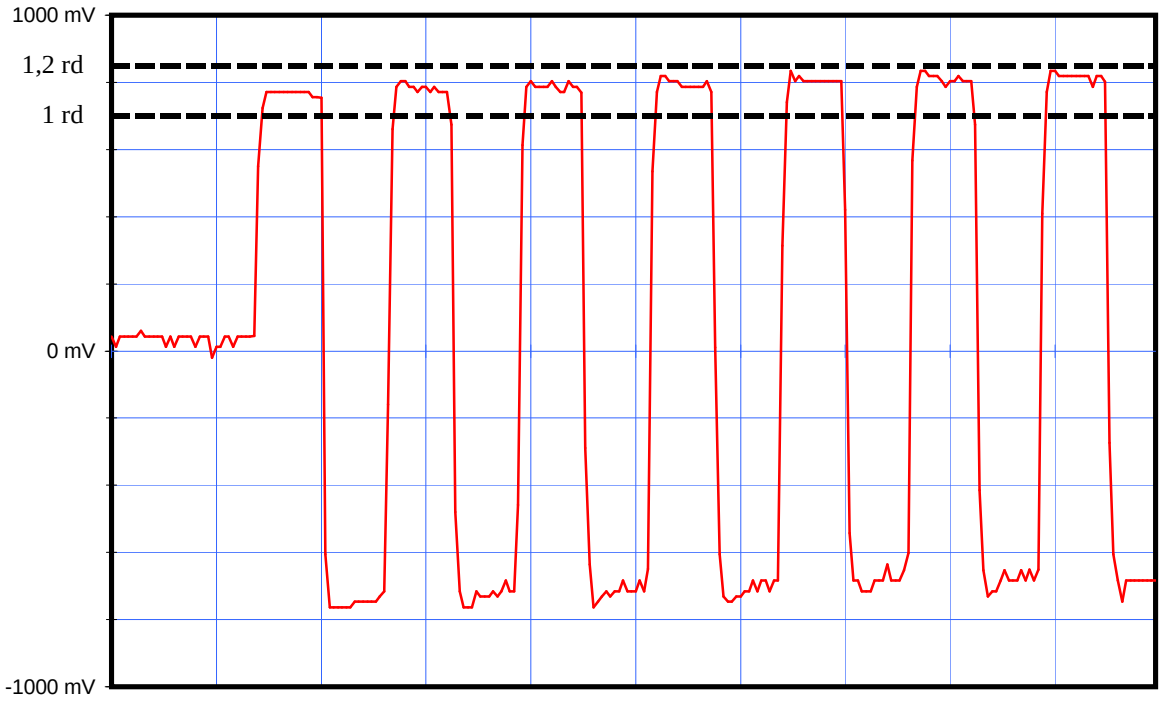
Message

Message received		FFFE2F8E3F00000AE2017508A9B70F2800DF
Format Flag	25	1
Protocol flag	26	0
Ident./Position code	27-85	0
Country Code/Country	27-36	227 / FRANCE
Protocol Code : U/Std-Nat	37-39/37-40	1111
Protocol Code Used	37-39/37-40	National Location - Test
Identification Data	40-85/41-64/41-58	
Identification Used		0
Calculated BCH1	25-85	1422A6
Encoded BCH1	86-106	1422A6
Homing	112	1
Em.cod/nat.use/supp.data	107-112	110111
Encod pos data	111	1 Internal
Fixed Data "1"	108	1
Calculated BCH2	107-132	0DF
Encoded BCH2	147-144	0DF
Latitude position		North 43° 33' 32"
Longitude position		East 1° 28' 40"
Delta position		0,060 km

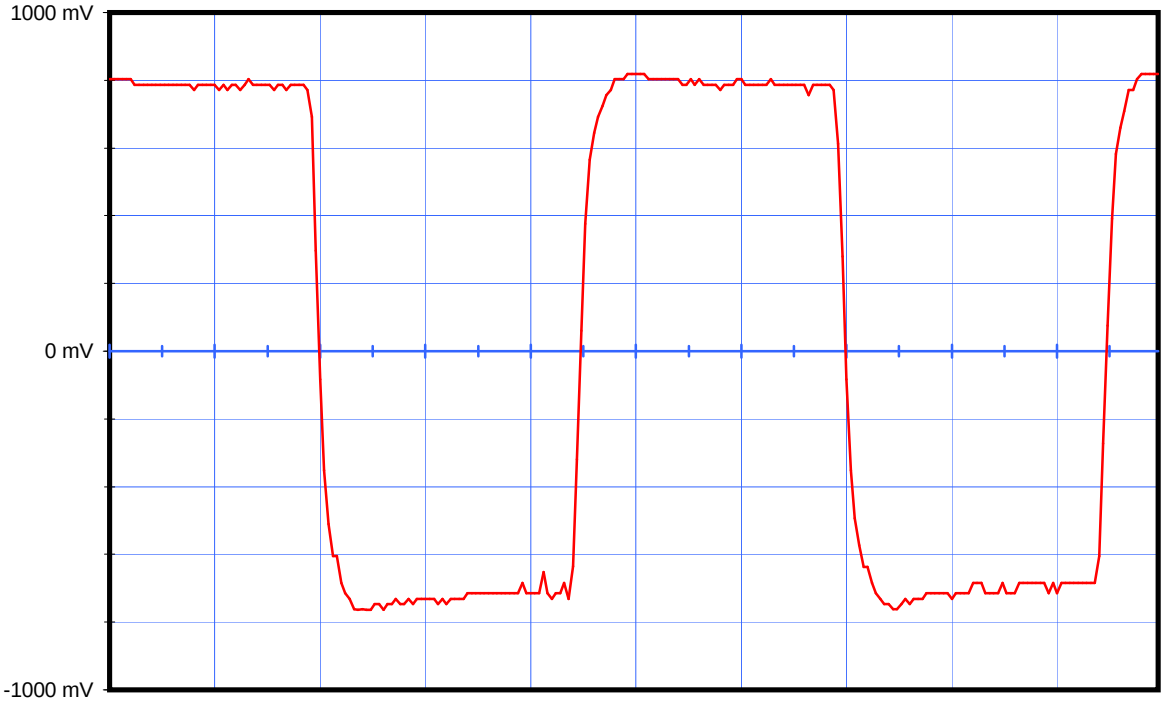
Electrical and other parameters

Rise time Modulation	ms			0,0998
Fall time Modulation	ms			0,0998
Phase deviation :positive	rd	1,00 <	< 1,20	1,08
Phase deviation : negative	rd	-1,20 <	< -1,00	-1,08
Symmetry measurement	%		<=5 %	0,80
Nominal frequency : F2	Hz			406037932,70





Vmarker1 850 mv ==> 1,2 rd 2 ms/div.
Vmarker2 700 mv ==> 1 rd



Duty Cycle : 0,008003976 0,5 ms/div.
falltime(1)<= 99,8005 us risetime(1)<= 99,8005 us
+width(1) 1,25749 ms -widht(1) 1,23752 ms

SELF-TEST MODE CONTROL ON
KANNAD Epirb
SafeLink Auto/Manual+
N° EUT 12
at 22° C

Message at 22°C

Manufacturer	KANNAD
Beacon model	SAFELINK
Serial number	EUT 12
Date of test	02-juil-09
Temperature	26,3
Message received	FFFED08E3F00001FC0FF0245B3B79F3C0010
Frame synchro. pattern	011010000
15 Hex ID	1C7E00003F81FE0

Total transmission time	ms	514.8<	<525.2	520,08

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
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	01001000101101100111 0
BCH 1 Calculated:	86-106	01001000101101100111 0
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	1C7E00003F81FE0

THERMAL SHOCK TEST RESULT ON
KANNAD Epirb
SafeLink Auto/Manual+
N° EUT 12
22°C to -10°C

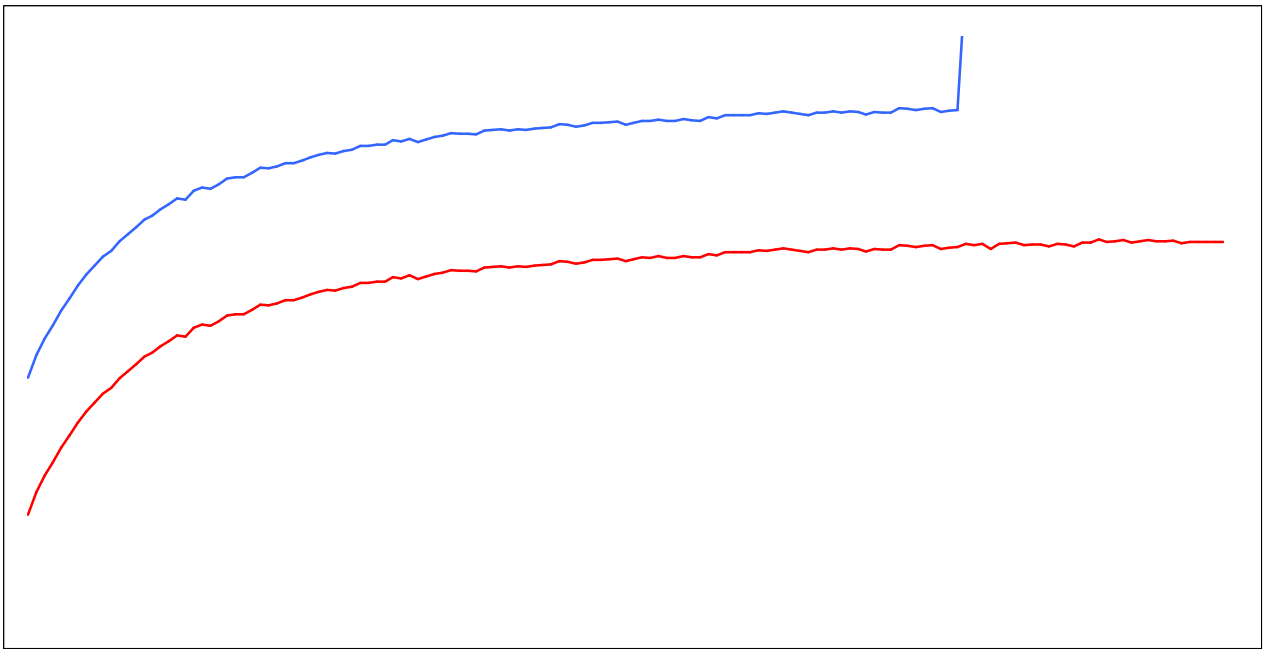
Temperature Soak : 22°C
Temperature Measure : -10°C

Warm Up	Δ Frequency (Hz)	Temp. (°C)	P406 (dBm)	P121.5 (dBm)
1	49899,73	-7,3	36,5	15,8
2	49900,04	-8,0	36,5	16,3
3	49900,34	-8,3	36,5	16,2
4	49901,08	-8,4	36,4	16,2
5	49902,06	-8,7	36,5	16,2
6	49903,08	-8,7	36,5	16,2
7	49904,12	-8,9	36,5	16,2
8	49905,23	-8,9	36,5	16,2
9	49906,33	-9,0	36,5	16,1
10	49907,51	-9,0	36,6	16,2
11	49908,54	-9,1	36,6	16,2
12	49909,56	-9,2	36,6	16,2
13	49910,50	-9,2	36,6	16,1
14	49911,35	-9,3	36,6	16,2
15	49912,18	-9,3	36,6	16,1
16	49912,96	-9,3	36,6	16,1
17	49913,77	-9,4	36,6	16,2
18	49914,44	-9,4	36,6	16,1

No	Temp.	Slope	Sigma	P406	Short term	P121.5
1	-9,4	2,8E-9	8,7E-10	36,6	6,8E-11	16,1
18	-9,7	8,4E-10	7,0E-10	36,7	9,2E-11	16,0
31	-9,7	3,0E-10	2,4E-10	36,7	7,4E-11	16,0
61	-9,9	7,6E-11	1,1E-10	36,7	1,0E-10	15,9
91	-9,8	4,7E-11	8,0E-11	36,7	9,4E-11	15,8
121	-9,9	2,1E-11	1,3E-10	36,8	8,3E-11	15,9

Frequency variation

406036930



406036913

Initial tracing Smoothed tracing

Beacon message during Thermal Shock Test :
FFFED08E3F00001FC0FF0245B3B79F3C0010

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
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	01001000101101100111O
BCH 1 Calculated:	86-106	01001000101101100111O
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	1C7E00003F81FE0

FFFE2F8E3F00000AE2017508A9B70F2C0836

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
Latitude Flag: North	59	0
Latitude (Degrees): 43	60-66	0101011
Latitude (Minutes): 34	67-71	10001
Longitude Flag: East	72	0
Longitude (Degrees): 1	73-80	00000001
Longitude (Minutes): 28	81-85	01110
BCH 1 Encoded:	86-106	10100001000101010100110
BCH 1 Calculated:	86-106	10100001000101010100110
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: 28	116-119	0111
Longitude Offset Sign: +	120	1
Longitude Offset Minutes: 0	121-122	00
Longitude Offset Seconds: 44	123-126	1011
Additional Id (Nat Use)	127-132	000000
BCH 2 Encoded:	133-144	100000110110
BCH 2 Calculated:	N/A	100000110110
Composite Latitude: 43.558888888888895 Degrees North	N/A	Composite Longitude: 1.478888888888889 Degrees East
15 Hex ID:	N/A	1C7E00003F81FE0

FFFE2F8E3F00000AE2017508A9B70D240E22

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
Latitude Flag: North	59	0
Latitude (Degrees): 43	60-66	0101011
Latitude (Minutes): 34	67-71	10001
Longitude Flag: East	72	0
Longitude (Degrees): 1	73-80	00000001
Longitude (Minutes): 28	81-85	01110
BCH 1 Encoded:	86-106	10100001000101010100110
BCH 1 Calculated:	86-106	10100001000101010100110
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: 24	116-119	0110
Longitude Offset Sign: +	120	1
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	111000100010
BCH 2 Calculated:	N/A	111000100010
Composite Latitude: 43.56 Degrees North	N/A	Composite Longitude: 1.4766666666666668 Degrees East
15 Hex ID:	N/A	1C7E00003F81FE0

FFFE2F8E3F00000AE2017508A9B70F2800DF

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
Latitude Flag: North	59	0
Latitude (Degrees): 43	60-66	0101011
Latitude (Minutes): 34	67-71	10001
Longitude Flag: East	72	0
Longitude (Degrees): 1	73-80	00000001
Longitude (Minutes): 28	81-85	01110
BCH 1 Encoded:	86-106	10100001000101010110
BCH 1 Calculated:	86-106	10100001000101010110
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: 28	116-119	0111
Longitude Offset Sign: +	120	1
Longitude Offset Minutes: 0	121-122	00
Longitude Offset Seconds: 40	123-126	1010
Additional Id (Nat Use)	127-132	000000
BCH 2 Encoded:	133-144	000011011111
BCH 2 Calculated:	N/A	000011011111
Composite Latitude: 43.558888888888895 Degrees North	N/A	Composite Longitude: 1.4777777777777779 Degrees East
15 Hex ID:	N/A	1C7E00003F81FE0

FFFE2F8E3F00000AE2017508A9B70D280220

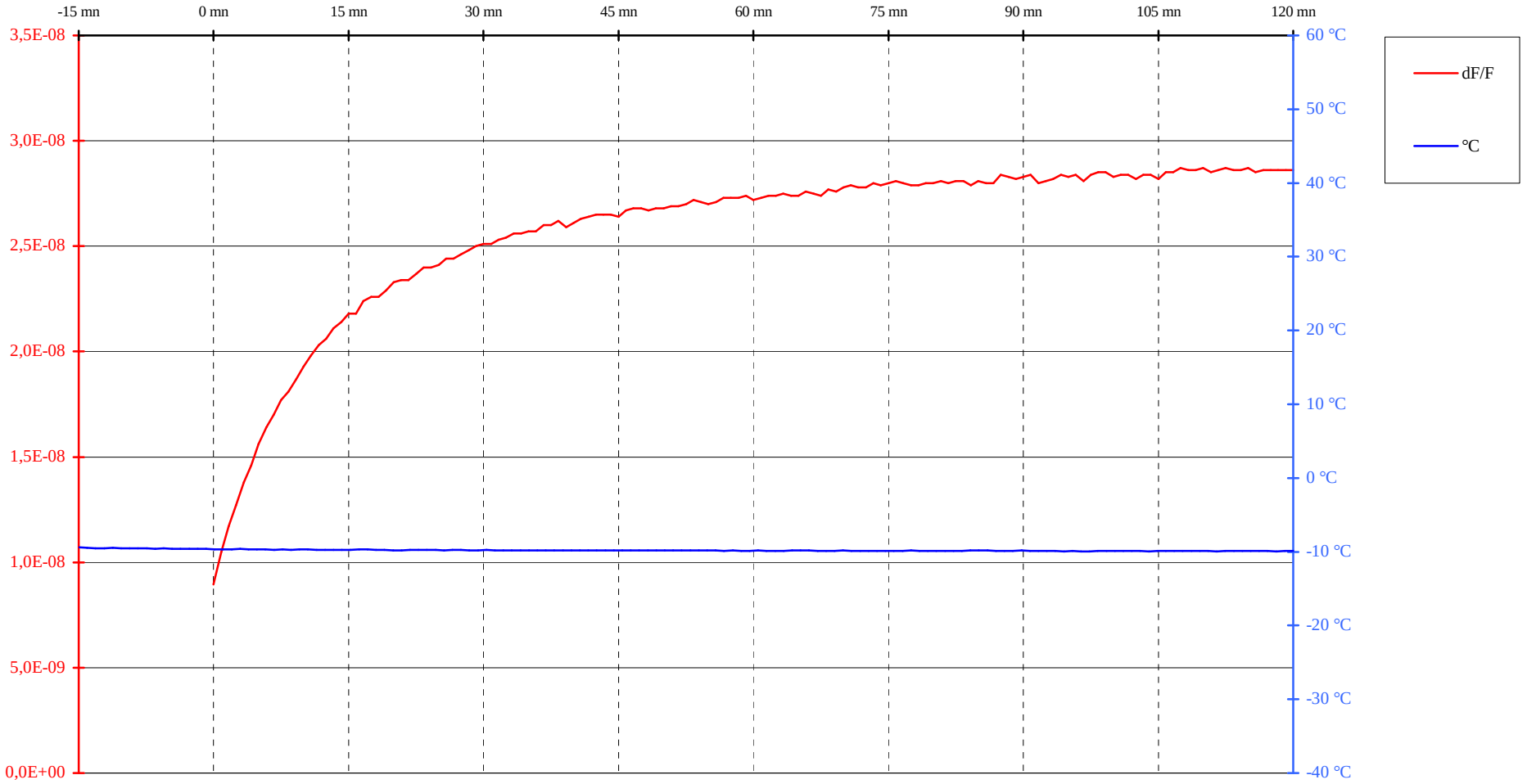
ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
Latitude Flag: North	59	0
Latitude (Degrees): 43	60-66	0101011
Latitude (Minutes): 34	67-71	10001
Longitude Flag: East	72	0
Longitude (Degrees): 1	73-80	00000001
Longitude (Minutes): 28	81-85	01110
BCH 1 Encoded:	86-106	10100001000101010110
BCH 1 Calculated:	86-106	10100001000101010110
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: 24	116-119	0110
Longitude Offset Sign: +	120	1
Longitude Offset Minutes: 0	121-122	00
Longitude Offset Seconds: 40	123-126	1010
Additional Id (Nat Use)	127-132	000000
BCH 2 Encoded:	133-144	001000100000
BCH 2 Calculated:	N/A	001000100000
Composite Latitude: 43.56 Degrees North	N/A	Composite Longitude: 1.4777777777777779 Degrees East
15 Hex ID:	N/A	1C7E00003F81FE0

THERMAL SHOCK TEST / 30 °C change (22 °C to -10 ° C)

Manufacturer : KANNAD
Model : SafeLink Auto/Manual+
Number : EUT 12

Date : 30/07/2009
Time : 15:23:49

FREQUENCY VARIATION

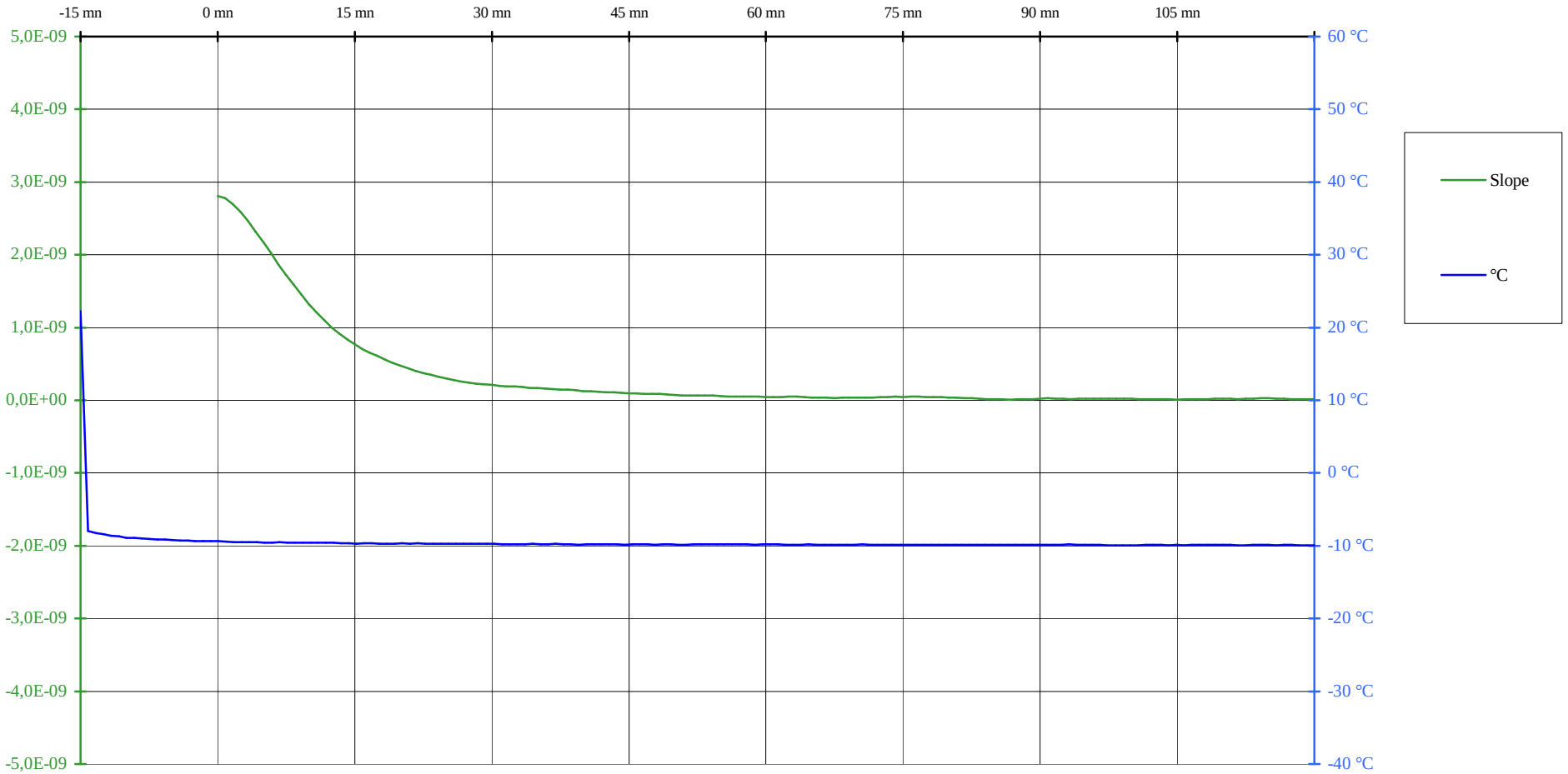


THERMAL SHOCK TEST / 30 °C change (22 °C to -10 ° C)

Manufacturer : KANNAD
Model : SafeLink Auto/Manual+
Number : EUT 12

Date : 30/07/2009
Time : 15:23:49

MEDIUM TERM STABILITY : MEAN SLOPE /mn (-1,0E-9 to 1,0E-9)

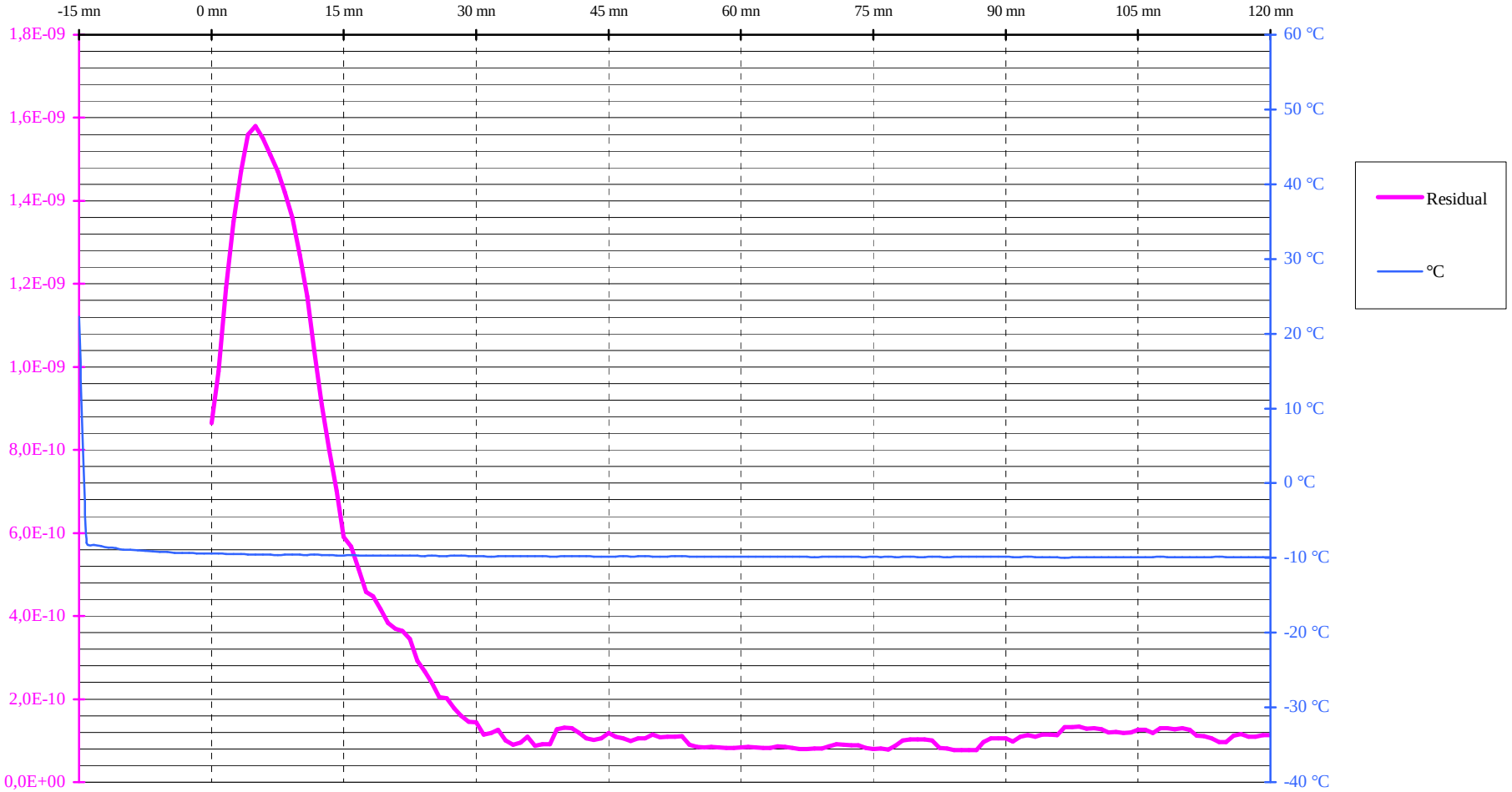


THERMAL SHOCK TEST / 30 °C change (22 °C to -10 ° C)

Manufacturer : KANNAD
Model : SafeLink Auto/Manual+
Number : EUT 12

Date : 30/07/2009
Time : 15:23:49

MEDIUM TERM STABILITY : RESIDUAL (≤ 3,0E-9)

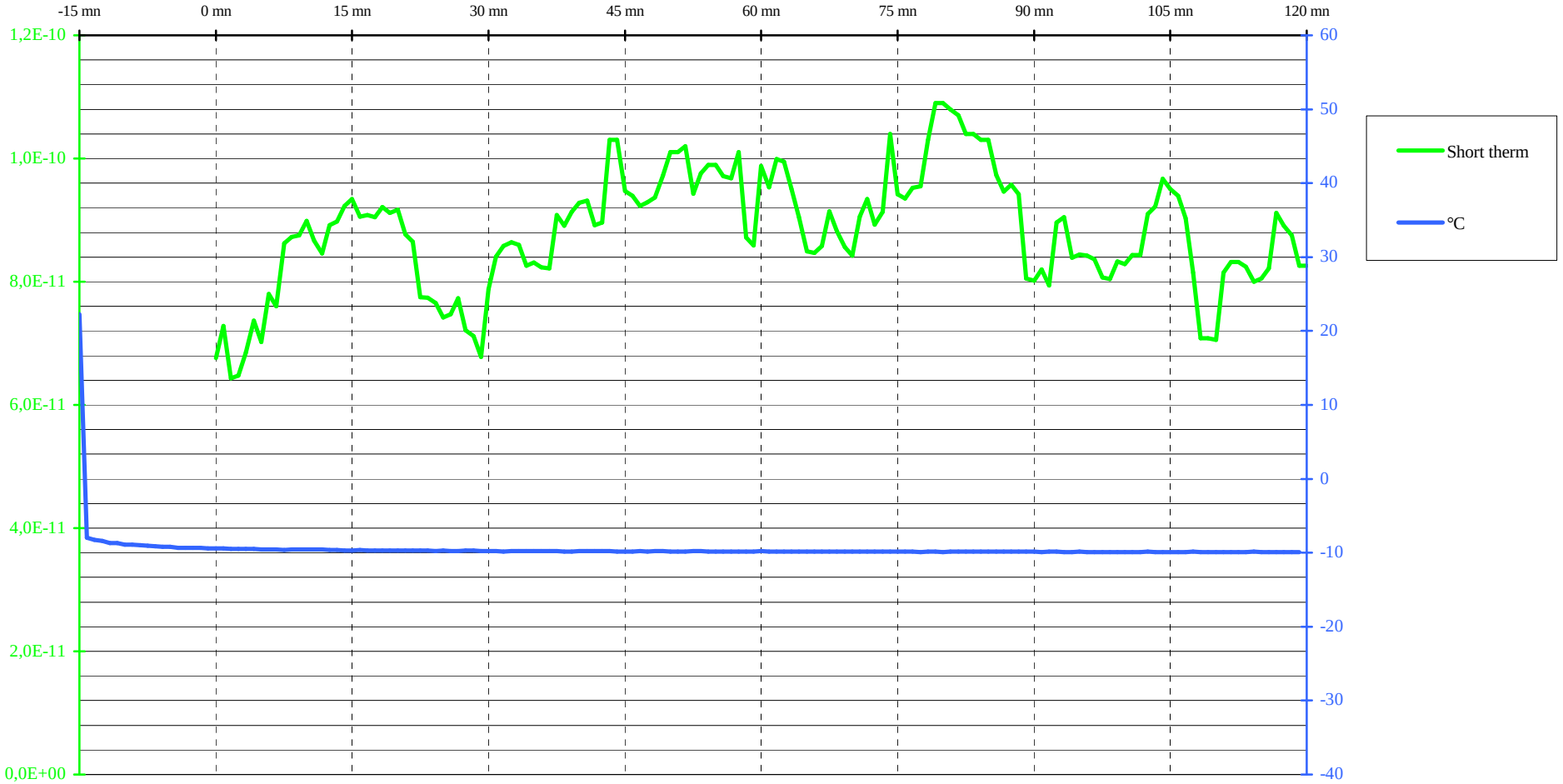


THERMAL SHOCK TEST / 30 °C change (22 °C to -10 ° C)

Manufacturer : KANNAD
Model : SafeLink Auto/Manual+
Number : EUT 12

Date : 30/07/2009
Time : 15:23:49

SHORT TERM STABILITY /100 mS (≤ 2,0E-9)

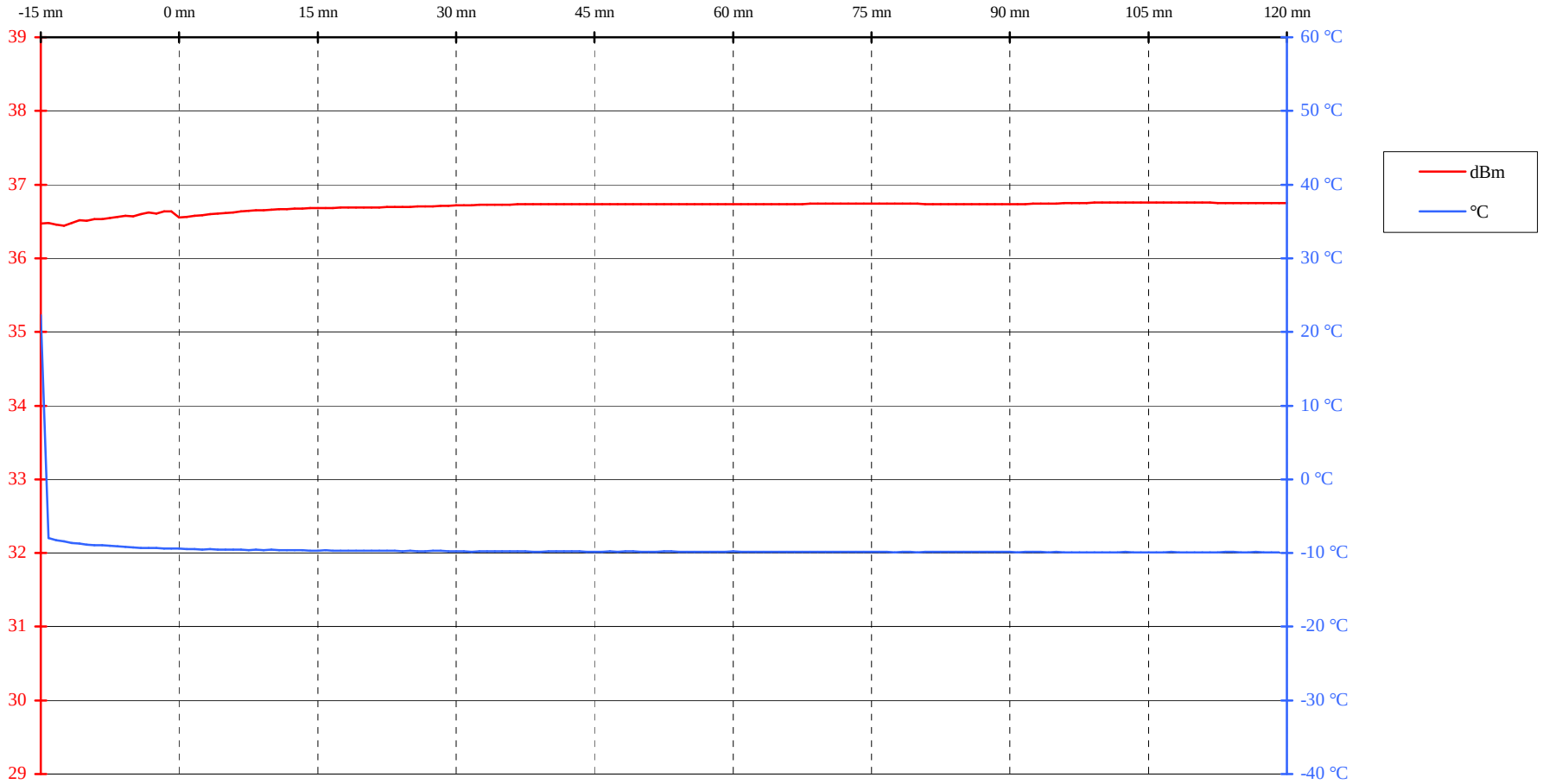


THERMAL SHOCK TEST / 30 °C change (22 °C to -10 ° C)

Manufacturer : KANNAD
Model : SafeLink Auto/Manual+
Number : EUT 12

Date : 30/07/2009
Time : 15:23:49

OUTPUT POWER (35 to 39 dBm)



OPERATING LIFE TEST RESULTS ON

KANNAD Epirb
SafeLink Auto/Manual+
N° EUT 12
-40 °C

C/S APPENDICES E TO ANNEX F

Table F-E.1 Beacon Operating Current

Beacon Operating Modes	Mode: Manually selectable or Automatic	Measurements interval, sec	Average Current, mA	Peak Current, mA
Stanby	Manually	900	0,0001	0,0003
Self Test	Manually	21	81,5	1722,0
Manually	Manually	900	82,2	1784,3

I) Battery manufacturer information

Battery chemistry	LiMnO2
Battery cell size and number of cells	CR123 / 9
Battery manufacturer	PANASONIC
Battery pack manufacturer and part number	Williamson / P/N=0146030
Battery capacity	4920 mAh
Battery capacity Self Discharge / 7 Years	4,4%
Battery Replacement Interval	7 years
Self-Test Interval	12 test per year

II) Battery Discharge Current - Test Results

Date of measurements : 7 August 2009

The consumption of beacon has been checked and compared with manufacturer calculation at ambient temperature (See Manufacturer documentation : DOC09060 page 51)

The battery current measurements have been check with :

Current measurement	Fluke 189 Multimeter	S/N : 82430029	Validity:05/2010
VDC measurement	HP 3457A Multimeter	S/N : 2505A00654	Validity:10/2009

Mode Current	Kannad	Intespace
Operating Mean current	69,3 mA	81,5 mA
Standby Mean current consumption	0,0001 mA	0,0001 mA
Self-test Mean current (measurement interval: 21 s)	75,5 mA	82,2 mA

III) Battery Discharge Time calculations:

	Kannad	Intespace
7years Self Discharge = Batt. capacity x 4,4% (for 7 years)	216,5 mAh	216,5 mAh
7 years Standby Drain = I Standby x 365d x 24h x 7y x 1,65**	10,118 mAh	10,118 mAh
7 years monthly Self Test Drain = I Self-test x (21s/3600) x 12m x 7y x 1,65**	61,076 mAh	66,459 mAh
Total 7 years Drain = Self Discharge + Standby Drain + Self-test Drain	287,67 mAh	293,06 mAh

** = C/S worst case coefficient

Battery Preconditioning / Discharge Time = Worst Case drain / Operting Current

Following Intespace Calculation = 293,06 / 81,5 = 3,60 hours 3:35:45

Following Kannad Calculation = 287,67 / 69,3 = 4,15 hours 4:09:05

IV) Lifetime Test Result

After application of worst case Battery Preconditionning / Discharge Time Calculation, 4.15 hours, and following the test result below the operating lifetime with the Williamson / P/N=0146030 battery pack has been evaluated =

50,7 hours at - 20°C

Warm Up	Δ Frequency (Hz)	Temp. (°C)	P406 (dBm)	P121.5 (dBm)
1	49978,17	-20,1	36,7	14,7
2	49974,77	-20,2	36,7	15,0
3	49970,84	-20,2	36,7	15,1
4	49966,62	-20,2	36,7	15,0
5	49961,54	-20,2	36,8	15,1
6	49955,80	-20,1	36,8	15,0
7	49948,39	-20,2	36,8	15,1
8	49940,97	-20,1	36,8	15,2
9	49937,38	-20,1	36,8	15,0
10	49935,83	-20,1	36,8	15,1
11	49935,32	-20,1	36,8	15,0
12	49935,19	-20,1	36,8	15,1
13	49935,04	-20,1	36,8	15,1
14	49935,03	-20,1	36,8	15,0
15	49934,99	-20,1	36,8	15,1
16	49935,00	-20,2	36,8	15,1
17	49934,93	-20,2	36,7	15,0
18	49934,91	-20,2	36,7	15,1

No	Temp.	Slope	Sigma	P406	Short term	P121.5
1	-20,1	-6,8E-9	1,7E-08	36,8	1,2E-10	15,0
2	-20,2	-5,6E-9	1,7E-08	36,8	1,2E-10	15,0
3	-20,1	-4,4E-9	1,6E-08	36,8	1,2E-10	15,1
4	-20,2	-3,2E-9	1,3E-08	36,7	1,3E-10	15,0
5	-20,2	-2,1E-9	1,0E-08	36,7	1,3E-10	15,0
6	-20,2	-1,2E-9	6,4E-09	36,7	1,2E-10	15,1
7	-20,2	-5,2E-10	2,8E-09	36,7	1,2E-10	15,2
8	-20,2	-2,4E-10	1,1E-09	36,7	1,2E-10	15,1
9	-20,2	-1,3E-10	3,6E-10	36,7	1,1E-10	15,0
10	-20,1	-9,2E-11	1,4E-10	36,7	1,1E-10	15,1
11	-20,2	-8,0E-11	1,0E-10	36,7	1,0E-10	15,1
12	-20,2	-7,2E-11	7,7E-11	36,7	1,0E-10	15,1
13	-20,1	-7,2E-11	7,7E-11	36,7	8,6E-11	15,1
14	-20,2	-6,8E-11	8,0E-11	36,7	7,8E-11	15,2
15	-20,2	-6,7E-11	8,0E-11	36,7	8,0E-11	15,2
16	-20,1	-6,3E-11	7,6E-11	36,7	8,8E-11	15,1
17	-20,1	-5,9E-11	8,3E-11	36,7	8,9E-11	15,1
18	-20,1	-6,1E-11	8,7E-11	36,7	1,2E-10	15,2
19	-20,2	-6,1E-11	8,8E-11	36,7	1,1E-10	15,1
20	-20,1	-5,7E-11	7,5E-11	36,7	1,1E-10	15,1
21	-20,1	-5,9E-11	7,4E-11	36,7	1,1E-10	15,1
22	-20,2	-5,7E-11	6,8E-11	36,7	1,1E-10	15,1
23	-20,1	-5,1E-11	8,9E-11	36,7	1,1E-10	15,1
24	-20,1	-5,0E-11	8,8E-11	36,7	1,1E-10	15,1
25	-20,2	-4,5E-11	9,6E-11	36,7	1,1E-10	15,1
26	-20,1	-4,1E-11	9,4E-11	36,7	1,1E-10	15,1
27	-20,1	-4,0E-11	9,5E-11	36,7	1,1E-10	15,1
28	-20,1	-3,7E-11	9,8E-11	36,7	1,2E-10	15,1
29	-20,1	-3,1E-11	1,0E-10	36,7	1,2E-10	15,1
30	-20,2	-3,7E-11	1,4E-10	36,7	1,2E-10	15,1
31	-20,2	-4,3E-11	1,5E-10	36,7	1,2E-10	15,2

Medium and Short Term Frequency Stability computed with Frequency measurement checked during warm up time
Medium Term Frequency Stability computed with Frequency measurement checked during warm up time and out off C/S specification

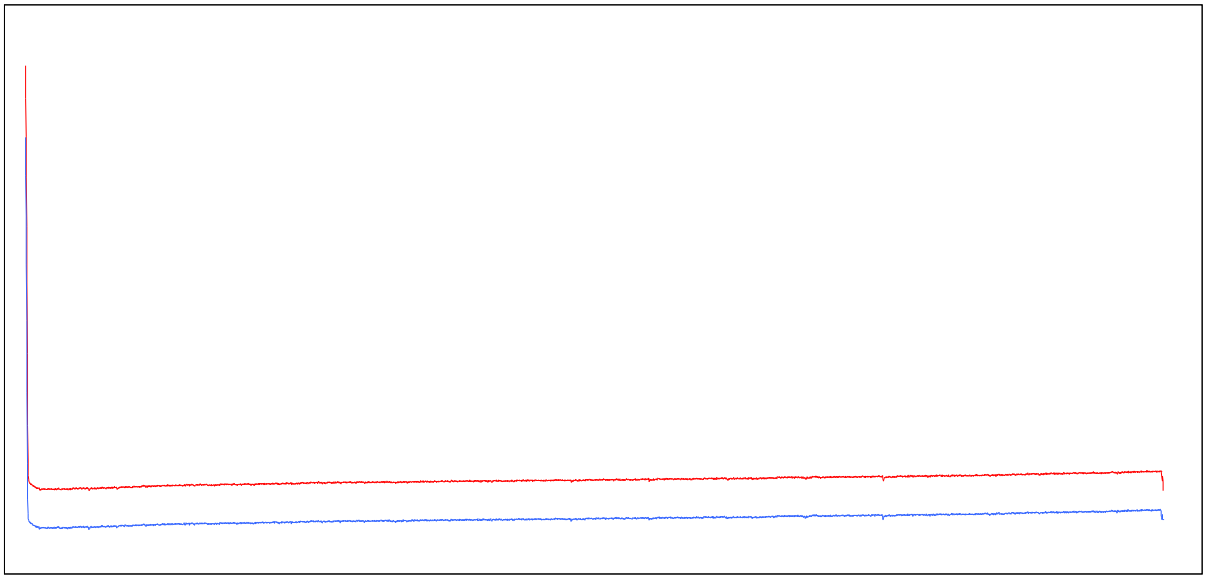
No	Temp.	Slope	Sigma	P406	Short term	P121.5
61	-20,2	2,2E-12	9,3E-11	36,6	8,7E-11	15,1
91	-20,2	6,8E-12	8,8E-11	36,6	1,2E-10	15,1
121	-20,2	1,1E-12	7,1E-11	36,6	9,3E-11	15,1
151	-20,2	1,4E-11	1,1E-10	36,6	8,3E-11	15,1
181	-20,2	6,9E-12	1,1E-10	36,6	8,0E-11	15,1
211	-20,2	1,3E-11	1,9E-10	36,6	1,0E-10	15,0
241	-20,2	5,6E-12	9,4E-11	36,6	1,0E-10	15,1
271	-20,2	4,9E-12	1,1E-10	36,6	9,5E-11	15,1
301	-20,2	-1,3E-11	1,5E-10	36,6	1,2E-10	15,1
331	-20,2	1,8E-12	1,1E-10	36,6	6,8E-11	15,1
361	-20,2	1,4E-11	1,1E-10	36,6	9,2E-11	15,0
391	-20,2	6,1E-12	1,4E-10	36,6	8,3E-11	15,1
421	-20,2	2,3E-12	1,1E-10	36,6	1,1E-10	15,2
451	-20,2	9,5E-12	1,2E-10	36,6	1,1E-10	15,1
481	-20,2	-3,8E-12	1,2E-10	36,6	1,2E-10	15,0
511	-20,2	-1,5E-12	8,3E-11	36,6	1,1E-10	15,1
541	-20,3	4,2E-12	1,5E-10	36,6	1,0E-10	15,0
571	-20,2	1,4E-11	9,9E-11	36,6	6,5E-11	15,1
601	-20,2	-8,3E-13	8,4E-11	36,6	6,1E-11	15,0
631	-20,3	5,6E-12	1,0E-10	36,6	1,1E-10	15,0
661	-20,2	-1,1E-12	1,0E-10	36,6	9,8E-11	15,1
691	-20,2	9,2E-12	8,2E-11	36,6	8,3E-11	15,0
721	-20,3	2,7E-12	9,3E-11	36,6	1,2E-10	15,1
751	-20,2	-1,3E-11	9,3E-11	36,6	9,0E-11	15,0
781	-20,3	9,4E-12	1,0E-10	36,6	1,1E-10	15,1
811	-20,2	7,6E-12	8,9E-11	36,6	5,7E-11	15,1
841	-20,2	-3,4E-12	1,0E-10	36,6	1,2E-10	15,1
871	-20,2	-3,3E-12	9,4E-11	36,6	7,0E-11	15,1
901	-20,3	-4,9E-12	1,2E-10	36,6	9,1E-11	15,0
931	-20,2	5,8E-12	1,1E-10	36,6	7,9E-11	15,0
961	-20,3	2,1E-11	1,0E-10	36,6	1,1E-10	15,1
991	-20,3	-9,3E-12	1,4E-10	36,6	1,0E-10	15,0
1021	-20,2	1,5E-12	1,1E-10	36,6	8,3E-11	15,0
1051	-20,3	8,6E-13	9,7E-11	36,6	8,8E-11	15,1
1081	-20,2	-5,6E-12	9,4E-11	36,6	1,1E-10	15,0
1111	-20,3	1,2E-11	1,2E-10	36,6	8,9E-11	15,0
1141	-20,2	-1,5E-11	1,2E-10	36,6	9,5E-11	15,0
1171	-20,2	5,0E-12	8,8E-11	36,5	1,2E-10	15,0
1201	-20,2	3,3E-12	1,0E-10	36,5	9,5E-11	15,0
1231	-20,2	-1,3E-11	1,2E-10	36,5	8,3E-11	15,0
1261	-20,2	1,1E-11	1,2E-10	36,5	1,1E-10	15,0
1291	-20,2	3,4E-12	1,0E-10	36,5	7,1E-11	15,0
1321	-20,3	-6,0E-12	1,1E-10	36,5	1,3E-10	15,0
1351	-20,2	2,0E-12	1,1E-10	36,5	8,6E-11	15,0
1381	-20,3	-5,7E-13	8,9E-11	36,5	8,3E-11	15,0
1411	-20,2	-5,5E-13	9,2E-11	36,5	1,1E-10	15,0
1441	-20,2	6,0E-12	1,1E-10	36,5	9,3E-11	15,0
1471	-20,2	-4,5E-12	7,4E-11	36,5	1,1E-10	15,0
1501	-20,2	-3,5E-12	1,1E-10	36,5	9,0E-11	15,0
1531	-20,2	-9,7E-12	1,3E-10	36,5	1,1E-10	14,9
1561	-20,2	-5,8E-12	1,4E-10	36,5	9,6E-11	15,0

No	Temp.	Slope	Sigma	P406	Short term	P121.5	
1591	-20,3	-4,0E-12	1,1E-10	36,5	1,1E-10	15,0	
1621	-20,2	7,9E-12	8,3E-11	36,5	8,4E-11	14,9	
1651	-20,2	2,0E-12	1,3E-10	36,5	1,0E-10	15,0	
1681	-20,2	-4,0E-12	1,0E-10	36,5	8,4E-11	15,0	
1711	-20,2	-3,3E-13	1,1E-10	36,5	1,1E-10	15,0	24h
1741	-20,2	-1,0E-11	7,0E-11	36,5	6,8E-11	15,0	
1771	-20,2	2,1E-12	7,5E-11	36,5	8,9E-11	15,0	
1801	-20,2	-1,6E-12	8,0E-11	36,5	9,0E-11	14,9	
1831	-20,2	5,1E-12	6,8E-11	36,5	7,9E-11	15,0	
1861	-20,2	-5,4E-12	1,1E-10	36,5	1,1E-10	14,9	
1891	-20,2	1,2E-11	1,1E-10	36,4	9,1E-11	15,0	
1921	-20,2	1,7E-12	7,2E-11	36,4	8,2E-11	14,9	
1951	-20,2	1,43E-11	6,6E-11	36,4	7,5E-11	14,9	
1981	-20,2	2,7E-12	8,3E-11	36,4	7,8E-11	14,9	
2011	-20,2	-7,0E-12	1,1E-10	36,4	8,4E-11	14,8	
2041	-20,2	-1,4E-11	9,3E-11	36,4	8,2E-11	15,0	
2071	-20,2	-3,7E-12	1,2E-10	36,4	1,4E-10	14,9	
2101	-20,2	6,3E-12	1,1E-10	36,4	9,2E-11	14,9	
2131	-20,2	8,1E-12	1,2E-10	36,4	1,4E-10	15,0	
2161	-20,2	6,8E-12	1,2E-10	36,4	1,1E-10	15,0	
2191	-20,2	-9,4E-12	1,2E-10	36,4	9,6E-11	15,0	
2221	-20,2	-5,2E-12	1,2E-10	36,4	1,0E-10	14,9	
2251	-20,2	3,0E-12	9,5E-11	36,3	9,3E-11	15,0	
2281	-20,2	-1,0E-11	9,6E-11	36,3	8,8E-11	14,9	
2311	-20,2	-2,2E-12	8,2E-11	36,3	1,0E-10	14,9	
2341	-20,2	4,0E-12	1,4E-10	36,3	1,2E-10	14,8	
2371	-20,2	-2,9E-11	1,4E-10	36,3	8,8E-11	14,9	
2401	-20,2	4,5E-12	1,2E-10	36,3	1,2E-10	14,9	
2431	-20,2	7,1E-12	9,1E-11	36,3	9,3E-11	14,9	
2461	-20,2	-8,1E-12	1,3E-10	36,3	6,3E-11	14,9	
2491	-20,2	4,8E-12	8,5E-11	36,3	9,8E-11	14,9	
2521	-20,2	3,7E-12	8,5E-11	36,2	1,3E-10	14,9	
2551	-20,2	6,7E-12	1,1E-10	36,2	1,2E-10	14,9	
2581	-20,2	3,4E-13	1,1E-10	36,2	9,2E-11	14,9	
2611	-20,2	6,2E-12	1,3E-10	36,2	8,5E-11	14,8	
2641	-20,2	-7,8E-12	1,9E-10	36,2	1,3E-10	14,9	
2671	-20,2	1,3E-11	1,2E-10	36,2	1,0E-10	14,9	
2701	-20,2	2,8E-12	1,2E-10	36,1	1,0E-10	14,9	
2731	-20,2	6,2E-12	1,4E-10	36,1	1,0E-10	14,9	
2761	-20,3	4,5E-12	8,6E-11	36,1	9,1E-11	14,9	
2791	-20,2	-1,1E-11	9,4E-11	36,1	7,3E-11	14,9	
2821	-20,2	-3,4E-12	9,3E-11	36,1	9,2E-11	14,9	
2851	-20,2	5,7E-12	1,0E-10	36,0	1,2E-10	14,9	
2881	-20,2	4,9E-12	1,1E-10	36,0	7,5E-11	14,9	
2911	-20,2	1,0E-11	3,4E-10	36,0	1,5E-10	14,9	
2941	-20,2	3,5E-12	1,0E-10	36,0	1,1E-10	14,9	
2971	-20,2	-7,6E-13	1,0E-10	36,0	1,1E-10	14,9	
3001	-20,2	-4,3E-12	1,4E-10	35,9	1,0E-10	14,9	
3031	-20,2	-3,2E-12	8,9E-11	35,9	1,2E-10	14,9	
3061	-20,2	6,1E-13	1,5E-10	35,9	1,3E-10	14,9	
3091	-20,2	9,0E-12	1,1E-10	35,9	9,7E-11	14,9	

No	Temp.	Slope	Sigma	P406	Short term	P121.5	
3121	-20,2	5,5E-13	1,0E-10	35,8	8,8E-11	14,8	
3151	-20,2	4,9E-13	1,2E-10	35,8	1,1E-10	14,8	
3181	-20,2	8,2E-13	8,5E-11	35,8	8,4E-11	14,9	
3211	-20,2	7,2E-12	7,2E-11	35,7	1,2E-10	14,9	
3241	-20,2	1,1E-11	8,4E-11	35,7	1,2E-10	14,7	
3271	-20,2	1,0E-11	1,0E-10	35,7	1,1E-10	14,9	
3301	-20,2	-1,2E-11	1,3E-10	35,6	1,1E-10	14,8	
3331	-20,2	-4,3E-13	9,6E-11	35,6	1,1E-10	14,8	
3361	-20,2	5,8E-12	1,1E-10	35,5	8,6E-11	14,8	
3391	-20,2	1,4E-11	9,6E-11	35,5	8,0E-11	14,9	
3421	-20,2	-2,5E-12	8,6E-11	35,4	6,8E-11	14,8	
3438	-20,2	-3,1E-12	1,3E-10	35,4	9,6E-11	14,8	48
3451	-20,2	1,0E-11	1,1E-10	35,4	1,2E-10	14,8	h
3481	-20,2	-6,1E-12	1,2E-10	35,3	1,1E-10	14,8	
3511	-20,2	1,5E-12	1,1E-10	35,2	1,0E-10	14,8	
3541	-20,2	1,5E-12	9,5E-11	35,1	9,8E-11	14,9	
3571	-20,2	1,5E-11	1,0E-10	35,1	1,1E-10	14,9	
3601	-20,2	2,7E-12	8,4E-11	35,0	7,7E-11	14,8	
3631	-20,2	-1,0E-11	9,5E-11	34,9	1,2E-10	14,8	50,7
3661	-20,2	7,8E-12	7,7E-11	34,8	7,8E-11	14,8	h
3691	-20,2	-1,7E-11	1,0E-10	34,7	1,1E-10	14,8	
3721	-20,2	9,6E-12	1,2E-10	34,6	8,2E-11	14,9	
3751	-20,2	1,2E-11	1,1E-10	34,5	1,0E-10	14,7	
3781	-20,2	1,2E-11	1,1E-10	34,4	1,1E-10	14,8	
3811	-20,2	-1,4E-11	1,1E-10	34,3	9,0E-11	14,8	
3841	-20,2	1,4E-11	9,1E-11	34,2	2,5E-10	14,8	
3849	-20,2	-2,3E-10	8,7E-10	32,1	4,9E-10	14,8	

Frequency variation

406036,978 kHz



406036,934 kHz

Initial tracing Smoothed tracing

Beacon message during Operating Lifetime Test :

FFFED08E3F00001FC0FF0245B3B79F3C0010

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
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	01001000101101100 1110
BCH 1 Calculated:	86-106	01001000101101100 1110
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	1C7E00003F81FE0

FFFE2F8E3F00000AE2017508A9B7112402E1

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
Latitude Flag: North	59	0
Latitude (Degrees): 43	60-66	0101011
Latitude (Minutes): 34	67-71	10001
Longitude Flag: East	72	0
Longitude (Degrees): 1	73-80	00000001
Longitude (Minutes): 28	81-85	01110
BCH 1 Encoded:	86-106	10100001000101010 0110
BCH 1 Calculated:	86-106	10100001000101010 0110
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: 32	116-119	1000
Longitude Offset Sign: +	120	1
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	001011100001
BCH 2 Calculated:	N/A	001011100001
Composite Latitude: 43.55777777777778 Degrees North	N/A	Composite Longitude: 1.4766666666666668 Degrees East
15 Hex ID:	N/A	1C7E00003F81FE0

FFFE2F8E3F00000AE2017508A9B70F2800DF

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
Latitude Flag: North	59	0
Latitude (Degrees): 43	60-66	0101011
Latitude (Minutes): 34	67-71	10001
Longitude Flag: East	72	0
Longitude (Degrees): 1	73-80	00000001
Longitude (Minutes): 28	81-85	01110
BCH 1 Encoded:	86-106	10100010001010100110
BCH 1 Calculated:	86-106	10100010001010100110
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: 28	116-119	0111
Longitude Offset Sign: +	120	1
Longitude Offset Minutes: 0	121-122	00
Longitude Offset Seconds: 40	123-126	1010
Additional Id (Nat Use)	127-132	000000
BCH 2 Encoded:	133-144	000011011111
BCH 2 Calculated:	N/A	000011011111
Composite Latitude: 43.558888888888895 Degrees North	N/A	Composite Longitude: 1.4777777777777779 Degrees East
15 Hex ID:	N/A	1C7E00003F81FE0

FFFE2F8E3F00000AE2017508A9B70D280220

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
Latitude Flag: North	59	0
Latitude (Degrees): 43	60-66	0101011
Latitude (Minutes): 34	67-71	10001
Longitude Flag: East	72	0
Longitude (Degrees): 1	73-80	00000001
Longitude (Minutes): 28	81-85	01110
BCH 1 Encoded:	86-106	10100010001010100110
BCH 1 Calculated:	86-106	10100010001010100110
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: 24	116-119	0110
Longitude Offset Sign: +	120	1
Longitude Offset Minutes: 0	121-122	00
Longitude Offset Seconds: 40	123-126	1010
Additional Id (Nat Use)	127-132	000000
BCH 2 Encoded:	133-144	001000100000
BCH 2 Calculated:	N/A	001000100000
Composite Latitude: 43.56 Degrees North	N/A	Composite Longitude: 1.4777777777777779 Degrees East
15 Hex ID:	N/A	1C7E00003F81FE0

FFFE2F8E3F00000AE2017508A9B70F2C0836

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
Latitude Flag: North	59	0
Latitude (Degrees): 43	60-66	0101011
Latitude (Minutes): 34	67-71	10001
Longitude Flag: East	72	0
Longitude (Degrees): 1	73-80	00000001
Longitude (Minutes): 28	81-85	01110
BCH 1 Encoded:	86-106	10100010001010100110
BCH 1 Calculated:	86-106	10100010001010100110
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: 28	116-119	0111
Longitude Offset Sign: +	120	1
Longitude Offset Minutes: 0	121-122	00
Longitude Offset Seconds: 44	123-126	1011
Additional Id (Nat Use)	127-132	000000
BCH 2 Encoded:	133-144	100000110110
BCH 2 Calculated:	N/A	100000110110
Composite Latitude: 43.558888888888895 Degrees North	N/A	Composite Longitude: 1.478888888888889 Degrees East
15 Hex ID:	N/A	1C7E00003F81FE0

FFFE2F8E3F00000AE2017508A9B711280EE3

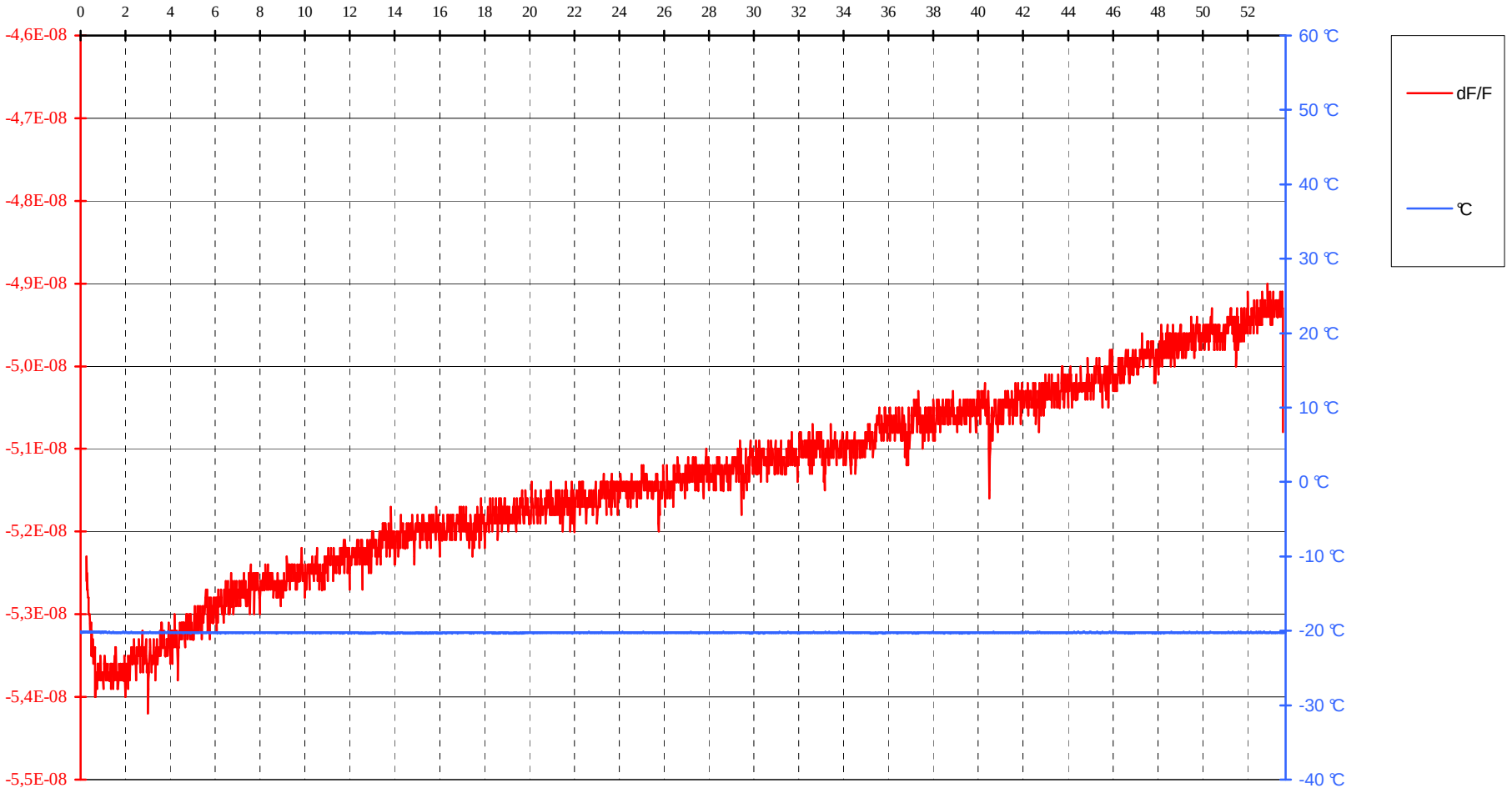
ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
Latitude Flag: North	59	0
Latitude (Degrees): 43	60-66	0101011
Latitude (Minutes): 34	67-71	10001
Longitude Flag: East	72	0
Longitude (Degrees): 1	73-80	00000001
Longitude (Minutes): 28	81-85	01110
BCH 1 Encoded:	86-106	10100010001010100110
BCH 1 Calculated:	86-106	10100010001010100110
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: 32	116-119	1000
Longitude Offset Sign: +	120	1
Longitude Offset Minutes: 0	121-122	00
Longitude Offset Seconds: 40	123-126	1010
Additional Id (Nat Use)	127-132	000000
BCH 2 Encoded:	133-144	111011100011
BCH 2 Calculated:	N/A	111011100011
Composite Latitude: 43.55777777777778 Degrees North	N/A	Composite Longitude: 1.4777777777777779 Degrees East
15 Hex ID:	N/A	1C7E00003F81FE0

LIFE TEST AT -20 °C

Manufacturer : KANNAD
Model : SafeLink Auto/Manual+
Number : EUT 12

Date : 7 Aug 2009
Time : 18:21:23

FREQUENCY VARIATION

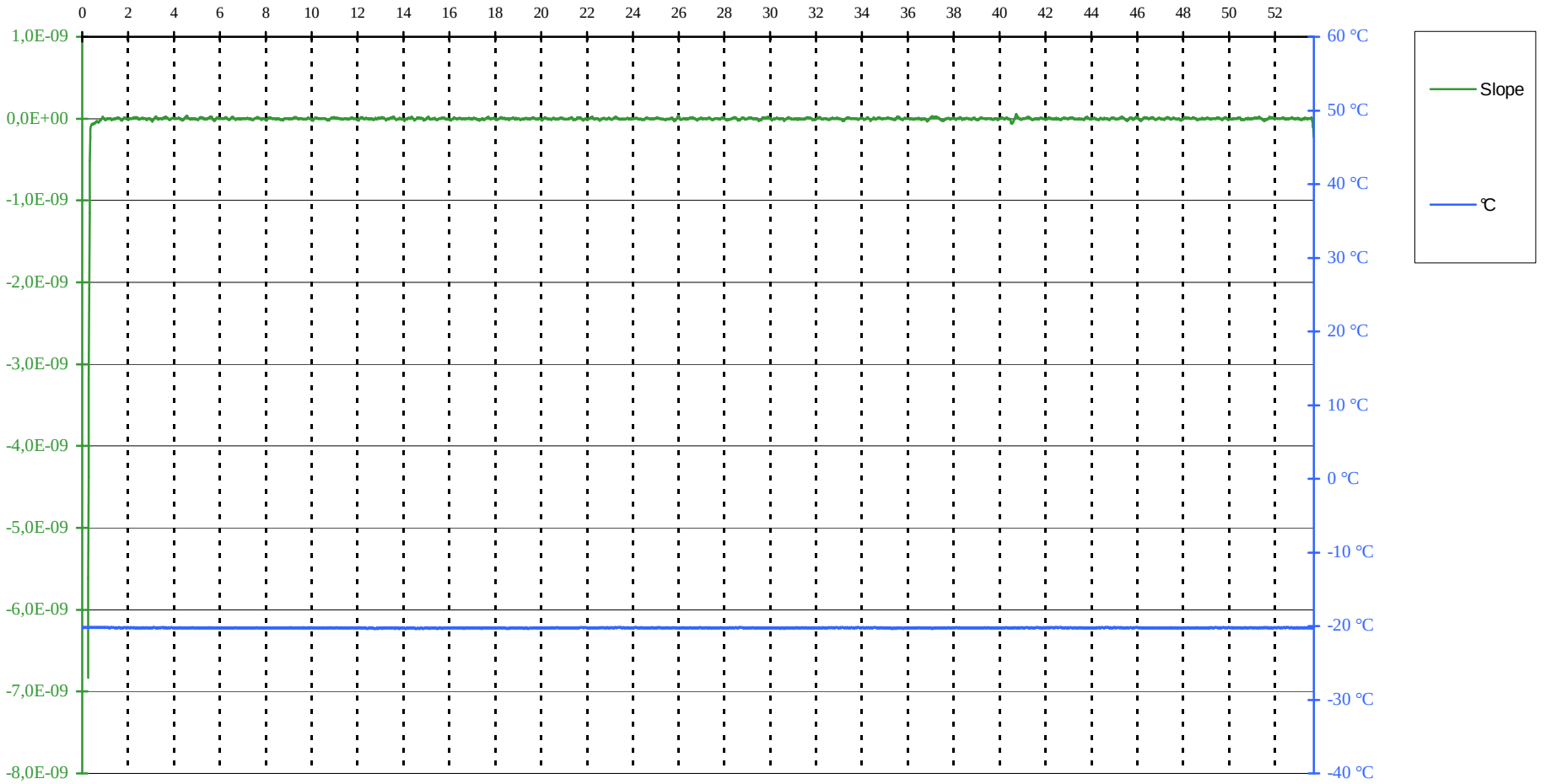


LIFE TEST AT -20 °C

Manufacturer : KANNAD
Model : SafeLink Auto/Manual+
Number : EUT 12

Date : 7 Aug 2009
Time : 18:21:23

MEDIUM TERM STABILITY : MEAN SLOPE /mn (-1,0E-9 to 1,0E-9)

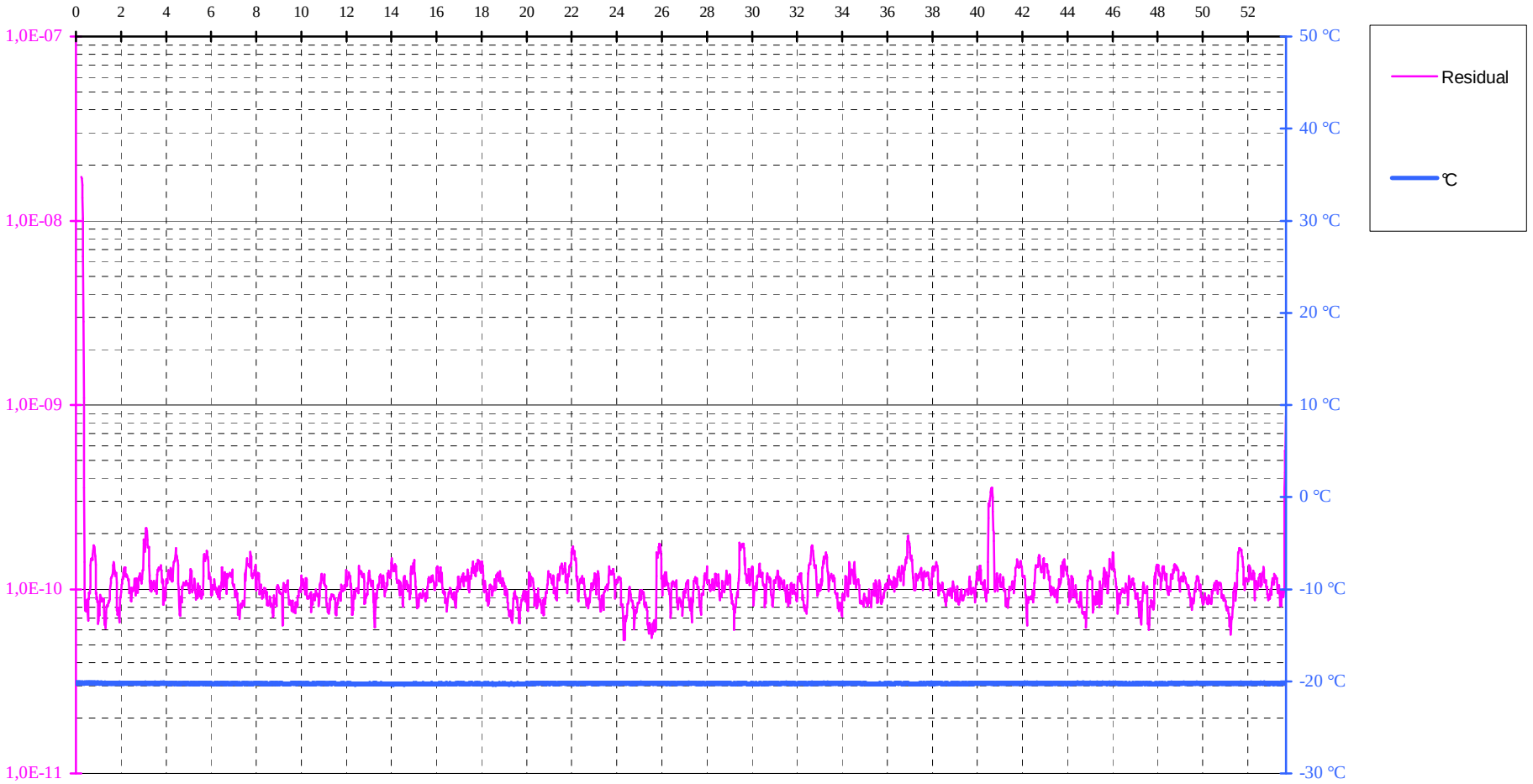


LIFE TEST AT -20 °C

Manufacturer : KANNAD
Model : SafeLink Auto/Manual+
Number : EUT 12

Date : 7 Aug 2009
Time : 18:21:23

MEDIUM TERM STABILITY : RESIDUAL (≤ 3,0E-9)



LIFE TEST AT -20 °C

Manufacturer : KANNAD
Model : SafeLink Auto/Manual+
Number : EUT 12

Date : 7 Aug 2009
Time : 18:21:23

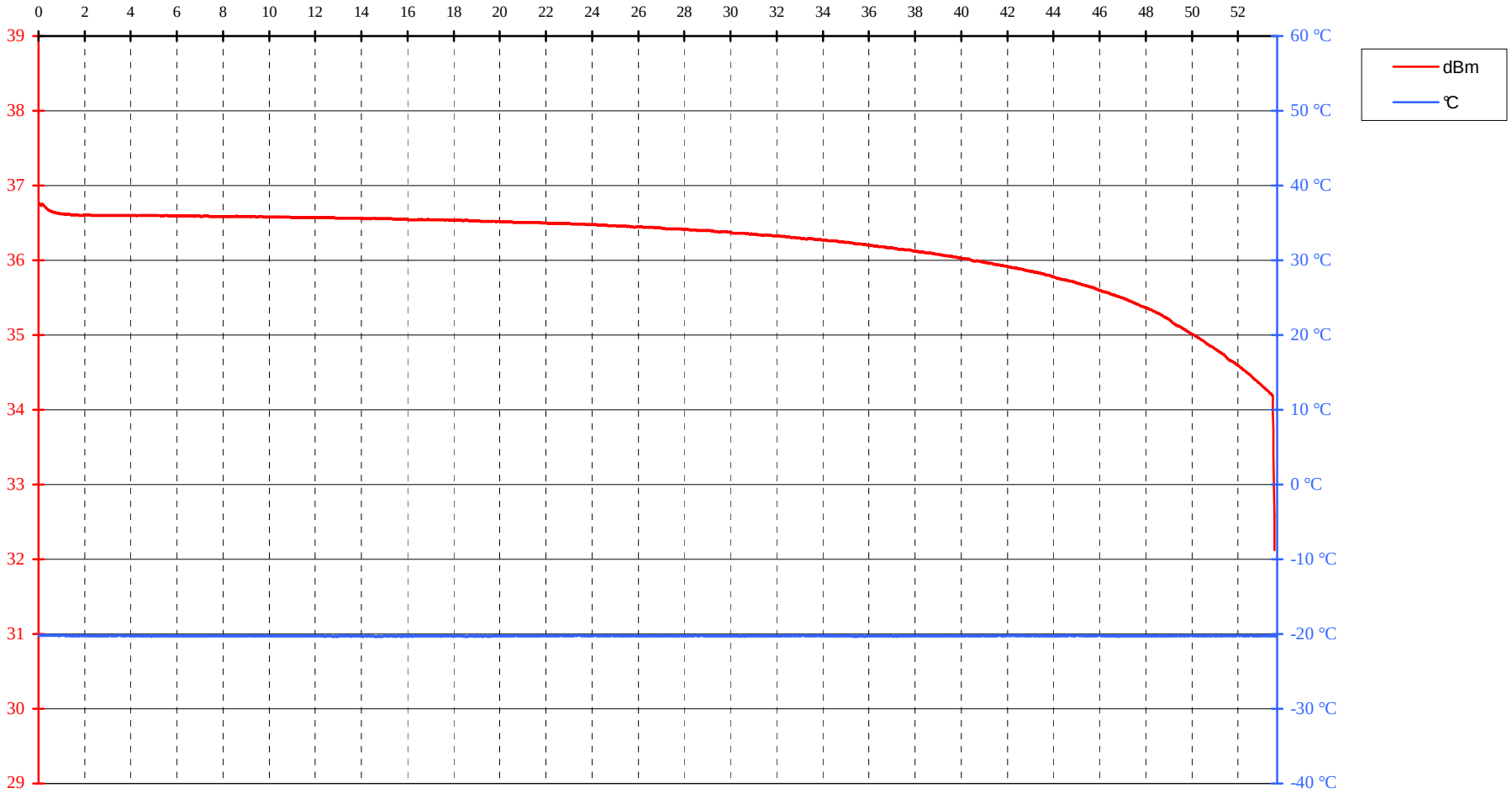
SHORT TERM STABILITY /100 mS (≤ 2,0E-9)

LIFE TEST AT -20 °C

Manufacturer : KANNAD
Model : SafeLink Auto/Manual+
Numero : EUT 12

Date : 7 Aug 2009
Time : 18:21:23

OUTPUT POWER (35 to 39 dBm)

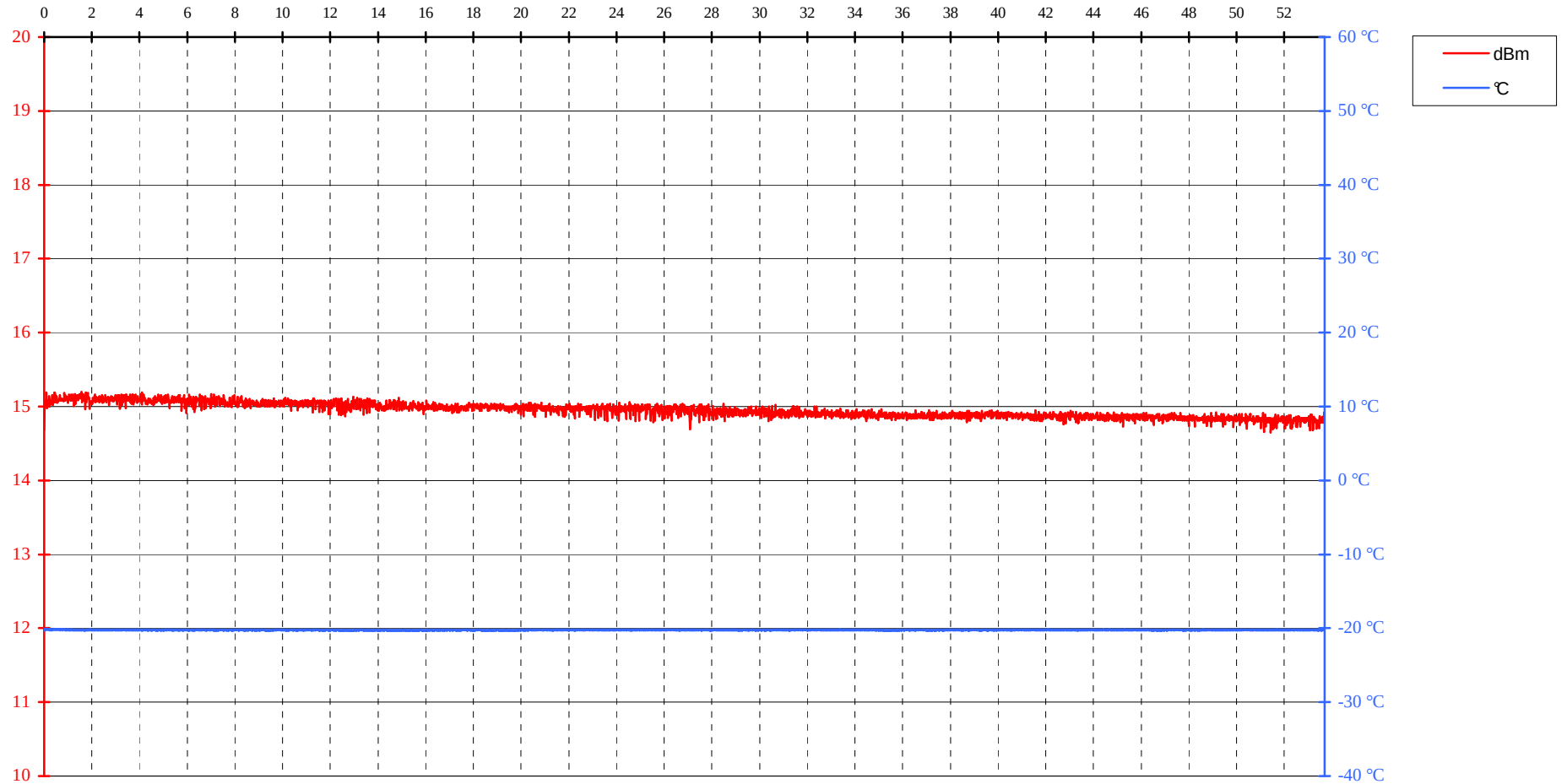


LIFE TEST AT -20 °C

Manufacturer : KANNAD
Model : SafeLink Auto/Manual+
Numero : EUT 12

Date : 7 Aug 2009
Time : 18:21:23

121,5 MHz OUTPUT POWER (14 to 20 dBm)



TEMPERATURE GRADIENT TEST RESULT ON
KANNAD Epirb
SafeLink Auto/Manual+
N° EUT 12
at -20° C, 22° C and 55° C

Warm Up	Δ Frequency (Hz)	Temp. (°C)	P406 (dBm)	P121.5 (dBm)
1	49976,65	-20,1	36,6	14,6
2	49971,84	-20,5	36,6	15,2
3	49968,53	-20,4	36,6	15,0
4	49964,61	-20,3	36,6	15,2
5	49960,20	-20,3	36,6	15,1
6	49954,95	-20,2	36,6	15,2
7	49948,16	-20,3	36,6	15,2
8	49939,74	-20,2	36,6	15,3
9	49933,20	-20,2	36,6	15,1
10	49930,70	-20,3	36,6	15,3
11	49929,86	-20,3	36,6	15,2
12	49929,56	-20,3	36,6	15,3
13	49929,46	-20,3	36,6	15,2
14	49929,40	-20,2	36,6	15,1
15	49929,30	-20,2	36,6	15,2
16	49929,25	-20,2	36,6	15,3
17	49929,18	-20,3	36,6	15,3
18	49929,18	-20,3	36,6	15,3

No	Temp.	Slope	Sigma	P406	Short term	P121.5
1	-20,2	-7,8E-9	1,8E-8	36,6	1,2E-10	15,2
2	-20,3	-6,6E-9	1,8E-8	36,6	1,2E-10	15,2
3	-20,3	-5,3E-9	1,7E-8	36,6	1,3E-10	15,2
4	-20,2	-4,1E-9	1,6E-8	36,6	1,3E-10	15,2
5	-20,3	-2,9E-9	1,3E-8	36,6	1,4E-10	15,2
6	-20,3	-1,7E-9	9,2E-9	36,6	1,4E-10	15,2
7	-20,2	-8,7E-10	5,0E-9	36,6	1,4E-10	15,3
8	-20,3	-3,8E-10	1,8E-9	36,6	1,5E-10	15,2
9	-20,3	-1,9E-10	6,2E-10	36,6	1,5E-10	15,1
10	-20,3	-1,3E-10	2,5E-10	36,6	1,5E-10	15,3
11	-20,2	-1,0E-10	1,6E-10	36,6	1,5E-10	15,2
12	-20,2	-9,3E-11	1,4E-10	36,6	1,5E-10	15,2
13	-20,3	-8,3E-11	1,2E-10	36,6	1,5E-10	15,3
14	-20,3	-7,5E-11	9,7E-11	36,6	1,5E-10	15,2
15	-20,3	-7,0E-11	8,9E-11	36,6	1,5E-10	15,3
16	-20,3	-6,5E-11	8,3E-11	36,5	1,4E-10	15,2
17	-20,3	-6,2E-11	8,3E-11	36,5	1,3E-10	15,2
18	-20,2	-5,6E-11	7,6E-11	36,5	1,3E-10	15,2
19	-20,3	-5,5E-11	7,5E-11	36,5	1,2E-10	15,2
20	-20,3	-5,3E-11	8,3E-11	36,5	1,1E-10	15,3
21	-20,3	-5,1E-11	8,1E-11	36,5	1,0E-10	15,2
22	-20,3	-4,7E-11	8,5E-11	36,5	1,1E-10	15,3
23	-20,3	-4,9E-11	8,1E-11	36,5	9,8E-11	15,2
24	-20,3	-4,6E-11	8,1E-11	36,5	9,9E-11	15,3
25	-20,2	-4,1E-11	5,8E-11	36,5	8,9E-11	15,2
26	-20,3	-4,6E-11	7,4E-11	36,5	8,4E-11	15,3
27	-20,3	-4,5E-11	7,3E-11	36,5	8,5E-11	15,3
28	-20,3	-4,5E-11	7,3E-11	36,5	8,5E-11	15,3
29	-20,2	-4,0E-11	7,0E-11	36,5	9,0E-11	15,2
30	-20,3	-4,2E-11	7,0E-11	36,5	8,7E-11	15,2
31	-20,3	-4,2E-11	7,0E-11	36,5	8,6E-11	15,3
32	-20,3	-4,2E-11	7,0E-11	36,5	7,3E-11	15,2
33	-20,3	-4,4E-11	7,1E-11	36,5	7,9E-11	15,2
34	-20,3	-3,7E-11	1,1E-10	36,5	8,8E-11	15,2
35	-20,3	-3,5E-11	1,1E-10	36,5	8,8E-11	15,2
36	-20,3	-3,5E-11	1,1E-10	36,5	9,2E-11	15,3

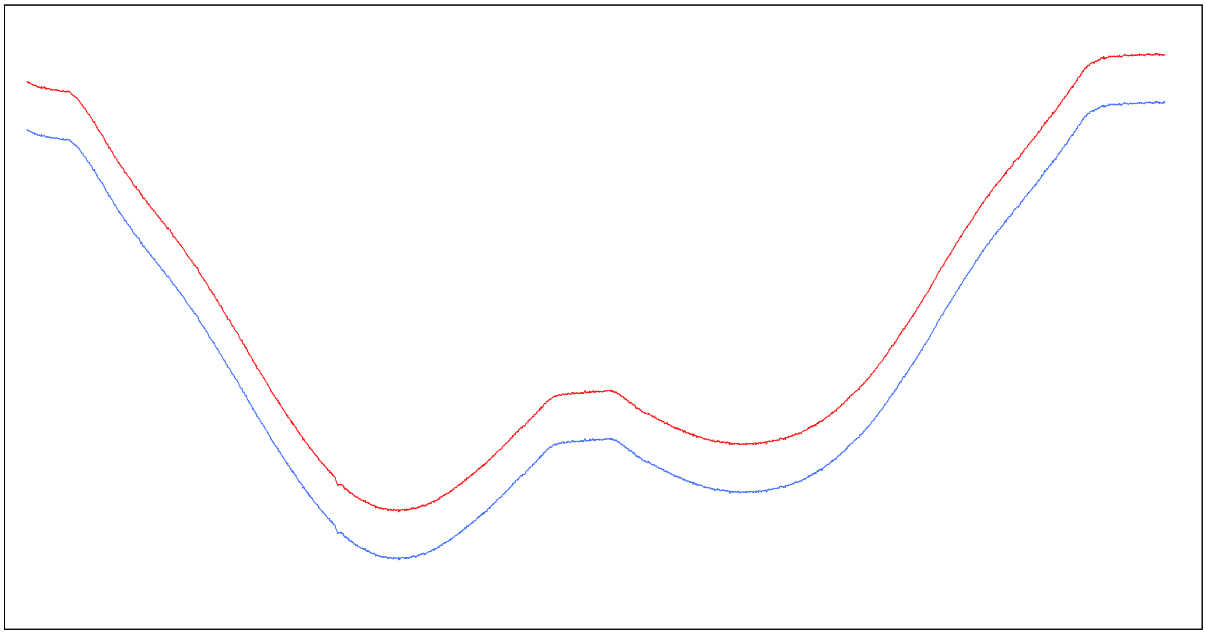
Medium and Short Term Frequency Stability computed with Frequency measurement checked during warm up time
Medium Term Frequency Stability computed with Frequency measurement checked during warm up time and out off C/S specification

No	Temp.	Slope	Sigma	P406	Short term	P121.5
60	-20,3	-2,4E-11	9,3E-11	36,4	1,0E-10	15,2
90	-20,3	-1,9E-11	1,1E-10	36,4	1,2E-10	15,2
120	-18,4	-9,3E-11	8,5E-11	36,4	9,7E-11	15,2
150	-16,4	-1,5E-10	9,2E-11	36,5	1,0E-10	15,3
180	-14,2	-1,7E-10	1,2E-10	36,5	1,1E-10	15,3
210	-12,2	-1,8E-10	1,1E-10	36,5	7,9E-11	15,4
240	-10,0	-1,4E-10	9,1E-11	36,5	8,4E-11	15,3
270	-8,0	-1,6E-10	1,5E-10	36,5	1,5E-10	15,4
300	-5,9	-1,4E-10	9,0E-11	36,5	1,1E-10	15,4
330	-3,8	-1,3E-10	1,3E-10	36,5	9,2E-11	15,5
360	-1,8	-1,4E-10	8,9E-11	36,5	1,1E-10	15,5
390	0,3	-1,3E-10	9,7E-11	36,5	1,3E-10	15,5
420	2,4	-1,9E-10	1,1E-10	36,4	7,5E-11	15,6
450	4,4	-1,8E-10	1,2E-10	36,4	9,5E-11	15,6
480	6,3	-1,8E-10	9,1E-11	36,4	8,3E-11	15,5
510	8,3	-1,8E-10	1,2E-10	36,4	1,1E-10	15,5
540	10,4	-1,7E-10	1,0E-10	36,4	1,1E-10	15,6
570	12,4	-1,7E-10	1,1E-10	36,4	1,0E-10	15,6
600	14,5	-1,6E-10	1,1E-10	36,3	7,4E-11	15,6
630	16,6	-1,6E-10	1,2E-10	36,3	8,3E-11	15,6
660	18,6	-1,4E-10	9,7E-11	36,3	9,4E-11	15,7
690	20,7	-1,2E-10	9,1E-11	36,3	7,9E-11	15,7
720	22,8	-7,3E-11	2,7E-10	36,2	1,0E-10	15,7
750	24,9	-8,6E-11	1,0E-10	36,2	1,1E-10	15,7
780	27,1	-5,2E-11	1,1E-10	36,2	8,6E-11	15,7
810	29,2	-3,6E-11	1,0E-10	36,2	7,9E-11	15,8
840	31,4	2,6E-13	1,2E-10	36,1	9,8E-11	15,7
870	33,5	-6,3E-13	8,8E-11	36,1	7,1E-11	15,8
900	35,6	4,3E-11	1,1E-10	36,1	1,0E-10	15,8
930	37,7	4,8E-11	9,2E-11	36,0	9,3E-11	15,8
960	39,8	6,5E-11	7,8E-11	36,0	7,7E-11	15,8
990	42,0	8,3E-11	9,5E-11	36,0	9,4E-11	15,7
1020	44,1	8,3E-11	1,1E-10	35,9	9,1E-11	15,9
1050	46,3	9,0E-11	1,3E-10	35,9	8,2E-11	15,9
1080	48,4	1,0E-10	1,0E-10	35,8	6,5E-11	15,8
1110	50,5	1,2E-10	9,3E-11	35,8	7,0E-11	15,9
1140	52,6	8,7E-11	1,4E-10	35,7	8,7E-11	15,9
1170	54,6	1,1E-10	1,2E-10	35,7	9,4E-11	15,9
1200	55,1	8,1E-11	1,0E-10	35,7	8,9E-11	15,9
1230	55,2	1,1E-11	1,0E-10	35,6	1,1E-10	16,0
1260	55,3	-6,0E-12	8,5E-11	35,6	1,1E-10	15,9
1290	55,3	2,3E-11	1,1E-10	35,6	1,1E-10	16,0
1320	55,2	1,1E-11	1,0E-10	35,6	9,0E-11	15,9
1350	53,4	-4,8E-11	9,8E-11	35,7	1,0E-10	16,0
1380	51,3	-7,3E-11	1,1E-10	35,7	7,8E-11	15,9
1410	49,3	-7,4E-11	8,9E-11	35,7	7,7E-11	16,0
1440	47,2	-5,5E-11	1,0E-10	35,8	7,7E-11	15,9
1470	45,1	-5,1E-11	1,1E-10	35,8	7,9E-11	15,9
1500	42,9	-5,0E-11	1,2E-10	35,9	8,2E-11	16,0
1530	40,9	-4,1E-11	1,3E-10	35,9	8,0E-11	16,0
1560	38,8	-2,3E-11	9,0E-11	35,9	8,7E-11	16,0

No	Temp.	Slope	Sigma	P406	Short term	P121.5
1590	36,6	-2,2E-11	1,0E-10	36,0	9,7E-11	15,9
1620	34,6	-5,0E-12	8,8E-11	36,0	8,1E-11	15,9
1650	32,5	6,3E-12	9,2E-11	36,0	7,1E-11	15,9
1680	30,4	1,5E-11	1,1E-10	36,1	8,3E-11	15,9
1710	28,2	2,3E-11	6,4E-11	36,1	7,6E-11	15,9
1740	26,0	4,0E-11	1,1E-10	36,2	1,2E-10	15,9
1770	23,9	4,6E-11	9,8E-11	36,2	8,2E-11	15,8
1800	21,8	5,1E-11	1,2E-10	36,2	5,5E-11	15,9
1830	19,8	8,3E-11	7,7E-11	36,2	1,0E-10	15,9
1860	17,7	1,0E-10	1,0E-10	36,3	8,3E-11	15,8
1890	15,7	1,0E-10	9,3E-11	36,3	8,6E-11	15,7
1920	13,6	1,2E-10	8,7E-11	36,3	8,7E-11	15,8
1950	11,5	1,4E-10	7,0E-11	36,3	1,1E-10	15,8
1980	9,5	1,4E-10	1,1E-10	36,3	1,2E-10	15,7
2010	7,4	1,5E-10	1,1E-10	36,4	8,4E-11	15,7
2040	5,3	1,7E-10	1,1E-10	36,4	9,6E-11	15,7
2070	3,1	2,0E-10	8,7E-11	36,4	9,8E-11	15,6
2100	1,1	1,8E-10	1,1E-10	36,4	8,8E-11	15,6
2130	-0,8	1,7E-10	1,1E-10	36,4	9,2E-11	15,6
2160	-2,9	1,6E-10	7,9E-11	36,4	8,6E-11	15,6
2190	-5,1	1,5E-10	1,0E-10	36,5	9,5E-11	15,6
2220	-7,0	1,2E-10	8,7E-11	36,5	6,9E-11	15,5
2250	-9,2	1,4E-10	1,4E-10	36,5	9,2E-11	15,5
2280	-11,3	1,4E-10	1,1E-10	36,5	9,0E-11	15,5
2310	-13,4	1,4E-10	1,1E-10	36,5	8,7E-11	15,4
2340	-15,5	1,3E-10	1,3E-10	36,5	1,2E-10	15,4
2370	-17,6	1,4E-10	1,0E-10	36,6	9,8E-11	15,3
2400	-19,7	1,7E-10	1,1E-10	36,6	9,8E-11	15,2
2430	-20,0	7,6E-11	1,2E-10	36,6	9,9E-11	15,2
2460	-20,1	1,9E-11	1,5E-10	36,5	1,4E-10	15,2
2490	-20,1	9,8E-12	1,2E-10	36,4	1,1E-10	15,2
2520	-20,1	4,9E-12	6,3E-11	36,4	6,8E-11	15,2
2550	-20,2	2,9E-13	9,6E-11	36,3	7,5E-11	15,2
2580	-20,2	6,6E-12	1,3E-10	36,3	1,1E-10	15,2
2592	-20,2	-1,1E-11	9,2E-11	36,3	1,0E-10	15,2
3451						
3481						
3511						
3541						
3571						
3601						
3631						
3661						
3691						
3721						
3751						
3781						
3811						
3841						
3871						
3901						

Frequency variation

406036938



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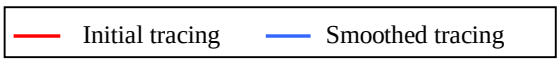


Beacon message during Frequency Stability Test with Temperature Gradient :

FFFE2F8E3F00000AE2017508A9B70F2800DF
FFFE2F8E3F00000AE2017508A9B70D280220
FFFE2F8E3F00000AE2017508A9B70F2C0836
FFFE2F8E3F00000AE2017508A9B711280EE3

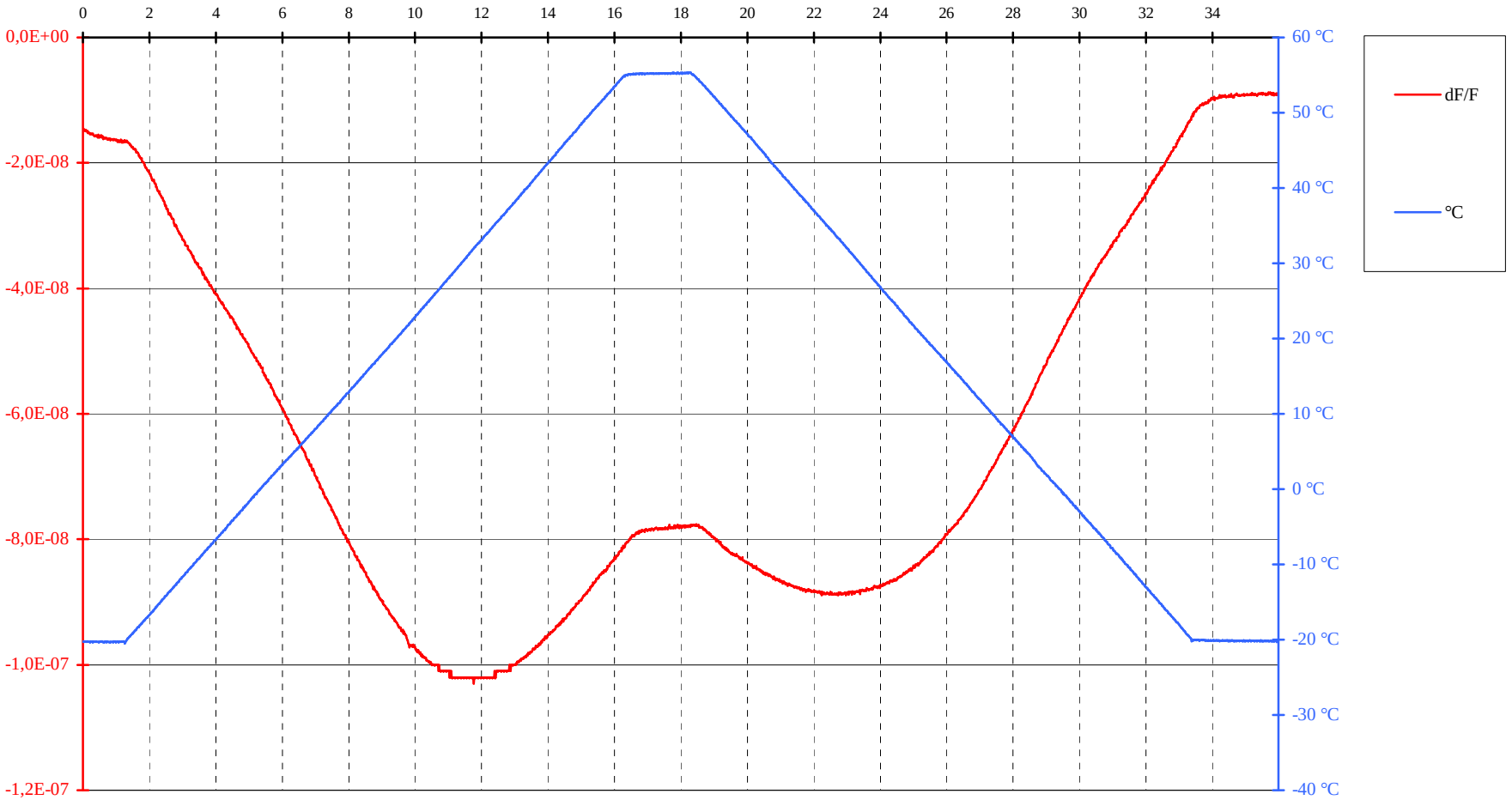
See life test résult for the Decode message

TEMPERATURE GRADIENT TEST RESULTS (5 °C / hour)

Manufacturer : KANNAD
Model : SafeLink Auto/Manual+
Number : EUT 12

Date : 17/09/2009
Time : 18:58:40

FREQUENCY VARIATION

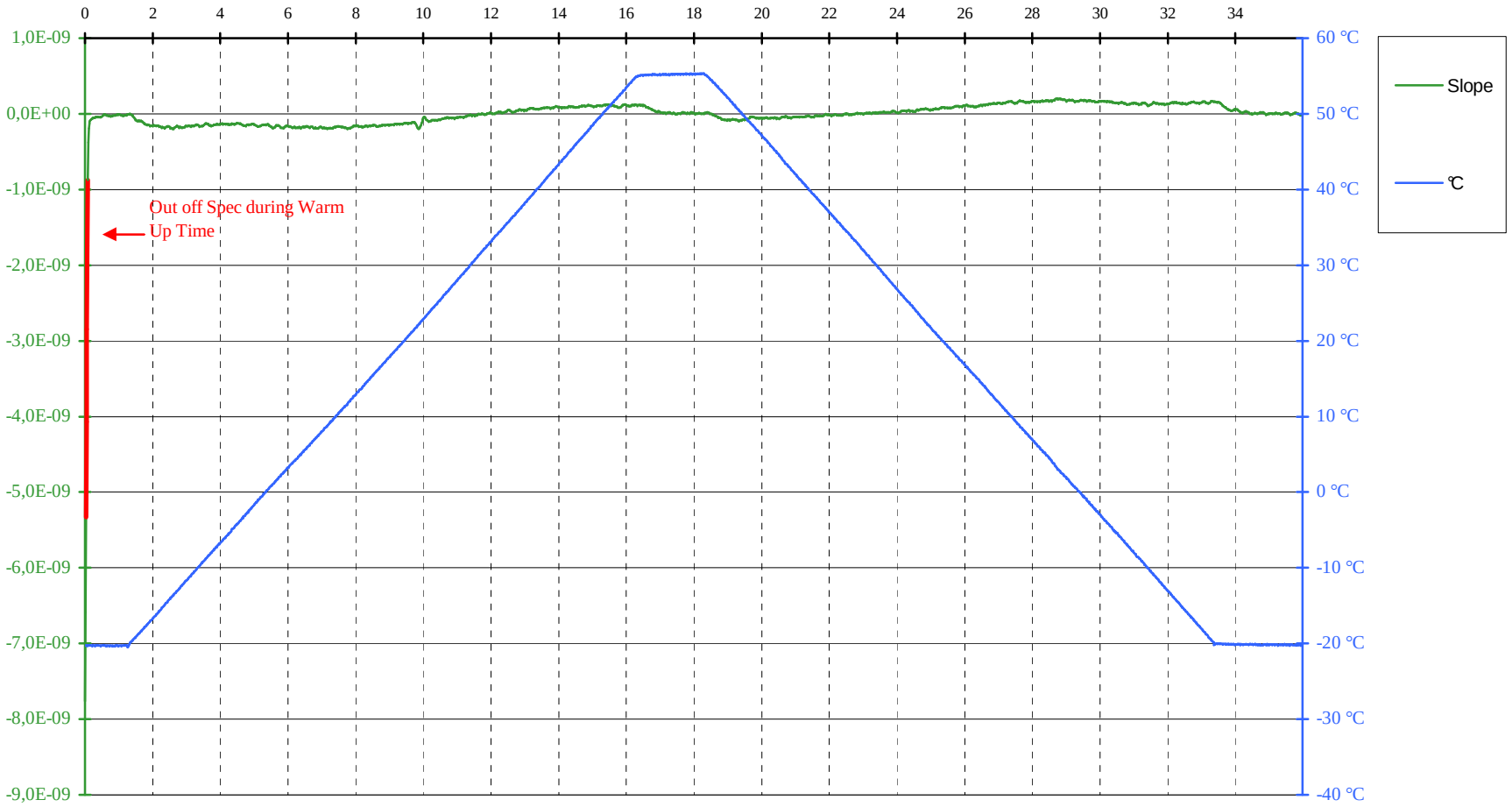


TEMPERATURE GRADIENT TEST RESULTS (5 °C / hour)

Manufacturer : KANNAD
Model : SafeLink Auto/Manual+
Number :

Date : 17/09/2009
Time : 18:58:40

MEDIUM TERM STABILITY : MEAN SLOPE /mn A to B, C+15 to D, and E+15 to F (-1,0E-9 to 1,0E-9)
MEAN SLOPE /mn B to C+15, and D to E+15 (-2,0E-9 to 2,0E-9)

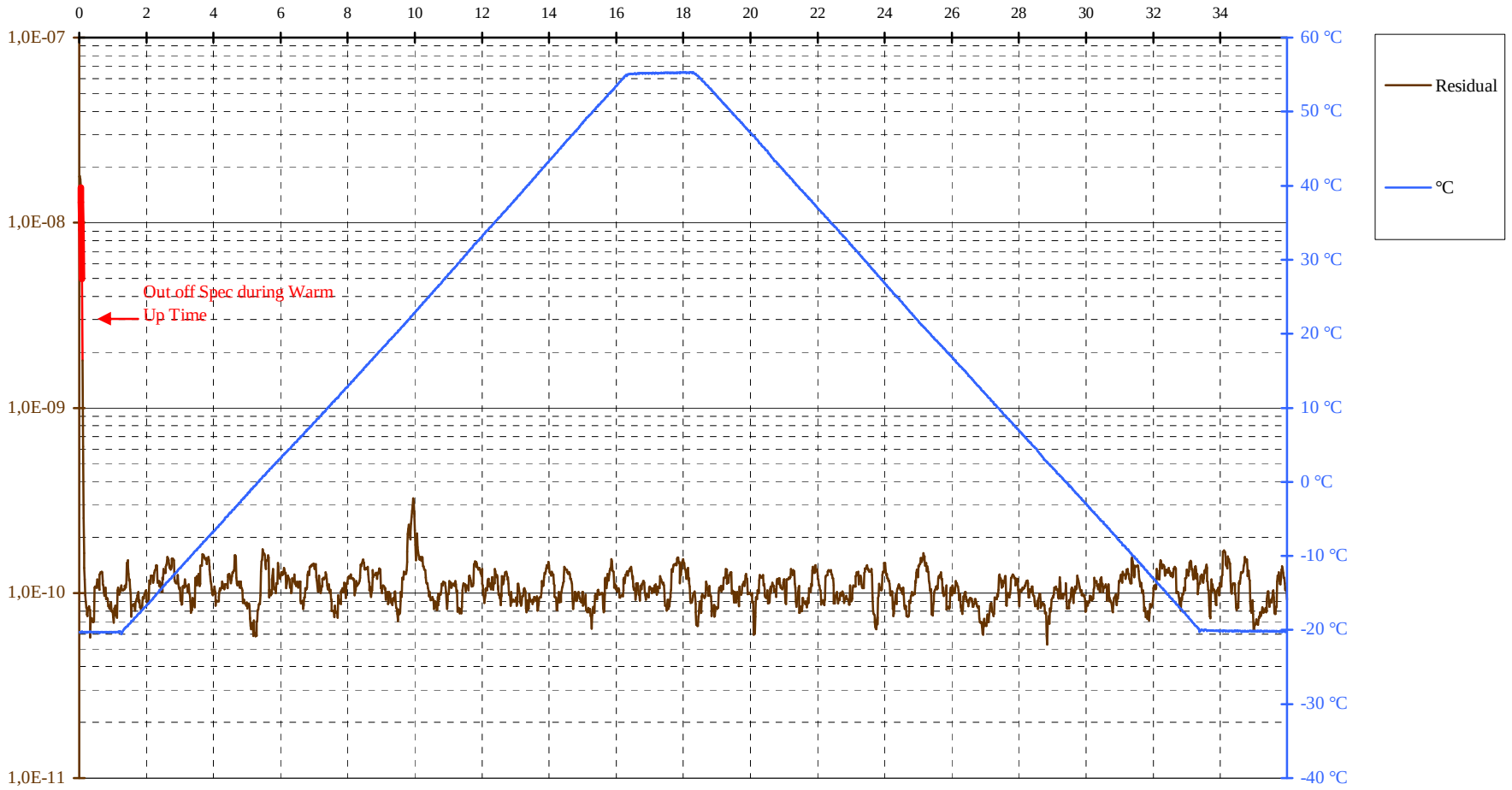


TEMPERATURE GRADIENT TEST RESULTS (5 °C / hour)

Manufacturer : KANNAD
Model : SafeLink Auto/Manual+
Number : EUT 12

Date : 17/09/2009
Time : 18:58:40

MEDIUM TERM STABILITY : RESIDUAL (≤ 3,0E-9)

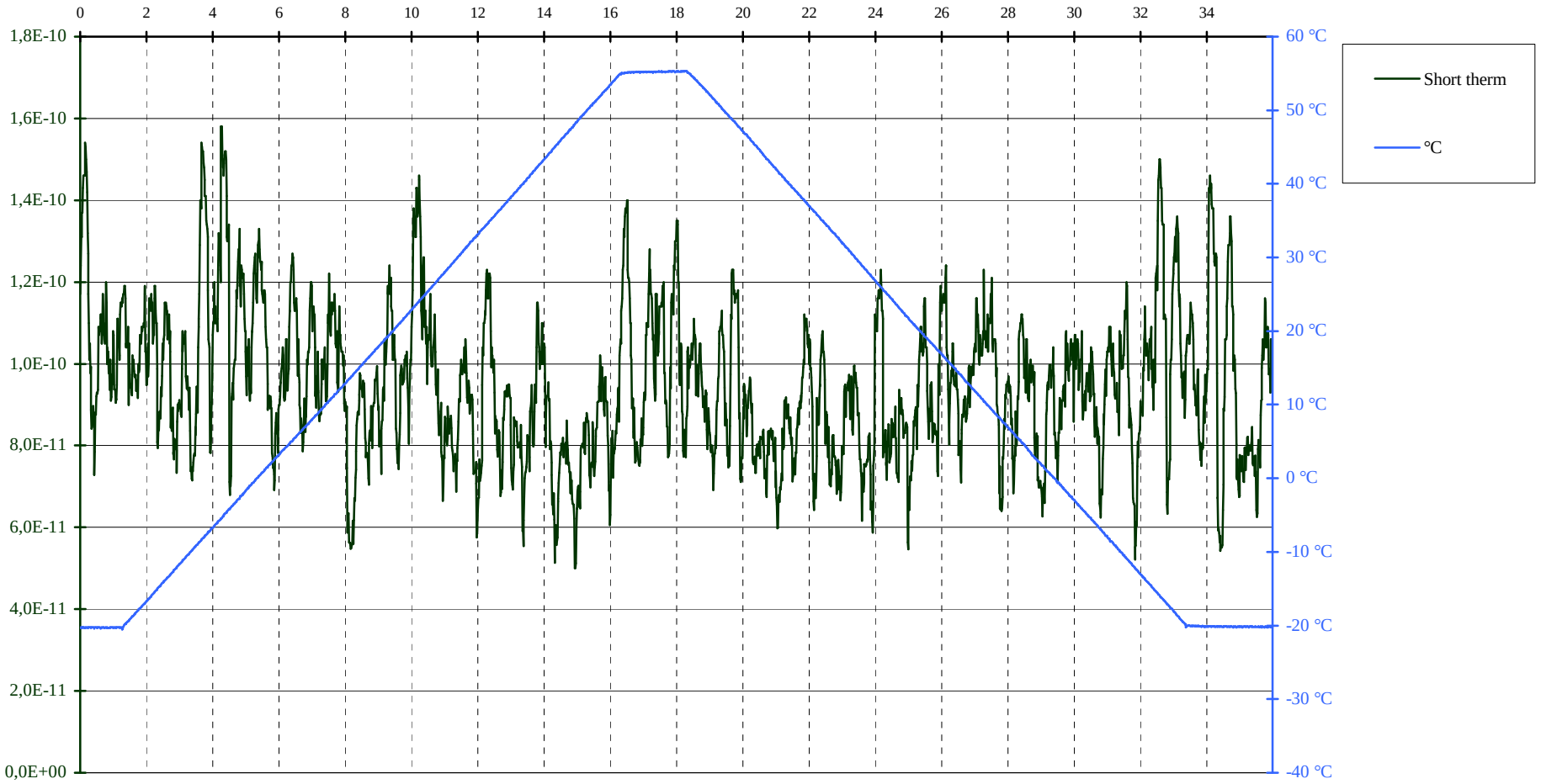


TEMPERATURE GRADIENT TEST RESULTS (5 °C / hour)

Manufacturer : KANNAD
Model : SafeLink Auto/Manual+
Number : EUT 12

Date : 17/09/2009
Time : 18:58:40

SHORT TERM STABILITY /100 mS (≤ 2,0E-9)

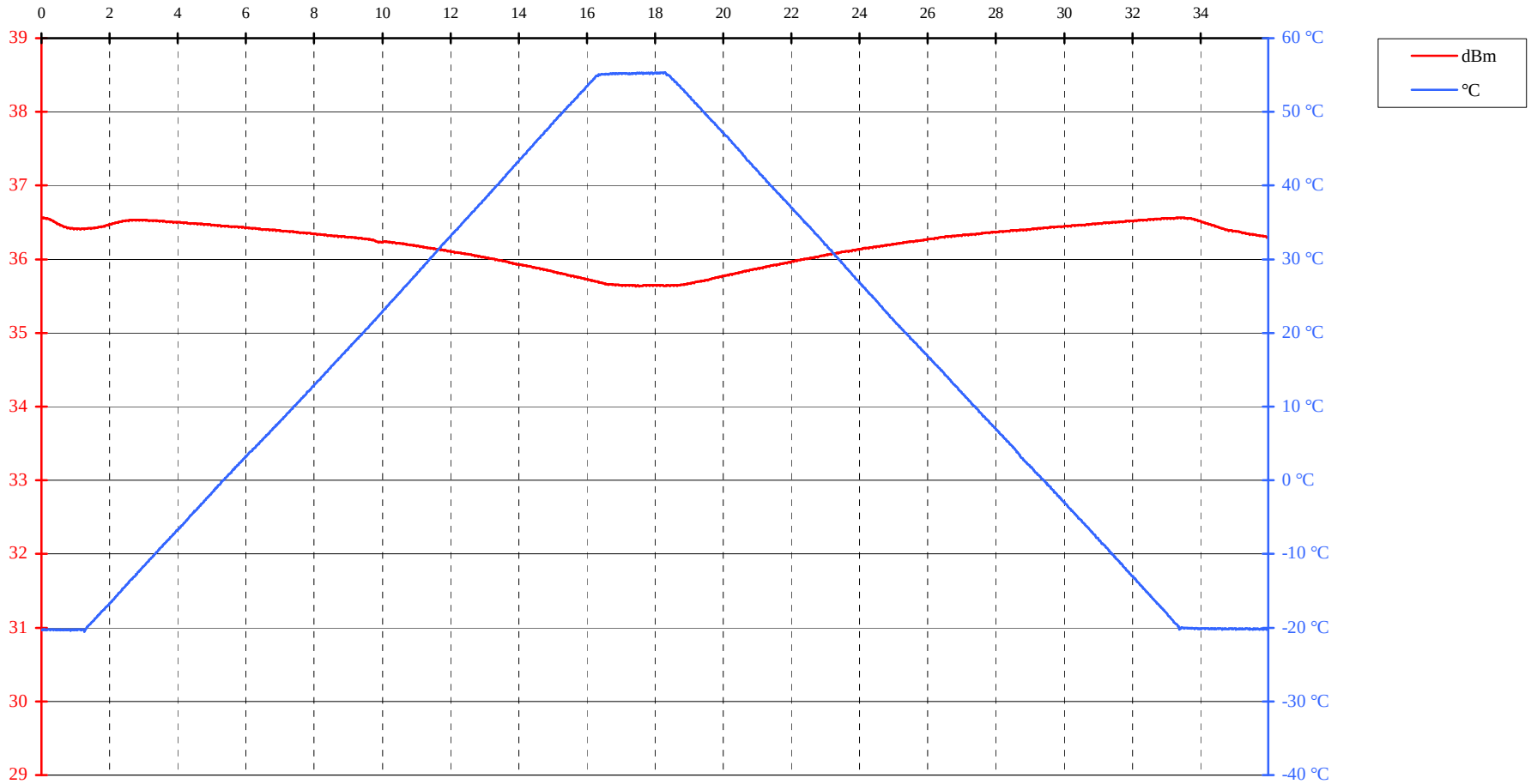


TEMPERATURE GRADIENT TEST RESULTS (5 °C / hour)

Manufacturer : KANNAD
Model : SafeLink Auto/Manual+
Number : EUT 12

Date : 17/09/2009
Time : 18:58:40

OUTPUT POWER (35 to 39 dBm)



Estimate of Medium Term Frequency Stability Ageing
following C/S Interim Procedure (July 2008)

1. Equipment checked

Beacon:
- Manufacturer : KANNAD
- type : EPIRB
- Model : SafeLink Auto / Manual+
- PN / SN :EUT 12

Beacon Oscillator:
- Manufacturer : RAKON
- Model : E4217LF
- SN : 5602
- CLASS : II (-20° C to +55° C)

2. Summary of Medium Term Frequency Stability with Temperature Gradient Test Results

The results of measurement given below are extracted:

1) From results of the Intespace beacon Frequency Stability test done on 17 to 19 September 2009
2) And from the graph-report of medium term stability test performed by Rakon with the TCXO on 30 October 2008.

	Intespace lab results* 17 to 19 September 2009		Rakon* results 30 October 2008		Maximum contributi
Max Residual	R_{tot} =	3,25E-10	Rosc =	1,073E-09	2,00E-09
Max Positive Slope Steady State Temp.	$+S_{tot\_sst}$ =	1,63E-10	$+S_{osc\_sst}$ =	8,2E-11	7,00E-10
Max Positive Slope Temperature Change	$+S_{tot\_tch}$ =	1,99E-10	$+S_{osc\_tch}$ =	2,71E-10	1,70E-09
Max Negative Slope Steady State Temp.	$-S_{tot\_sst}$ =	-5,52E-11	$-S_{osc\_sst}$ =	-1,15E-10	-7,00E-10
Max Negative Slope Temperature Change	$-S_{tot\_tch}$ =	-2,00E-10	$-S_{osc\_tch}$ =	-2,03E-10	-1,70E-09

The Medium Term parameters are computed with Frequency measurements checked after the 15 minutes of the beacon warm up time.

* Graph attached next page.

3. Estimate of Medium-Term Frequency Stability component

MT: Medium Term parameter	MT Component due to the beacon design	Worst case beacon MT component performance
	$MT_{beacon} = (MT_{tot}^2 - MT_{osc}^2)^{1/2}$	$MT_{beacon\_max} = (MT_{beacon}^2 + MT_{osc\_max}^2)^{1/2}$
Residual	0,00E+00 *	2,00E-09
Positive Slope Steady State Temp.	1,41E-10	7,14E-10
Positive Slope Temperature Change	0,00E+00 *	1,70E-09
Negative Slope Steady State Temp.	0,00E+00 *	7,00E-10
Negative Slope Temperature Change	0,00E+00 *	1,70E-09

* Mtot < MTosc: In that case the contribution of beacon design is considered equal to 0

- MT_{tot} = maximum value of Medium Term parameter measured during C/S type approval testing
- MT_{osc} = Medium Term parameter provided for the specific oscillator in the beacon prototype

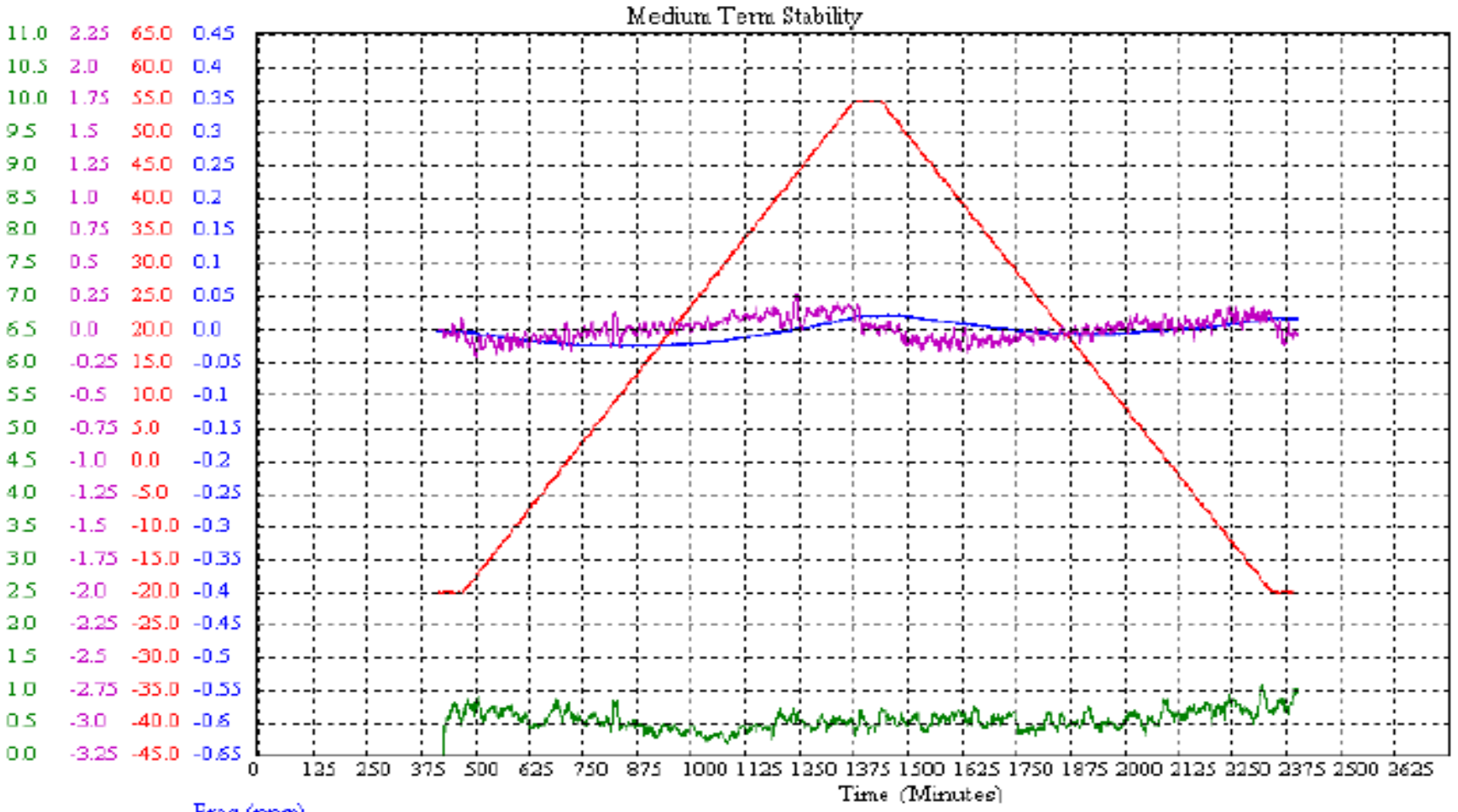
4. Medium Term performance after five years

MT: Medium Term parameter	AF:Ageing factor	$MT_{beacon\_5\_year\_max} = MT_{beacon\_max} + AF$	C/S requirements
Residual	2,00E-10	2,20E-09	≤ 3E-09
Positive Slope Steady State Temp.	0	7,14E-10	≤ 1E-09
Positive Slope Temperature Change	0	1,70E-09	≤ 2E-09
Negative Slope Steady State Temp.	0	7,00E-10	≥ -1E-09
Negative Slope Temperature Change	0	1,70E-09	≥ -2E-09

5. Conclusion

The results above demonstrate that the Beacon compliant the C/S Interim Medium Term Frequency Stability criteria.

Ramp Data: E4217 673.VFV : 30/10/2008 08:42:03 (Limits: Static/Gradient Slope=0.7/1.7 ppb/min Residual=2 ppb) Pos: 171 Date code: HV
Serial no: 5602



Mid-Frequency: -0.077 ppm	Max Residual: 1.073 ppb
Freq Stability: +/-0.024 ppm	
Min Gradient Slope: -0.203 ppb/min	Min Static Slope: -0.115 ppb/min
Max Gradient Slope: 0.271 ppb/min	Max Static Slope: 0.082 ppb/min

PASS

SATELLITE QUALITATIVE TEST REPORT
KANNAD SafeLink EPIRB
EUT N° 9

1 - TEST METHOD

The Satellite Qualitative Tests of the dedicated radio beacon are performed on the INTESPACE Roof Building in compliance with the test methods described in C/S T.007 ANNEX A § A.2.5 Satellite Qualitative Test (test no. 14 in Table F.1 This test is also coordinated with the Cospas-Sarsat Mission Control Centre (MCC) of CNES Toulouse.

2 - EQUIPMENT UNDER TEST

Beacon :

Beacon type :	EPIRB
Manufacturer :	KANNAD
Model N° :	SafeLink
SN :	9

Antenna :
KANNAD integrated Antenna

Battery pack :	PANASONIC (CR123 / 9)
P/N Williamson	0146030

Antenna / ELT Coax cable : BNC 3 m (Att = 1,1dB)

3 - TEST SCHEDULE

30 June to 2 July 2009

4 - TEST SITE DESCRIPTION

Tests are performed outside on the top of Intespace Pacal A building .
The Beacon and Antenna are placed sucessively as C/S T.007 Test Configuration 5, 7 and 8

Configuration 5: Water ground plane

Configuration 7: Beacon on ground plane

Configuration 8: Beacon above ground plane

6 - TEST CRITERIA

The pass/fail criteria are as follows:

a. LEOLUT solutions producing the correct beacon 15 hexadecimal identification must be provided for all satellite passes with cross track angles between 1 and 21 degrees; and

b. at least 80% of the LEOLUT Doppler locations, associated with satellite passes with cross track angles between 1 and 21 degrees and with bursts that bracket TCA, must be accurate to within 5 km.

7 - RESULTS

Beacon message : FFFE2F8E3F00000AE2017508A9B70F2800DF

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
Latitude Flag: North	59	0
Latitude (Degrees): 43	60-66	0101011
Latitude (Minutes): 34	67-71	10001
Longitude Flag: East	72	0
Longitude (Degrees): 1	73-80	00000001
Longitude (Minutes): 28	81-85	01110
BCH 1 Encoded:	86-106	10100001000101010100110
BCH 1 Calculated:	86-106	10100001000101010100110
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: 28	116-119	0111
Longitude Offset Sign: +	120	1
Longitude Offset Minutes: 0	121-122	00
Longitude Offset Seconds: 40	123-126	1010
Additional Id (Nat Use)	127-132	000000
BCH 2 Encoded:	133-144	000011011111
BCH 2 Calculated:	N/A	000011011111
Composite Latitude: 43.558888888888895 Degrees North	N/A	Composite Longitude: 1.4777777777777779 Degrees East
15 Hex ID:	N/A	1C7E00003F81FE0

Antenna model	Beacon Type	Satellite Conf.	Sat Test pass/fail criteria	Appendix A to Annex F tables	Battery pack
KANNAD integrated Antenna	EPIRB	5 7 8	80 % of Doppler Locations within 5 km (1° < CTA < 21°)	Table F-A. 1	P/N Williamson 0146030

CONCLUSIONS

According to the C/S T.007 Satellite Qualitative Test Criteria the Beacon Antenna is declared in the tolerance

APPENDIX A TO ANNEX F

SATELLITE QUALITATIVE TEST SUMMARY REPORT

Date of the Test : 02 juil 2009
Time of the Test : 02/07/2009 15:39 to 03/07/2009 02:19 = 10:40
Beacon Model : Kannad Safelink n°9
Beacon 15 Hex ID : 1C7E0 0003F 81FE0
Antenna Manufacturer & Model : Integrated
Actual location of the test beacon : Latitude : 43,559 Longitude : 1,478
Beacon test configuration : Conf. 5 : Water ground plane

Satellite ID	Satellite Pass Number	TIME OF Closest Approach (TCA)	Cross Track Angle	15 Hex ID Provided by LUT	Doppler Location		Location Error (km)
					Lat	Long	
7	57898	02/07/2009 15:39	5,111	1C7E0 0003F 81FE0	43,5672	1,47388	0,97
8	45248	02/07/2009 16:08	9,965	1C7E0 0003F 81FE0	43,5665	1,47791	0,84
7	57899	02/07/2009 17:19	12,837	1C7E0 0003F 81FE0	43,567	1,48324	0,98
8	45249	02/07/2009 17:49	7,686	1C7E0 0003F 81FE0	43,5632	1,48128	0,53
9	36497	02/07/2009 19:39	11,784	1C7E0 0003F 81FE0	43,5662	1,47639	0,81
9	36498	02/07/2009 21:18	5,646	1C7E0 0003F 81FE0	43,5637	1,48439	0,74
10	21218	03/07/2009 00:37	17,025	1C7E0 0003F 81FE0	43,5527	1,47448	0,75
12	2067	03/07/2009 01:55	4,394	1C7E0 0003F 81FE0	43,5605	1,48122	0,31
10	21219	03/07/2009 02:19	1,266	1C7E0 0003F 81FE0	43,558	1,47829	0,11

Ratio of successful solutions = $\frac{\text{number of Doppler solutions within 5 Km with } 1°<CTA<21°}{\text{number of satellites passes over test duration with } 1°<CTA<21°}$ X 100 = **100%**

APPENDIX A TO ANNEX F

SATELLITE QUALITATIVE TEST SUMMARY REPORT

Date of the Test : 30 juin 2009
Time of the Test : 30/06/2009 16:26 to 01/07/2009 00:59 = 8:32
Beacon Model : Kannad Safelink n°9
Beacon 15 Hex ID : 1C7E0 0003F 81FE0
Antenna Manufacturer & Model : Integrated
Actual location of the test beacon : Latitude : 43,559 Longitude : 1,478
Beacon test configuration : Conf. 7 : Beacon on ground plane

Satellite ID	Satellite Pass Number	TIME OF Closest Approach (TCA)	Cross Track Angle	15 Hex ID Provided by LUT	Doppler Location		Location Error (km)
					Lat	Long	
7	57870	30/06/2009 16:26	3,355	1C7E0 0003F 81FE0	43,5758	1,48512	1,95
8	45220	30/06/2009 16:32	5,926	1C7E0 0003F 81FE0	43,5659	1,47851	0,77
8	45221	30/06/2009 18:13	12,062	1C7E0 0003F 81FE0	43,5629	1,48325	0,60
9	36468	30/06/2009 18:46	20,17	1C7E0 0003F 81FE0	43,5662	1,47624	0,82
11	13996	30/06/2009 20:16	6,137	1C7E0 0003F 81FE0	43,5652	1,48042	0,72
9	36469	30/06/2009 20:25	3,913	1C7E0 0003F 81FE0	43,5666	1,48099	0,88
11	13997	30/06/2009 21:57	11,771	1C7E0 0003F 81FE0	43,5619	1,48229	0,48
9	36470	30/06/2009 22:05	14,115	1C7E0 0003F 81FE0	43,5664	1,48302	0,92
12	2038	01/07/2009 00:34	19,1	1C7E0 0003F 81FE0	43,5613	1,48007	0,30
10	21190	01/07/2009 00:59	13,128	1C7E0 0003F 81FE0	43,5546	1,48142	0,57

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

APPENDIX A TO ANNEX F

SATELLITE QUALITATIVE TEST SUMMARY REPORT

Date of the Test : 01 juil 2009
Time of the Test : 01/07/2009 16:20 to 02/07/2009 02:06 = 9:45
Beacon Model : Kannad Safelink n°9
Beacon 15 Hex ID : 1C7E0 0003F 81FE0
Antenna Manufacturer & Model : Integrated
Actual location of the test beacon : Latitude : 43,559 Longitude : 1,478
Beacon test configuration : Conf. 8 : Beacon above ground plane

Satellite ID	Satellite Pass Number	TIME OF Closest Approach (TCA)	Cross Track Angle	15 Hex ID Provided by LUT	Doppler Location		Location Error (km)
					Lat	Long	
8	45234	01/07/2009 16:20	7,963	1C7E0 0003F 81FE0	43,5725	1,47262	1,57
7	57885	01/07/2009 17:43	17,228	1C7E0 0003F 81FE0	43,5655	1,48553	0,94
8	45235	01/07/2009 18:01	9,871	1C7E0 0003F 81FE0	43,5669	1,48275	0,96
11	14010	01/07/2009 19:56	9,65	1C7E0 0003F 81FE0	43,5651	1,47849	0,68
9	36483	01/07/2009 20:02	7,907	1C7E0 0003F 81FE0	43,5744	1,47157	1,79
11	14011	01/07/2009 21:36	7,986	1C7E0 0003F 81FE0	43,5627	1,48465	0,68
9	36484	01/07/2009 21:42	9,866	1C7E0 0003F 81FE0	43,5646	1,48173	0,69
12	2052	02/07/2009 00:24	20,972	1C7E0 0003F 81FE0	43,5585	1,48074	0,23
10	21204	02/07/2009 00:48	15,076	1C7E0 0003F 81FE0	43,554	1,47704	0,56
12	2053	02/07/2009 02:06	2,552	1C7E0 0003F 81FE0	43,5611	1,48348	0,50

* Not provided by MCC

Ratio of successful solutions = $\frac{\text{number of Doppler solutions within 5 Km with } 1°<CTA<21°}{\text{number of satellites passes over test duration with } 1°<CTA<21°}$ X 100 = **100%**

ANTENNA TEST REPORT
KANNAD
SafeLink
9

1 - ADMINISTRATION

1. WORK ORDER : Reference ITS : E9788-CS

1. TEST TEAM : F. ESQUEVIN

1. SCHEDULE : 18 June 2009

2 - PURPOSE

The radiation tests of the dedicated radio beacon are performed in INTESPACE EMC Laboratory in compliance with the test methods described in the COSPAS-SARSAT 406 MHz distress beacon type approval standard : C/S T 007- Issue 4 - Revision 3 - October 2008

3 - RADIO BEACON IDENTIFICATIONS

Manufacturer :	KANNAD
Model N° :	SafeLink
PN / SN :	9
Antenna :	KANNAD Integrated Antenna

4 - TEST SITE DESCRIPTION

Tests are performed in an anechoic chamber (size 16 m x 10 m x 11 m)
Walls, ceilling and doors are lined with EMERSON CUMING foams VHP 36 and VHP 26 type.
The Beacon is placed as shown on figure N° 1, N° 3, C/S B.4. and Conf. 4 (Fig B.5)

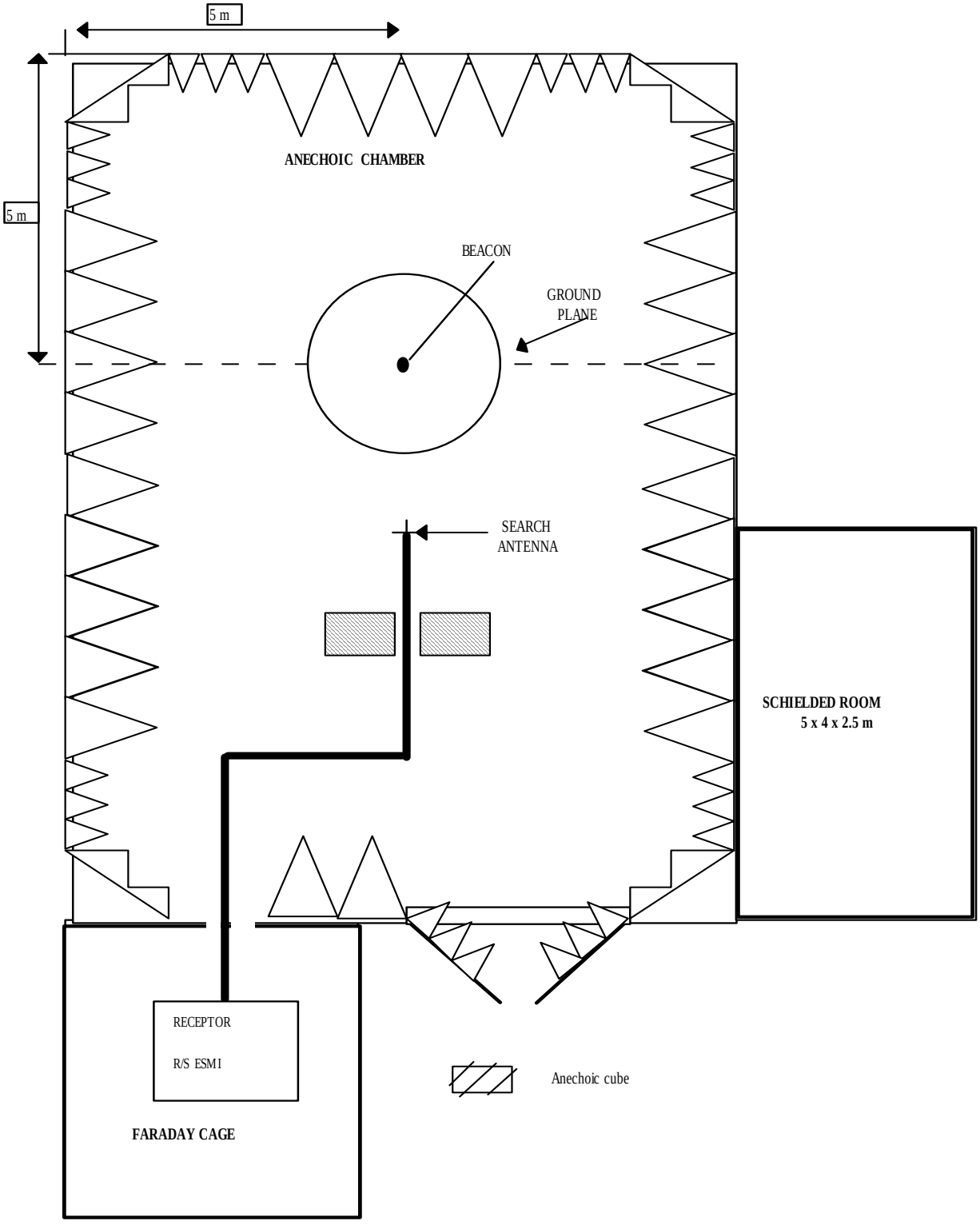
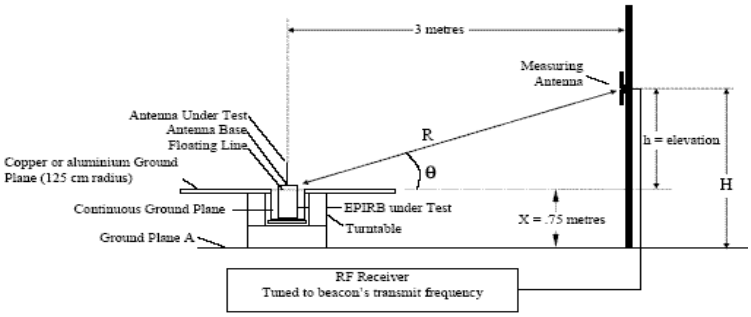
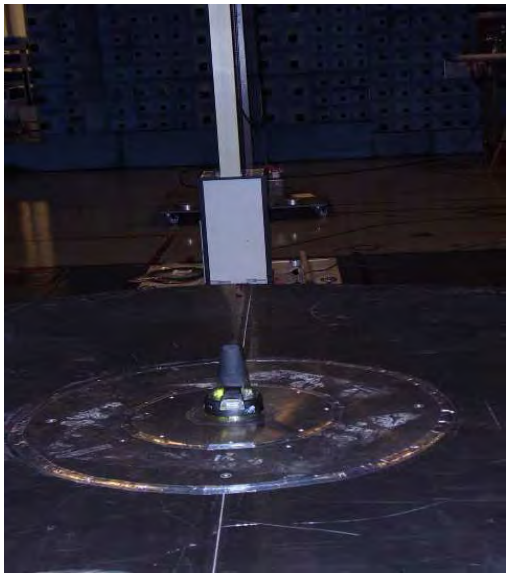

5 m
5 m
ANECHOIC CHAMBER
BEACON
GROUND
PLANE
SEARCH
ANTENNA
SCHIELDED ROOM
5 x 4 x 2.5 m
RECEPTOR
R/S ESM1
FARADAY CAGE
Anechoic cube

FIGURE 1

Figure B.4: Test Configuration for "EPIRB-like" Devices (i.e. beacons designed to operate while floating in water)





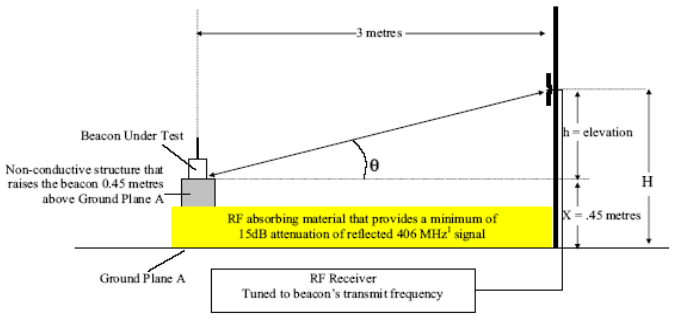
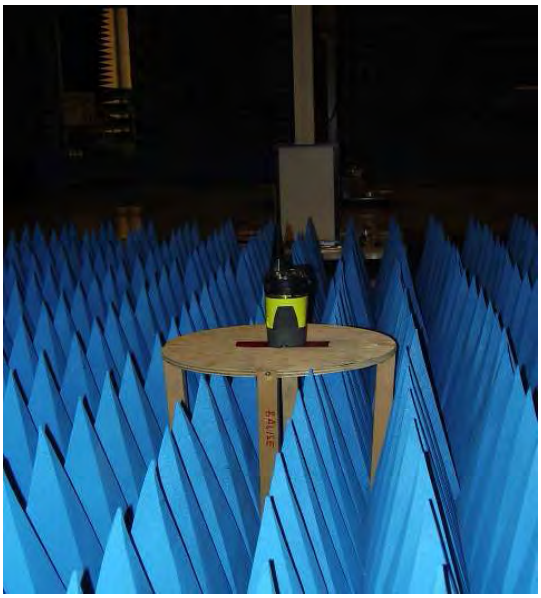


Figure B.5: Additional Test Configuration for all Devices that Might be Required to Operate Without a Ground Plane



5 - TEST METHOD

The test method described below, according to C/S T 007- Issue 4 - Revision 3 - October 2008
is executed for 406 MHz frequency .
The Beacon or the Beacon Antenna is placed on the center of the electrical ground plane (as show Fig B & Fig 3) the following measurements are performed :

1/ Determination of E field strength in term of dBµV/m at 3 m far from the Beacon Antenna for all direction (0° to 360° by step of 30°) and for all search antenna elevation (10° to 50° by step of 10°).
Lenght of search antenna is adjusted to proper l/2 λ conditions .
For all positions the induced voltage is measured with search antenna in vertical and horizontal direction .

2/ Beacon antenna polarization is determined .

3/ An EIRP (Equivalent Isotropically Radiated Power) from the Beacon Antenna is calculated

4/ EIRP is corrected with EOL (end of life factor)

5/ Actual EIRP are compared to specified EIRP to be in the range :
- 1.6 W to 20 W (+ 32 dBm to + 43 dBm) in conf C/S B.4.
- 1 W to 20 W (+ 30 dBm to + 43 dBm) in Conf. 4 (Fig. B.5)

6 - TESTS EQUIPMENTS

6.1. SEARCH ANTENNA

- Linear antenna (dipole)
  Manufacturer : EMCO 3121C-DB4
  P/N / S/N : 9904-1436
  Antenna Factor : 21,772
  Calibration validity Dec. 2009

6.2. SPECTRUM ANALYSER

- Manufacturer Rohde&Schwarz
  Reference : ESMI
  Serial number : 833579/006
  Calibration validity : Jan. 2010

6.3. CABLES

- type N length : 2x10 m
  Cable loss at 406 MHz is : 3,5 dB

7 - TESTS OPERATIONS

7.1. EMISSION FIELD STRENGTH FROM BEACON

Beacon electric field strength is obtained from measurement of the output voltage (dBµV RMS) at antenna port (typical set up are shown figure N° 3 for 406 MHz) and computed with following parameters :

- Antenna factor of search antenna AF in dB
- Directivity factor of the vertical search antenna Dm in dB
  (Theoritical directivity shown paragraph B-5-4 of C/S T007) as :

  $$Dm = 20 \log [\cos (90 \times \sin q) / \cos q]$$
- Cable loss L = 3,5 dB at 406 MHz
- DF : distance factor in dB - To calculate field at a constant distance (3 m) from Beacon due to the elevation of the search antenna.
- Power correction factor : end of life correction factor EOL is calculated from the difference between RF power measured during test and end of life power after 24/48 hours operation. This factor is applied to correct EIRP as shown on final test result table
- The measurements are performed on the carrier signal, just before to apply the modulation.
- The effective field strength at 3 m from Beacon is computed from :
  Linear Antenna (Dipole) : EdBµV/m = UdBµV + AF - Dm + L + DF or
  RHCP Antenna (Spiral Cone) : EdBµV/m = UdBµV + AF + L + DF (the search antenna point to the BUT antenna)

7.2. POWER CORRECTION FACTORS

EOL factor

TEST FREQUENCY	**RF Power measured at Ambient Temp. Test**	**RF Power measured at the end of Operating Lifetime Test**	**Loss Factor EIRPLOSS**
406 MHz BEACON	36,5 dBm	36,5 dBm	0,0 dBm

8 - RADIATED POWER CALCULATIONS

8.1. EFFECTIVE ISOTROPICALLY RADIATED POWER OF BEACON

EIRP of Beacon is directly calculated from equation :

$$EIRP = E^2 \times D^2 / 30$$

EIRP = W
E = V/m
D = m

Results shown in table N° C1 are given in dBm where :

$$EIRP\ dBm = 10 \log (EIRP\ W) + 30$$

and apparent antenna gain :

$$GidB = EIRPdBm - RF\ PowerdBm$$

9 - SUCCESS CRITERIA

'- For C/S B.4. test configuration : 90% of Beacon measurements must be equal or greater than 1,6 W EIRP (32 dBm) . and less than 20 W EIRP (43 dBm)

10 - BEACON ANTENNA POLARIZATION

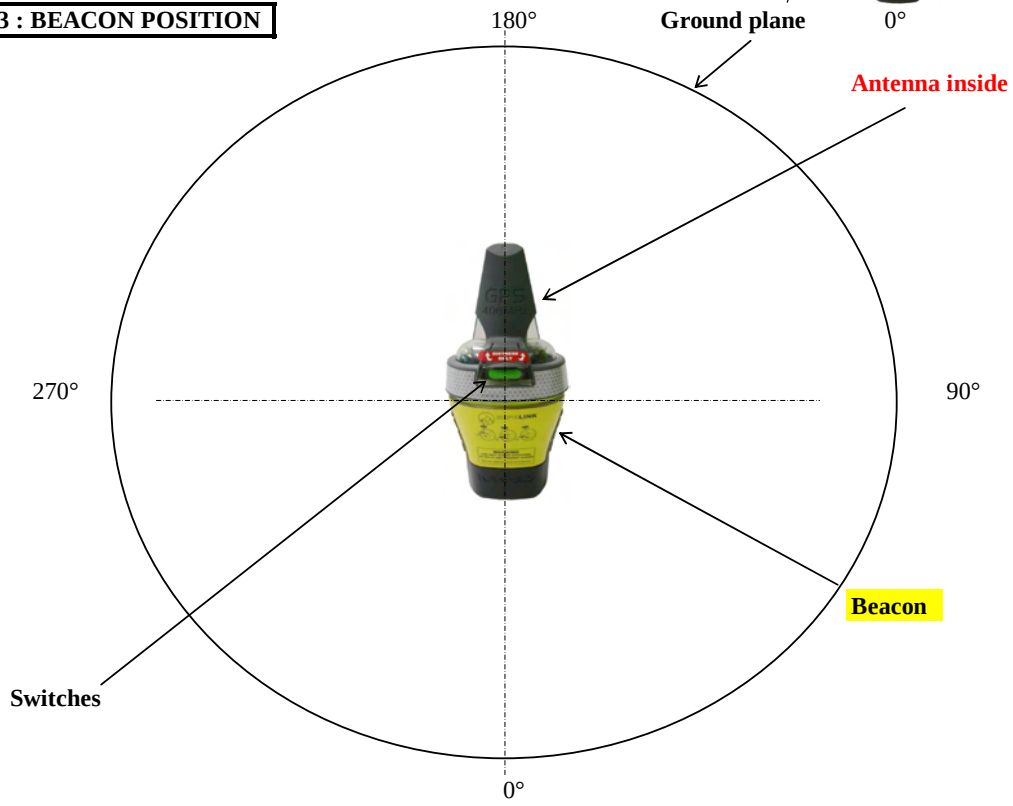
10.1 Beacon Antenna Polarization
Beacon antenna polarization is checked according to C/S T007 procedure paragraph B9 . The Beacon antenna polarization is declared linear when 80 % of induced voltage measurement Vv and Vh differ by at least 10 dB.
If more than 20 % of the induced voltage measurement (Vv, Vh) are within 10 dB of each other
the Antenna Polarization is considered Circular .

Antenna model	**C/S T.007 Test Conf.**	**Min difference (Vv - Vh)** (See C1b Tables)		**Antenna Polarization**
		min	% < 10dB	
Integrated Antenna	C/S B.4.	18,1 dB	0%	Linear Vertical

11 - BEACON MECHANICAL SET UP

Beacon 0°axis is identified with 0° azimuth direction of turn table .
Antenna is the center of rotation of azimuth angle.

Fig 3 : BEACON POSITION



NOT TO SCALE

12 - RESULTS

Test frequency	Polarization	Reference EIRP (dBm)	Measurement EIRP
406 MHz	Linear Vertical	32 < EIRP Ref< 43	According tables F-B.1/2
406 MHz	Linear Vertical	30 < EIRP Ref< 43	According tables F-B.3

CONCLUSIONS

Taking account of laboratory measurement uncertainties (+/- 2,3 dB) and C/S T.007 measurement tolerance the Beacon Antenna is declared in EIRP Ref tolerance

406 MHz Beacon Antenna Test Results - C/S B.4. Test configuration

Date of test 18 June 2009
Beacon properties
- Manufacturer : KANNAD
- Type : SafeLink
- PN / SN : 9

other properties
Antenna model : Integrated Antenna
Search antenna : Linear antenna (dipole)

Table F-B.1 : Equivalent Isotropically Radiated Power (dBm) / Antenna Gain (dBi)

Azimuth Angle (degrees)	Elevation Angle(degrees)									
	10		20		30		40		50	
	dBm	dBi	dBm	dBi	dBm	dBi	dBm	dBi	dBm	dBi
0	37,97	1,47	40,27	3,77	41,16	4,66	40,13	3,63	32,60	-3,90
30	37,97	1,47	40,28	3,78	41,17	4,67	40,12	3,62	32,20	-4,30
60	37,97	1,47	40,27	3,77	41,17	4,67	40,12	3,62	32,08	-4,42
90	37,87	1,37	40,37	3,87	41,26	4,76	40,23	3,73	32,27	-4,23
120	37,87	1,37	40,38	3,88	41,36	4,86	40,23	3,73	32,15	-4,35
150	37,97	1,47	40,47	3,97	41,36	4,86	40,33	3,83	32,35	-4,15
180	37,97	1,47	40,37	3,87	41,46	4,96	40,24	3,74	32,56	-3,94
210	37,87	1,37	40,28	3,78	41,36	4,86	40,24	3,74	32,47	-4,03
240	37,77	1,27	40,17	3,67	41,16	4,66	40,14	3,64	32,26	-4,24
270	37,67	1,17	40,08	3,58	41,27	4,77	40,13	3,63	32,68	-3,82
300	37,77	1,27	40,07	3,57	41,16	4,66	40,03	3,53	32,36	-4,14
330	37,97	1,47	40,18	3,68	41,17	4,67	40,02	3,52	32,30	-4,20
Overall Gain Variation (dB)	0,30		0,40		0,30		0,31		0,61	

$ERP_{max\ EOL}$ = **MAX [**ERP_{max}, (ERP_{max} - ERP_{LOSS}**]** = **MAX (** 41,46 41,46 **)** = 41,46 dBm
$ERP_{min\ EOL}$ = **MIN [**ERP_{min}, (ERP_{min} - ERP_{LOSS}**]** = **MIN (** 32,08 32,08 **)** = 32,08 dBm

Table F-B.2 : INDUCED Voltage Measurements Vv / Vh (dBmV)

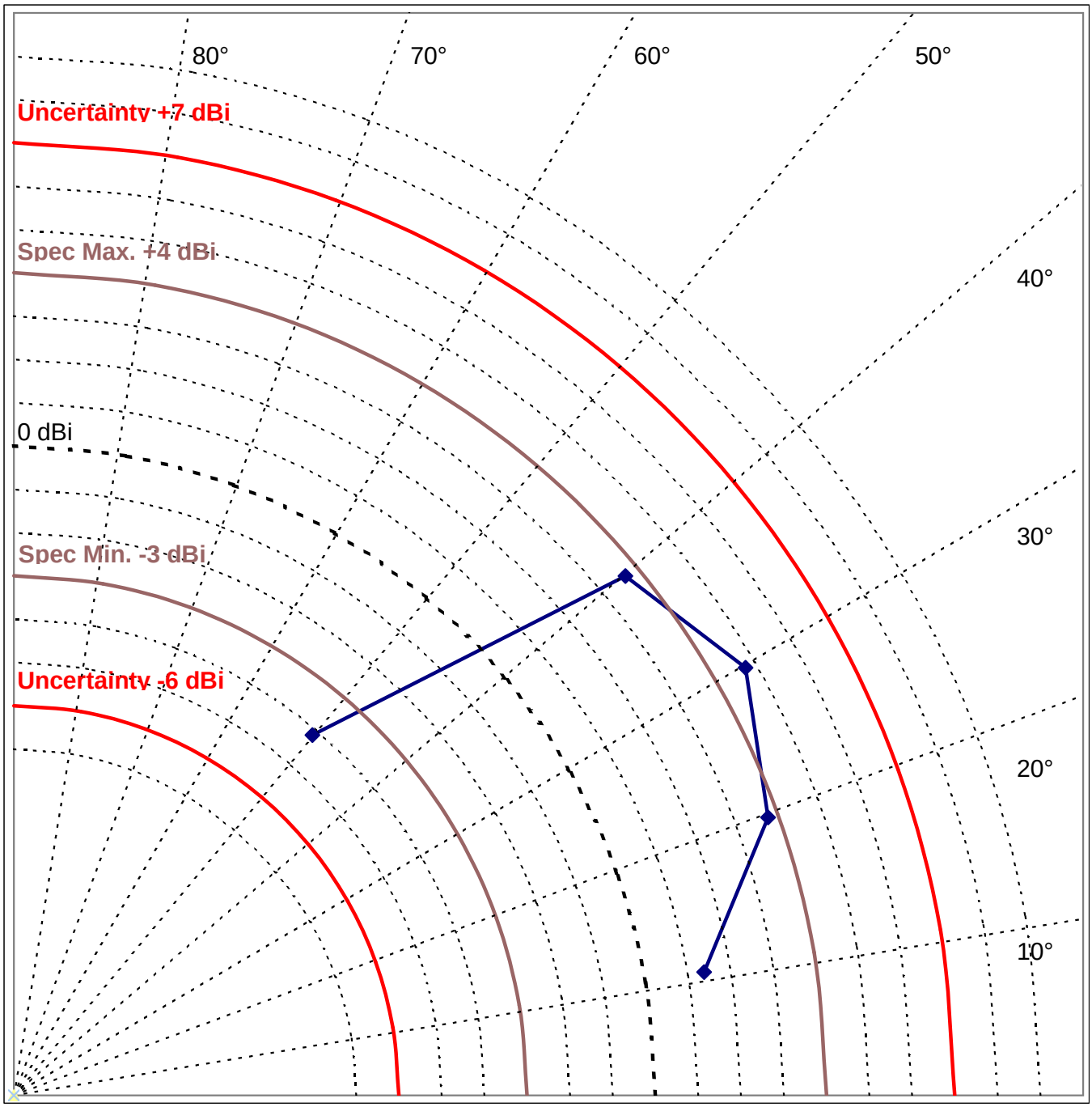
Azimuth Angle (Degrees)	Elevation Angle (Degrees)									
	10		20		30		40		50	
	Vv	Vh	Vv	Vh	Vv	Vh	Vv	Vh	Vv	Vh
0	107,79	72,30	109,68	82,00	109,86	83,30	107,76	76,40	98,65	80,60
30	107,79	68,30	109,68	84,70	109,86	85,40	107,76	69,70	98,25	80,20
60	107,79	67,30	109,68	84,10	109,86	84,20	107,76	74,40	98,15	78,10
90	107,69	68,30	109,78	82,60	109,96	82,60	107,86	78,40	98,35	77,90
120	107,69	66,30	109,78	84,70	110,06	82,90	107,86	78,90	98,25	74,60
150	107,79	68,40	109,88	82,80	110,06	80,30	107,96	81,90	98,45	73,30
180	107,79	60,10	109,78	84,40	110,16	81,50	107,86	82,40	98,65	76,70
210	107,69	60,10	109,68	85,50	110,06	84,20	107,86	82,70	98,55	77,50
240	107,59	51,70	109,58	82,60	109,86	80,10	107,76	83,10	98,35	76,50
270	107,49	63,00	109,48	85,30	109,96	84,30	107,76	80,30	98,75	79,20
300	107,59	70,10	109,48	82,90	109,86	82,50	107,66	80,00	98,45	76,40
330	107,79	62,60	109,58	85,70	109,86	85,80	107,66	69,20	98,35	80,30
Min (Vv-Vh)	35,5		23,9		24,1		24,7		18,1	

Min difference (Vv - Vh)	% < 10dB	Antenna Polarization
18,1 dB	0%	Linear Vertical

Antenna diagram versus elevation angle comparison with theoritical limits

KANNAD SafeLink Antenna : Integrated Antenna

Test configuration : C/S B.4.



406 MHz Beacon Antenna Test Results - C/S Test Conf. 4 (Fig B.5)

Date of test 18 June 2009

Beacon properties

- Manufacturer : KANNAD
- Type : SafeLink
- PN / SN : 9

other properties

Antenna model : Integrated Antenna
Search antenna : Linear antenna (dipole)

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

Azimuth Angle (degrees)	Elevation Angle(degrees)									
	10		20		30		40		50	
	dBm	dBi	dBm	dBi	dBm	dBi	dBm	dBi	dBm	dBi
0	34,87	-1,63	37,26	0,76	38,15	1,65	38,52	2,02	31,73	-4,77
90	34,77	-1,73	37,16	0,66	37,85	1,35	38,22	1,72	31,43	-5,07
180	34,87	-1,63	37,26	0,76	38,05	1,55	38,32	1,82	31,53	-4,97
270	34,77	-1,73	37,06	0,56	37,95	1,45	38,32	1,82	31,93	-4,57
Overall Gain Variation (dB)	0,10		0,20		0,30		0,30		0,50	

ERP_{LOSS} = 0 dB

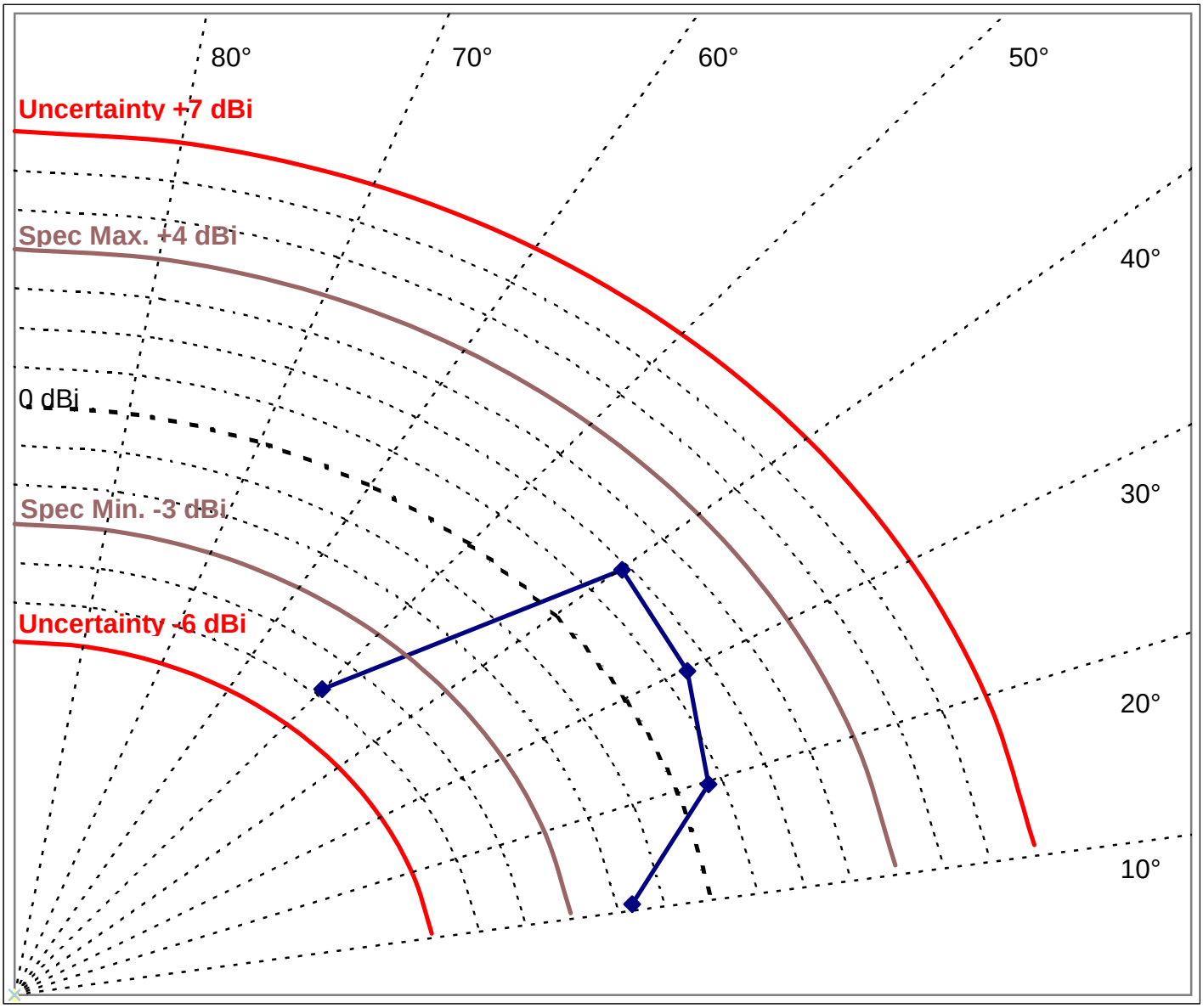
$ERP_{max\ EOL}$ = **MAX [**ERP_{max}, (ERP_{max} - ERP_{LOSS}**]** = **MAX (** 38,52 38,52 **)** = 38,52 dBm

$ERP_{min\ EOL}$ = **MIN [**ERP_{min}, (ERP_{min} - ERP_{LOSS}**]** = **MIN (** 31,43 31,43 **)** = 31,43 dBm

Antenna diagram versus elevation angle comparison with theoritical limits

KANNAD SafeLink Antenna : Integrated Antenna

Test configuration : Conf. 4 (Fig B.5)



REPORT OF NAVIGATION SYSTEMS TESTS AND BEACON CODING SOFTWARE CONTROLS ON SAFELINK KANNAD EPIRB

Tests of Position Data Default Values after 18 hours without navigation signal input

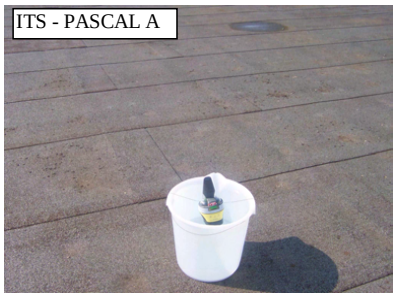
Date : 06 Aug. 2009
Beacon message : FFFE2F8E3F00001FC0FF0245B3B79F3C0010
Always default value after 30 min. : Correct Time : 00:30:51

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
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	01001000101101100111O
BCH 1 Calculated:	86-106	01001000101101100111O
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	1C7E00003F81FE0

Time	Latitude	Longitude	Def.	Delta	BCH1 Encod./calcul.	BCH2 Encod./calcul.
15:40:18	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:41:09	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:41:59	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:42:48	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:43:37	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:44:27	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:45:17	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:46:08	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:46:58	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:47:49	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:48:40	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:49:30	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:50:20	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:51:09	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:52:00	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:52:51	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:53:41	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:54:31	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:55:20	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:56:09	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:56:59	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:57:49	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:58:38	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
15:59:28	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
16:00:18	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
16:01:08	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
16:01:57	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
16:02:47	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
16:03:36	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
16:04:26	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
16:05:17	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
16:06:08	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
16:06:57	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
16:07:47	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
16:08:36	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
16:09:27	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
16:10:18	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010
16:11:09	127° 00' 01" N	255° 00' 01" E	*		0916CE/0916CE	010/010

Test of Position Acquisition Time and Position Accuracy

Test configuration : **On water ground plane (conf. 5)**



1)First acquisition GPS Date : 02-juil-09

Reference position "ITS - PASCAL A" :
43° 33' 33.5" N
01° 28' 40.9" E :

Self test message: FFFED08E3F00001FC0FF0245B3B79F3C0010
Position Location message: FFFE2F8E3F00000AE2017508A9B70F2800DF

Time of first GPS location : **00:01:01**

Time	Latitude	Longitude	Def.	Delta	BCH1 Encod./calcul.	BCH2 Encod./calcul.
17:30:18	Beacon "ON"					
17:30:28	127°00'01" N	255°00'01" E	*		0916CE/0916CE	010/010
17:31:19	43°33'34"N	1°28'42"E		0,03 km	1422A6/1422A6	0DF/0DF
17:32:07	43°33'34"N	1°28'42"E		0,03 km	1422A6/1422A6	0DF/0DF

2) Second acquisition GPS Date : 08 Aug 2009

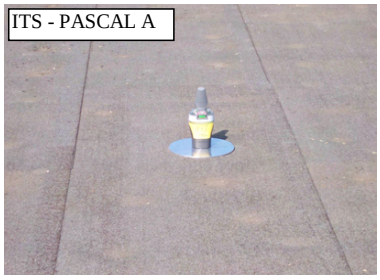
Reference position "Lanta" :
43° 33' 32" N
1° 39' 40.7" E

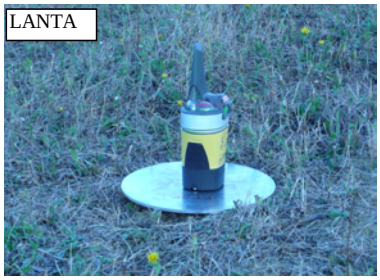
Default position message: FFFED08E3F00001FC0FF0245B3B79F3C0010
Position Location message: FFFE2F8E3F00000AE201A3DCE3B70E14087D

Time of first GPS location : **00:01:00**

Time	Latitude	Longitude	Def.	Delta	BCH1 Encod./calcul.	BCH2 Encod./calcul.
08:20:34	Beacon "ON"					
08:20:45	127°00'01" N	255°00'01" E	*		0916CE/0916CE	010/010
08:21:34	43°33'32"N	1°39'40" E		0,02 km	0F738E/0F738E	87D/87D
08:22:22	43°33'32"N	1°39'40" E		0,02 km	0F738E/0F738E	87D/87D

Test configuration : **On ground plane (conf. 7)**





1)First acquisition GPS Date : 30-juin-09

Reference position "ITS PASCAL A" :
43° 33' 33.5" N
01° 28' 40.9" E :

Self test message: FFFED08E3F00001FC0FF0245B3B79F3C0010
Position Location message: FFFE2F8E3F00000AE2017508A9B70F2800DF

Time of first GPS location : **00:00:59**

Time	Latitude	Longitude	Def.	Delta	BCH1 Encod./calcul.	BCH2 Encod./calcul.
17:02:05	Beacon "ON"					
17:02:15	127°00'01" N	255°00'01" E	*		0916CE/0916CE	010/010
17:03:04	43°33'34"N	1°28'42"E		0,03 km	1422A6/1422A6	0DF/0DF
17:03:56	43°33'34"N	1°28'42"E		0,03 km	1422A6/1422A6	0DF/0DF

2) Second acquisition GPS Date : 06 Aug 2009

Reference position "Lanta" :
43° 33' 32" N
1° 39' 40.7" E

Self test message: FFFED08E3F00001FC0FF0245B3B79F3C0010
Position Location message: FFFE2F8E3F00000AE201A3DCE3B70E14087D

Time of first GPS location : **00:01:00**

Time	Latitude	Longitude	Def.	Delta	BCH1 Encod./calcul.	BCH2 Encod./calcul.
07:30:56	Beacon "ON"					
07:31:07	127°00'01" N	255°00'01" E	*		0916CE/0916CE	010/010
07:31:56	43°33'32"N	1°39'40" E		0,02 km	0F738E/0F738E	87D/87D
07:32:45	43°33'32"N	1°39'40" E		0,02 km	0F738E/0F738E	87D/87D

Test configuration : **Above ground plane (conf. 8)**

1)First acquisition GPS Date : 01-juil-09

Reference position "ITS Lab" :
43° 33' 33.5" N
01° 28' 40.9" E :

Self test message: FFFED08E3F00001FC0FF0245B3B79F3C0010
Position Location message: FFFE2F8E3F00000AE2017508A9B70F2800DF

Time of first GPS location : **00:01:01**

Time	Latitude	Longitude	Def.	Delta	BCH1 Encod./calcul.	BCH2 Encod./calcul.
16:29:32	Beacon "ON"					
16:29:42	127°00'01" N	255°00'01" E	*		0916CE/0916CE	010/010
16:30:33	43°33'34"N	1°28'42"E		0,03 km	1422A6/1422A6	0DF/0DF
16:31:22	43°33'34"N	1°28'42"E		0,03 km	1422A6/1422A6	0DF/0DF

2) Second acquisition GPS Date : 06 Aug 2009

Reference position "Lanta" :
43° 33' 32" N
1° 39' 40.7" E

Self test message: FFFED08E3F00001FC0FF0245B3B79F3C0010
Position Location message: FFFE2F8E3F00000AE201A3DCE3B70E14087D

Time of first GPS location : **00:00:59**

Time	Latitude	Longitude	Def.	Delta	BCH1 Encod./calcul.	BCH2 Encod./calcul.
21:09:50	Beacon "ON"					
21:10:01	127°00'01" N	255°00'01" E	*		0916CE/0916CE	010/010
21:10:49	43°33'32"N	1°39'40" E		0,02 km	0F738E/0F738E	87D/87D
21:11:37	43°33'32"N	1°39'40" E		0,02 km	0F738E/0F738E	87D/87D

"SELF-TEST" Decode message
FFFED08E3F00001FC0FF0245B3B79F3C0010

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
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	01001000101101100110
BCH 1 Calculated:	86-106	01001000101101100110
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	1C7E00003F81FE0

"ITS - PASCAL A" Decode message
FFFE2F8E3F00000AE2017508A9B70F2800DF

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
Latitude Flag: North	59	0
Latitude (Degrees): 43	60-66	0101011
Latitude (Minutes): 34	67-71	10001
Longitude Flag: East	72	0
Longitude (Degrees): 1	73-80	00000001
Longitude (Minutes): 40	81-85	10100
BCH 1 Encoded:	86-106	01111011100111001110
BCH 1 Calculated:	86-106	01111011100111001110
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: 28	116-119	0111
Longitude Offset Sign: -	120	0
Longitude Offset Minutes: 0	121-122	00
Longitude Offset Seconds: 20	123-126	0101
Additional Id (Nat Use)	127-132	000000
BCH 2 Encoded:	133-144	100001111101
BCH 2 Calculated:	N/A	100001111101
Composite Latitude: 43.558888888888895 Degrees North	N/A	Composite Longitude: 1.661111111111111 Degrees East
15 Hex ID:	N/A	1C7E00003F81FE0

"LANTA " decode message
FFFE2F8E3F00000AE201A3DCE3B70E14087D

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
Latitude Flag: North	59	0
Latitude (Degrees): 43	60-66	0101011
Latitude (Minutes): 34	67-71	10001
Longitude Flag: East	72	0
Longitude (Degrees): 1	73-80	00000001
Longitude (Minutes): 28	81-85	01110
BCH 1 Encoded:	86-106	10100001000101010100110
BCH 1 Calculated:	86-106	10100001000101010100110
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: 28	116-119	0111
Longitude Offset Sign: +	120	1
Longitude Offset Minutes: 0	121-122	00
Longitude Offset Seconds: 40	123-126	1010
Additional Id (Nat Use)	127-132	000000
BCH 2 Encoded:	133-144	000011011111
BCH 2 Calculated:	N/A	000011011111
Composite Latitude: 43.558888888888895 Degrees North	N/A	Composite Longitude: 1.4777777777777779 Degrees East
15 Hex ID:	N/A	1C7E00003F81FE0

Table F-C.4: Position Acquisition Time and Position Accuracy (Internal Navigation Devices)

Operational Configuration	C/S T.007 Section A3.8.2.1		C/S T.007 Section A3.8.2.2	
	Time to Acquire Position (sec)	Location Error in metres	Time to Acquire Position (sec)	Location Error in metres
Floating in Water	61	30	60	20
On ground plane	59	30	60	20
Above ground plane	61	30	59	20

Test of Encoded Position Data Update Interval (A.3.8.3)

Test configuration : **On Dry Ground** Date : 12 Aug 2009

The test has been performed in an anechoic chamber with a GNSS RF simulator.

Reference position : N° 1 Lat : 0° 11' 10" N
Long : 179° 47' 7" E

N° 2 Lat : 0° 34' 55" N
Long : 179° 35' 59" E

Beacon message in Ref Pos N° 1: FFFE2F8F5E19045700567A4754370F622D84

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 245	27-36	0011110101
Type of location protocol: Standard Location - Test	37-40	1110
Test Protocol: Test Protocol (No Decode information in bits 41 to 64)	41-64	0001100100000100010101111
Latitude Sign: North	65	0
Latitude Degrees: 0	66-72	0000000
Latitude Minutes: 15	73-74	01
Longitude Sign: East	75	0
Longitude Degrees: 179	76-83	10110011
Longitude Minutes: 45	84-85	11
BCH 1 Encoded:	86-106	01001000111010101000O
BCH 1 Calculated:	N/A	01001000111010101000O
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	0
Latitude Offset Minutes: 3	114-118	00011
Latitude Offset Seconds: 52	119-122	1101
Longitude Offset Sign: +	123	1
Longitude Offset Minutes: 2	124-128	00010
Longitude Offset Seconds: 8	129-132	0010
BCH 2 Encoded:	133-144	110110000100
BCH 2 Calculated:	N/A	110110000100
Composite Latitude: 0.18555555555555556 Degrees North	N/A	Composite Longitude: 179.78555555555556 Degrees East
15 Hex ID:	N/A	1EBC3208AEFFBFF

Beacon message in Ref Pos N° 2: FFFE2F8F5E190457009671D09BB793A602AA

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 245	27-36	0011110101
Type of location protocol: Standard Location - Test	37-40	1110
Test Protocol: Test Protocol (No Decode information in bits 41 to 64)	41-64	0001100100000100010101111
Latitude Sign: North	65	0
Latitude Degrees: 0	66-72	0000000
Latitude Minutes: 30	73-74	10
Longitude Sign: East	75	0
Longitude Degrees: 179	76-83	10110011
Longitude Minutes: 30	84-85	10
BCH 1 Encoded:	86-106	00111010000100110111O
BCH 1 Calculated:	N/A	00111010000100110111O
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: 4	114-118	00100
Latitude Offset Seconds: 56	119-122	1110
Longitude Offset Sign: +	123	1
Longitude Offset Minutes: 6	124-128	00110
Longitude Offset Seconds: 0	129-132	0000
BCH 2 Encoded:	133-144	001010101010
BCH 2 Calculated:	N/A	001010101010
Composite Latitude: 0.5822222222222222 Degrees North	N/A	Composite Longitude: 179.6 Degrees East
15 Hex ID:	N/A	1EBC3208AEFFBFF

Results : No updating message before 5 min. : Correct
Time of first update GPS location : 00:20:52

Ref. Pos	Time	Latitude	Longitude	Def.	Delta	BCH1 Encod./calcul.	BCH2 Encod./calcul.
N° 1	14:49:43	0° 11' 8" N	179° 47' 8" E		0,07 km	091D50/091D50	D84/D84
N° 2	15:10:35	0° 34' 56" N	179° 35' 59" E		0,04 km	07426E/07426E	2AA/2AA

Position Clearance after Deactivation (A.3.8.4)

Beacon message after deactivate and reactivate the beacon with no navigation data input:

FFFE2F8E3F00001FC0FF0245B3B79F3C0010

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
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	01001000101101100111O
BCH 1 Calculated:	86-106	01001000101101100111O
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	1C7E00003F81FE0

Last Valid Position Date : 06 Aug 2009

Reference position : ITS Lab. 43° 33' 34" N
01° 28' 42" E

First burst with Navigation Location encoded in the message :
FFFE2F8E3F00000AE2017508A9B70F2C0836 10:37:58
National Location Protocol
FR TEST 0 no Homing Internal GPS
pst: N 43d34m delta:-0m28s E 001d28m delta:+0m44s

Last burst with encoded Navigation Location in the message : 14:42:06

Valid position retained during : 04:04:08 Correct

Default message after 4 hours with Valid Position Navigation retained : 14:42:57
FFFE2F8E3F00001FC0FF0245B3B79F3C0010 **Correct**
National Location Protocol
FR TEST 0 no Homing Internal GPS
pst: default value

Time	Latitude	Longitude	Def.	Delta	BCH1 read./calcul.	BCH2 read./calcul.
10:36:58	127°00'01" N	255°00'01" E	*		0916CE/0916CE	010/010
10:37:08	127°00'01" N	255°00'01" E	*		0916CE/0916CE	010/010
10:37:58	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:38:47	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:39:39	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:40:29	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:41:19	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:42:09	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:43:01	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:43:52	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:44:43	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:45:29	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:46:20	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:47:11	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:47:59	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:48:48	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:49:36	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:50:28	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:51:19	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:52:07	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:52:59	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:53:48	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:54:39	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:55:29	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:56:18	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:57:09	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:58:02	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:58:52	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
10:59:42	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:00:31	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:01:21	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:02:13	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836

Time	Latitude	Longitude	Def.	Delta	BCH1 read./calcul.	BCH2 read./calcul.
11:03:02	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:03:52	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:04:41	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:05:31	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:06:23	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:07:11	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:08:02	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:08:51	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:09:40	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:10:26	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:11:16	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:12:06	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:12:53	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:13:44	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:14:35	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:15:23	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:16:12	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:17:01	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:17:51	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:18:40	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:19:27	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:20:16	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:21:06	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:21:59	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:22:46	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:23:39	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:24:29	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:25:19	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:26:11	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:26:58	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:27:51	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:28:41	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:29:30	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:30:19	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:31:09	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:32:01	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:32:52	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:33:42	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:34:32	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:35:21	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:36:14	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:37:05	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:37:56	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:38:45	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:39:37	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:40:28	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:41:17	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:42:05	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:42:54	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:43:44	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:44:36	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:45:27	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:46:15	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:47:06	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836

Time	Latitude	Longitude	Def.	Delta	BCH1 read./calcul.	BCH2 read./calcul.
11:47:57	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:48:46	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:49:38	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:50:31	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:51:14	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:52:03	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:52:52	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:53:39	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:54:30	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:55:20	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:56:11	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:57:02	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:57:52	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:58:40	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
11:59:29	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:00:21	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:01:11	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:02:02	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:02:52	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:03:39	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:04:30	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:05:22	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:06:10	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:06:10	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:07:00	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:07:51	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:08:41	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:09:33	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:10:22	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:11:10	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:11:58	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:12:49	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:13:36	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:14:26	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:15:16	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:16:04	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:16:53	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:17:44	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:18:32	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:19:23	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:20:08	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:20:58	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:21:47	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:22:34	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:23:25	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:24:18	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:25:09	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:25:55	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:26:47	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:27:35	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:28:27	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:29:19	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:30:07	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:30:56	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836

Time	Latitude	Longitude	Def.	Delta	BCH1 read./calcul.	BCH2 read./calcul.
12:31:44	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:32:32	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:33:22	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:34:11	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:35:00	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:35:52	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:36:42	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:37:31	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:38:21	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:39:10	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:39:58	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:40:47	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:41:36	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:42:27	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:43:15	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:44:04	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:44:53	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:45:42	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:46:33	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:47:24	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:48:16	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:49:05	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:49:57	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:50:45	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:51:35	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:52:25	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:53:14	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:54:03	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:54:51	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:55:42	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:56:30	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:57:19	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:58:07	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:58:56	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
12:59:45	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:00:34	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:01:24	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:02:14	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:03:05	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:03:57	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:04:46	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:05:37	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:06:25	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:07:15	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:08:05	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:08:55	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:09:43	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:10:33	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:11:24	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:12:13	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:13:03	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:13:54	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:14:47	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:15:40	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836

Time	Latitude	Longitude	Def.	Delta	BCH1 read./calcul.	BCH2 read./calcul.
13:16:29	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:17:21	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:18:11	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:19:03	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:19:51	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:20:40	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:21:31	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:22:22	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:23:06	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:23:56	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:24:42	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:25:32	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:26:22	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:27:07	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:27:59	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:28:47	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:29:39	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:30:31	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:31:18	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:32:08	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:32:58	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:33:51	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:34:41	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:35:27	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:36:16	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:37:08	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:37:57	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:38:47	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:39:36	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:40:27	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:41:17	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:42:06	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:42:56	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:43:45	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:44:36	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:45:26	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:46:18	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:47:08	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:47:57	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:48:49	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:49:39	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:50:30	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:51:18	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:52:08	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:52:56	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:53:47	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:54:36	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:55:25	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:56:17	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:57:08	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:57:57	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:58:48	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
13:59:37	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:00:27	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836

Time	Latitude	Longitude	Def.	Delta	BCH1 read./calcul.	BCH2 read./calcul.
14:01:16	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:02:06	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:02:58	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:03:46	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:04:34	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:05:26	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:06:11	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:07:02	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:07:50	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:08:41	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:09:30	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:10:22	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:11:14	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:12:04	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:12:55	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:13:47	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:14:37	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:15:24	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:16:13	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:17:03	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:17:54	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:18:44	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:19:33	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:20:24	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:21:14	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:22:53	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:23:42	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:26:15	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:27:06	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:27:56	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:30:25	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:31:18	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:32:07	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:32:57	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:33:48	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:34:39	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:35:26	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:36:14	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:37:05	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:37:54	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:38:47	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:39:35	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:40:27	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:41:16	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:42:06	43°33'32" N	1°28'42" E		0,06 km	1422A6/1422A6	836/836
14:42:57	127°00'01" N	255°00'01" E	*		0916CE/0916CE	010/010

"ITS -Lab" Decode message
FFFE2F8E3F00000AE2017508A9B70F2C0836

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
Latitude Flag: North	59	0
Latitude (Degrees): 43	60-66	0101011
Latitude (Minutes): 34	67-71	10001
Longitude Flag: East	72	0
Longitude (Degrees): 1	73-80	00000001
Longitude (Minutes): 28	81-85	01110
BCH 1 Encoded:	86-106	10100001000101010100110
BCH 1 Calculated:	86-106	10100001000101010100110
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: 28	116-119	0111
Longitude Offset Sign: +	120	1
Longitude Offset Minutes: 0	121-122	00
Longitude Offset Seconds: 44	123-126	1011
Additional Id (Nat Use)	127-132	000000
BCH 2 Encoded:	133-144	100000110110
BCH 2 Calculated:	N/A	100000110110
Composite Latitude: 43.558888888888895 Degrees North	N/A	Composite Longitude: 1.478888888888889 Degrees East
15 Hex ID:	N/A	1C7E00003F81FE0

"Default Pos." Decode message
FFFE2F8E3F00001FC0FF0245B3B79F3C0010

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
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	01001000101101100 1110
BCH 1 Calculated:	86-106	01001000101101100 1110
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	1C7E00003F81FE0

BEACON CODING SOFTWARE

The test laboratory has verified the encoding messages according to the Kannad .
documentation: "SafeLink Technical data Indice B DOC09060"

To control the GNSS encoding information we have used GNSS Simulator with Sarsat Receiver test bench with 3 beacons:

SafeLink	n°1	Standat Location- Test
SafeLink	n°3	User Maritime - MMSI
SafeLink	n°9	National Location-Test

Above samples of messages with Laboratory GPS location

8F5E1904572B80340F86B78E4154C9 KANNAD SafeLink **S/N1** SLP-Test Lab

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 245	27-36	0011110101
Type of location protocol: Standard Location - Test	37-40	1110
Test Protocol: Test Protocol (No Decode information in bits 41 to 64)	41-64	00011001000001000101010111
Latitude Sign: North	65	0
Latitude Degrees: 43	66-72	0101011
Latitude Minutes: 30	73-74	10
Longitude Sign: East	75	0
Longitude Degrees: 1	76-83	00000001
Longitude Minutes: 30	84-85	10
BCH 1 Encoded:	86-106	10000001111100001101 0
BCH 1 Calculated:	N/A	10000001111100001101 0
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: 3	114-118	00011
Latitude Offset Seconds: 36	119-122	1001
Longitude Offset Sign: -	123	0
Longitude Offset Minutes: 1	124-128	00001
Longitude Offset Seconds: 20	129-132	0101
BCH 2 Encoded:	133-144	010011001001
BCH 2 Calculated:	N/A	010011001001
Composite Latitude: 43.559999999999995 Degrees North	N/A	Composite Longitude: 1.4777777777777779 Degrees East
15 Hex ID:	N/A	1EBC3208AEFFBFF

8F5E1904577FDFFF56AE7783E0F66C KANNAD SafeLink **S/N1** SLP-Test Def

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 245	27-36	0011110101
Type of location protocol: Standard Location - Test	37-40	1110
Test Protocol: Test Protocol (No Decode information in bits 41 to 64)	41-64	00011001000001000101010111
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	11101010110101011100 1
BCH 1 Calculated:	N/A	11101010110101011100 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: 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	1EBC3208AEFFBFF

CC94186186186689DE52A570017151 KANNAD SafeLink **S/N 3** ULPmar Lab

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201	27-36	0011001001
User type: Maritime User	37-39	010
Maritime MMSI (6 digits): 999999	40-75	0000110000110000110000110000011000011
Specific bcn: 0	76-81	001101
Spare	82-83	00
Aux radio device: 121.5 MHz	84-85	01
Encoded BCH 1:	86-106	00111011110010100 1010
Calculated BCH 1:	N/A	00111011110010100 1010
Encoded Position Data Source From Internal Navigation Device	107	1
North	108	0
Latitude (degrees): 43	109-115	0101011
Latitude (minutes): 32	116-119	1000
East	120	0
Longitude (degrees): 1	121-128	00000001
Longitude (minutes): 28	129-132	0111
Encoded BCH 2:	133-144	000101010001
Calculated BCH 2:	N/A	000101010001
15 Hex ID:	N/A	992830C30C30CD1

CC94186186186689DE52AFE0FF0146 KANNAD SafeLink **S/N 3** ULPmar Def

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201	27-36	0011001001
User type: Maritime User	37-39	010
Maritime MMSI (6 digits): 999999	40-75	0000110000110000110000110000011000011
Specific bcn: 0	76-81	001101
Spare	82-83	00
Aux radio device: 121.5 MHz	84-85	01
Encoded BCH 1:	86-106	00111011110010100 1010
Calculated BCH 1:	N/A	00111011110010100 1010
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	992830C30C30CD1

8E3F00001FC0FF0245B3B79F3C0010 KANNAD SafeLink **S/N 9** NLPDef

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
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	01001000101101100 1110
BCH 1 Calculated:	86-106	01001000101101100 1110
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	1C7E00003F81FE0

8E3F00000AE2017508A9B70F2800DF KANNAD SafeLink **S/N 9** NLP Lab

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: Location Protocol	26	0
Country code: 227	27-36	0011100011
Type of location protocol: National Location - Test	37-40	1111
Serial Number: 0	41-58	000000000000000000
Latitude Flag: North	59	0
Latitude (Degrees): 43	60-66	0101011
Latitude (Minutes): 34	67-71	10001
Longitude Flag: East	72	0
Longitude (Degrees): 1	73-80	00000001
Longitude (Minutes): 28	81-85	01110
BCH 1 Encoded:	86-106	10100001000101010 0110
BCH 1 Calculated:	86-106	10100001000101010 0110
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: 28	116-119	0111
Longitude Offset Sign: +	120	1
Longitude Offset Minutes: 0	121-122	00
Longitude Offset Seconds: 40	123-126	1010
Additional Id (Nat Use)	127-132	000000
BCH 2 Encoded:	133-144	000011011111
BCH 2 Calculated:	N/A	000011011111
Composite Latitude: 43.558888888888895 Degrees North	N/A	Composite Longitude: 1.4777777777777779 Degrees East
15 Hex ID:	N/A	1C7E00003F81FE0

APPENDIX C TO ANNEX F

NAVIGATION SYSTEM TEST RESULTS

Table F-C.1: Position Data Encoding Results User-Location Protocol

Script Reference (See Table D.1)	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: < 52.5 sec	√ √
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	√

Table F-C.2: 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:	< 52.5 sec	√
3	Bits 65-85=	000000	
	Bits 113-132=	8360D	√
4	Bits 65-85=	000ACF	
	Bits 113-132=	0F622	√
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=	03802	√
10	Bits 65-85=	0B42D0	
	Bits 113-132=	08009	√
11	Bits 65-85=	14962A	
	Bits 113-132=	80000	√

Table F-C.3: 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:	< 52.5 sec	
3	Bits 59-85=	0000000	
	Bits 113-126=	26CD	√
4	Bits 59-85=	0019678	
	Bits 113-126=	068D	√
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=	0009	√
11	Bits 59-85=	523F14F	
	Bits 113-126=	2000	√

APPENDIX D TO ANNEX F

BEACON CODING SOFTWARE RESULTS

Table F-D.1: Examples of User Protocol Beacon Messages
(Examples required for each protocol requested for inclusion on the type approval certificate)

Protocol	Operational Message (in hexadecimal including bit and frame synchronisation bits)	Self-Test Message (in hexadecimal including bit and frame synchronisation bits)
Maritime User Protocol with MMSI	FFFE2F CC94186186186E8162F7300100084B	FFFED0 CC94186186186E8162F72FE0FF0146
Maritime User Protocol with Radio Call Sign	FFFE2F CC9526F6F06B2E8E95EF60230110F4	FFFED0 CC9526F6F06B2E872397AFE0FF0146
Radio Call Sign User Protocol	FFFE2F CC9DBDBC1A554E866553B00100084B	FFFED0 CC9526F6F06B2E872397B00100084B
Serial User: Float-Free EPIRB with Serial Number	FFFE2F CC96A000C6007CE70B3A300100084B	FFFED0 CC96A000C6007CE70B3A2FE0FF0146
Serial User: Non Float-Free EPIRB with Serial Number	FFFE2F CC972000C6007CE2C9C9B00100084B	FFFED0 CC972000C6007CE2C9C9AFE0FF0146
Aviation User Protocol		
Serial User: ELT with Serial Number		
Serial User: ELT with Aircraft Operator Designator & Serial Number		
Serial User: ELT with Aircraft 24-bit address		
Serial User: PLB with Serial Number		
National User (Short)		
National User (Long)		

Table F-D.2: Examples of Location Protocol Beacon Messages
(Examples required for each protocol requested for inclusion on the type approval certificate)

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"[1]	Location "B"		Location "A"
Standard Location: EPIRB with MMSI	FFFE2F 8C92F423F12FE077496CB68C020006	FFFE2F 8C92F423F12FE077496CB60C080934	FFFED0 8C92F423F17FDFF90DB83683E0F00E	N/A
Standard Location: EPIRB with Serial Number	FFFE2F 8C96F9C0632FE077D63BB68C020006	FFFE2F 8C96F9C0632FE077D63BB60C080934	FFFED0 8C96F9C0637FDFF992EF3683E0F00E	N/A
Standard Location: ELT with 24-bit Addres Address				
Standard Location: ELT with Serial Number				
Standard Location: ELT with Aircraft Operator Designator				
Standard Location: PLB with Serial Number				
National Location: EPIRB	FFFE2F 8C9A0018CBF1037020C23681000B0F	FFFE2F 8C9A0018CBEB0359CEE1F681000B0F	FFFED0 8C9A0018DFC0FF02AD44769F3C0672	N/A
National Location: ELT				
National Location: PLB				
User-Location[2]	FFFE2F CC94186186186E8162F725F9037C97	FFFE2F CC94186186186E8162F725F7036553	FFFED0 CC94186186186E8162F72FE0FF0146	N/A

[1] Location “A” and location “B” must be separated by at least 500 metres for the Standard and National location protocols, and by at least 10 km for the User-Location protocol.

[2] Conformance of User-Location protocol demonstrated by a single example of “A”, “B”, and self-test messages provided in Table F-D.2 supplemented by Table F-D.1 completed with the specific User protocol variations requested.

Summary of Location Protocol Beacon Messages verified by the ITS laboratory

Protocol	Operational Message (in hexadecimal including bit and frame synchronisation bits)		Self-Test Message (in hexadecimal including bit and frame synchronisation bits)
	Location "A"[1]	Location "B"[1]	
Standard Location: EPIRB with MMSI	FFFE2F8C92F423F12FE077496CB68C020006	FFFE2F8C92F423F12FE077496CB60C080934	FFFED08C92F423F17FDFF90DB83683E0F00E
Standard Location: EPIRB with Serial	FFFE2F8C96F9C0632FE077D63BB68C020006	FFFE2F8C96F9C0632FE077D63BB60C080934	FFFED08C96F9C0637FDFF992EF3683E0F00E
National Location : EPIRB	FFFE2F8C9A0018CBF1037020C23681000B0F	FFFE2F8C9A0018CBEB0359CEE1F681000B0F	FFFED08C9A0018DFC0FF02AD44769F3C0672
Maritime User Protocol with MMSI	FFFE2FCC94186186186E8162F725F9037C97	FFFE2FCC94186186186E8162F725F7036553	FFFED0CC94186186186E8162F72FE0FF0146
Maritime Usr Protocol with Radio Call Sign	FFFE2FCC9526F6F06B2E872397A5F9037C97	FFFE2FCC9526F6F06B2E872397A5F7036553	FFFED0CC9526F6F06B2E872397AFE0FF0146
Radio Call Sign User Protocol	FFFE2FCC9DBDBC1A554E866553A5F9037C97	FFFE2FCC9DBDBC1A554E866553A5F7036553	FFFED0CC9DBDBC1A554E866553AFE0FF0146
Serial user FF EPIRB	FFFE2FCC96A000C6007CE70B3A25F9037C97	FFFE2FCC96A000C6007CE70B3A25F7036553	FFFED0CC96A000C6007CE70B3A2FE0FF0146
Serial user NON FF EPIRB	FFFE2FCC972000C6007CE2C9C9A5F9037C97	FFFE2FCC972000C6007CE2C9C9A5F7036553	FFFED0CC972000C6007CE2C9C9AFE0FF0146

Location coordinates	
Location "A"	Location "B"
N 47° 48' W 3° 28'	N 47° 42' W 3° 22'

	Loc A = N 47° 48' / W 3° 28'	Loc B = N 47° 42' / W 3° 22'	Self-Test Message
Standard Location: EPIRB with MMSI	**FFFE2F8C92F423F12FE077496CB68C020006** ITEM / BITS / VALUE Message format: long format / 25 / 1 Protocol: Location Protocol / 26 / 0 Country code: 201 / 27-36 / 0011001001 Type of location protocol: Standard Location - EPIRB (MMSI) / 37-40 / 0010 MID: 999999 / 41-60 / 111101000010001111111 Specific Beacon: 1 / 61-64 / 0001 Latitude Sign: North / 65 / 0 Latitude Degrees: 47 / 66-72 / 0101111 Latitude Minutes: 45 / 73-74 / 11 Longitude Sign: West / 75 / 1 Longitude Degrees: 3 / 76-83 / 00000011 Longitude Minutes: 30 / 84-85 / 10 BCH 1 Encoded: / 86-106 / 11101001001011011001O BCH 1 Calculated: / N/A / 11101001001011011001O Fixed bits (1101): Pass / 107-110 / 1101 Position Data: Encoded Position Data Source From Internal Navigation Device / 111 / 1 Aux Device: No 121.5 MHz homer / 112 / 0 Latitude Offset Sign: + / 113 / 1 Latitude Offset Minutes: 3 / 114-118 / 00011 Latitude Offset Seconds: 0 / 119-122 / 0000 Longitude Offset Sign: - / 123 / 0 Longitude Offset Minutes: 2 / 124-128 / 00010 Longitude Offset Seconds: 0 / 129-132 / 0000 BCH 2 Encoded: / 133-144 / 000000000110 BCH 2 Calculated: / N/A / 000000000110 Composite Latitude: 47.8 Degrees North / N/A / Composite Longitude: 3.466666666666667 Degrees West 15 Hex ID: / N/A / 1925E847E2FFBFF	**FFFE2F8C92F423F12FE077496CB60C080934** ITEM / BITS / VALUE Message format: long format / 25 / 1 Protocol: Location Protocol / 26 / 0 Country code: 201 / 27-36 / 0011001001 Type of location protocol: Standard Location - EPIRB (MMSI) / 37-40 / 0010 MID: 999999 / 41-60 / 111101000010001111111 Specific Beacon: 1 / 61-64 / 0001 Latitude Sign: North / 65 / 0 Latitude Degrees: 47 / 66-72 / 0101111 Latitude Minutes: 45 / 73-74 / 11 Longitude Sign: West / 75 / 1 Longitude Degrees: 3 / 76-83 / 00000011 Longitude Minutes: 30 / 84-85 / 10 BCH 1 Encoded: / 86-106 / 11101001001011011001O BCH 1 Calculated: / N/A / 11101001001011011001O Fixed bits (1101): Pass / 107-110 / 1101 Position Data: Encoded Position Data Source From Internal Navigation Device / 111 / 1 Aux Device: No 121.5 MHz homer / 112 / 0 Latitude Offset Sign: - / 113 / 0 Latitude Offset Minutes: 3 / 114-118 / 00011 Latitude Offset Seconds: 0 / 119-122 / 0000 Longitude Offset Sign: - / 123 / 0 Longitude Offset Minutes: 8 / 124-128 / 01000 Longitude Offset Seconds: 0 / 129-132 / 0000 BCH 2 Encoded: / 133-144 / 100100110100 BCH 2 Calculated: / N/A / 100100110100 Composite Latitude: 47.7 Degrees North / N/A / Composite Longitude: 3.3666666666666667 Degrees West 15 Hex ID: / N/A / 1925E847E2FFBFF	**FFFED08C92F423F17FDFF90DB83683E0F00E** ITEM / BITS / VALUE Message format: long format / 25 / 1 Protocol: Location Protocol / 26 / 0 Country code: 201 / 27-36 / 0011001001 Type of location protocol: Standard Location - EPIRB (MMSI) / 37-40 / 0010 MID: 999999 / 41-60 / 111101000010001111111 Specific Beacon: 1 / 61-64 / 0001 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 / 00100001101101100000 BCH 1 Calculated: / N/A / 00100001101101100000 Fixed bits (1101): Pass / 107-110 / 1101 Position Data: Encoded Position Data Source From Internal Navigation Device / 111 / 1 Aux Device: No 121.5 MHz homer / 112 / 0 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 / 000000001110 BCH 2 Calculated: / N/A / 000000001110 Composite Latitude: default / N/A / Composite Longitude: default 15 Hex ID: / N/A / 1925E847E2FFBFF
Standard Location: EPIRB with Serial Number	**FFFE2F8C96F9C0632FE077D63BB68C020006** ITEM / BITS / VALUE Message format: long format / 25 / 1 Protocol: Location Protocol / 26 / 0 Country code: 201 / 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: 47 / 66-72 / 0101111 Latitude Minutes: 45 / 73-74 / 11 Longitude Sign: West / 75 / 1 Longitude Degrees: 3 / 76-83 / 00000011 Longitude Minutes: 30 / 84-85 / 10 BCH 1 Encoded: / 86-106 / 11111010110001101110 BCH 1 Calculated: / N/A / 11111010110001101110 Fixed bits (1101): Pass / 107-110 / 1101 Position Data: Encoded Position Data Source From Internal Navigation Device / 111 / 1 Aux Device: No 121.5 MHz homer / 112 / 0 Latitude Offset Sign: + / 113 / 1 Latitude Offset Minutes: 3 / 114-118 / 00011 Latitude Offset Seconds: 0 / 119-122 / 0000 Longitude Offset Sign: - / 123 / 0 Longitude Offset Minutes: 2 / 124-128 / 00010 Longitude Offset Seconds: 0 / 129-132 / 0000 BCH 2 Encoded: / 133-144 / 000000000110 BCH 2 Calculated: / N/A / 000000000110 Composite Latitude: 47.8 Degrees North / N/A / Composite Longitude: 3.466666666666667 Degrees West 15 Hex ID: / N/A / 192DF380C6FFBFF	**FFFE2F8C96F9C0632FE077D63BB60C080934** ITEM / BITS / VALUE Message format: long format / 25 / 1 Protocol: Location Protocol / 26 / 0 Country code: 201 / 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: 47 / 66-72 / 0101111 Latitude Minutes: 45 / 73-74 / 11 Longitude Sign: West / 75 / 1 Longitude Degrees: 3 / 76-83 / 00000011 Longitude Minutes: 30 / 84-85 / 10 BCH 1 Encoded: / 86-106 / 11111010110001101110 BCH 1 Calculated: / N/A / 11111010110001101110 Fixed bits (1101): Pass / 107-110 / 1101 Position Data: Encoded Position Data Source From Internal Navigation Device / 111 / 1 Aux Device: No 121.5 MHz homer / 112 / 0 Latitude Offset Sign: - / 113 / 0 Latitude Offset Minutes: 3 / 114-118 / 00011 Latitude Offset Seconds: 0 / 119-122 / 0000 Longitude Offset Sign: - / 123 / 0 Longitude Offset Minutes: 8 / 124-128 / 01000 Longitude Offset Seconds: 0 / 129-132 / 0000 BCH 2 Encoded: / 133-144 / 100100110100 BCH 2 Calculated: / N/A / 100100110100 Composite Latitude: 47.7 Degrees North / N/A / Composite Longitude: 3.3666666666666667 Degrees West 15 Hex ID: / N/A / 192DF380C6FFBFF	**FFFED08C96F9C0637FDFF992EF3683E0F00E** ITEM / BITS / VALUE Message format: long format / 25 / 1 Protocol: Location Protocol / 26 / 0 Country code: 201 / 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 / 00110010010111101111100 BCH 1 Calculated: / N/A / 00110010010111101111100 Fixed bits (1101): Pass / 107-110 / 1101 Position Data: Encoded Position Data Source From Internal Navigation Device / 111 / 1 Aux Device: No 121.5 MHz homer / 112 / 0 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 / 000000001110 BCH 2 Calculated: / N/A / 000000001110 Composite Latitude: default / N/A / Composite Longitude: default 15 Hex ID: / N/A / 192DF380C6FFBFF
National Location : EPIRB	**FFFE2F8C9A0018CBF1037020C23681000B0F** ITEM / BITS / VALUE Message format: long format / 25 / 1 Protocol: Location Protocol / 26 / 0 Country code: 201 / 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): 47 / 60-66 / 0101111 Latitude (Minutes): 48 / 67-71 / 11000 Longitude Flag: West / 72 / 1 Longitude (Degrees): 3 / 73-80 / 00000011 Longitude (Minutes): 28 / 81-85 / 01110 BCH 1 Encoded: / 86-106 / 00000100000011000001000 BCH 1 Calculated: / 86-106 / 00000100000011000001000 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: No 121.5 MHz homer / 112 / 0 Latitude Offset Sign: + / 113 / 1 Latitude Offset Minutes: 0 / 114-115 / 00 Latitude Offset Seconds: 0 / 116-119 / 0000 Longitude Offset Sign: + / 120 / 1 Longitude Offset Minutes: 0 / 121-122 / 00 Longitude Offset Seconds: 0 / 123-126 / 0000 Additional Id (Nat Use) / 127-132 / 000000 BCH 2 Encoded: / 133-144 / 101100001111 BCH 2 Calculated: / N/A / 101100001111 Composite Latitude: 47.8 Degrees North / N/A / Composite Longitude: 3.466666666666667 Degrees West 15 Hex ID: / N/A / 19340031BF81FE0	**FFFE2F8C9A0018CBEB0359CEE1F681000B0F** ITEM / BITS / VALUE Message format: long format / 25 / 1 Protocol: Location Protocol / 26 / 0 Country code: 201 / 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): 47 / 60-66 / 0101111 Latitude (Minutes): 42 / 67-71 / 10101 Longitude Flag: West / 72 / 1 Longitude (Degrees): 3 / 73-80 / 00000011 Longitude (Minutes): 22 / 81-85 / 01011 BCH 1 Encoded: / 86-106 / 00111001110111100001111 BCH 1 Calculated: / 86-106 / 00111001110111100001111 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: No 121.5 MHz homer / 112 / 0 Latitude Offset Sign: + / 113 / 1 Latitude Offset Minutes: 0 / 114-115 / 00 Latitude Offset Seconds: 0 / 116-119 / 0000 Longitude Offset Sign: + / 120 / 1 Longitude Offset Minutes: 0 / 121-122 / 00 Longitude Offset Seconds: 0 / 123-126 / 0000 Additional Id (Nat Use) / 127-132 / 000000 BCH 2 Encoded: / 133-144 / 101100001111 BCH 2 Calculated: / N/A / 101100001111 Composite Latitude: 47.7 Degrees North / N/A / Composite Longitude: 3.3666666666666667 Degrees West 15 Hex ID: / N/A / 19340031BF81FE0	**FFFED08C9A0018DFC0FF02AD44769F3C0672** ITEM / BITS / VALUE Message format: long format / 25 / 1 Protocol: Location Protocol / 26 / 0 Country code: 201 / 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: No 121.5 MHz homer / 112 / 0 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 / 011001110010 BCH 2 Calculated: / N/A / 011001110010 Composite Latitude: default / N/A / Composite Longitude: default 15 Hex ID: / N/A / 19340031BF81FE0

Maritime User Protocol with MMSI

FFFE2FCC94186186186E8162F725F9037C97

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201	27-36	0011001001
User type: Maritime User	37-39	010
Maritime MMSI (6 digits): 999999	40-75	000011000011000011000011000011000011
Specific bcn: 1	76-81	011101
Spare	82-83	00
Aux radio device: No Auxiliary Radio-locating Device	84-85	00
Encoded BCH 1:	86-106	00101100010111011100
Calculated BCH 1:	N/A	00101100010111011100
Encoded Position Data Source From Internal Navigation Device	107	1
North	108	0
Latitude (degrees): 47	109-115	0101111
Latitude (minutes): 48	116-119	1100
West	120	1
Longitude (degrees): 3	121-128	00000011
Longitude (minutes): 28	129-132	0111
Encoded BCH 2:	133-144	110010010111
Calculated BCH 2:	N/A	110010010111
15 Hex ID:	N/A	992830C30C30DD0

FFFE2FCC94186186186E8162F725F7036553

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201	27-36	0011001001
User type: Maritime User	37-39	010
Maritime MMSI (6 digits): 999999	40-75	000011000011000011000011000011000011
Specific bcn: 1	76-81	011101
Spare	82-83	00
Aux radio device: No Auxiliary Radio-locating Device	84-85	00
Encoded BCH 1:	86-106	00101100010111011100
Calculated BCH 1:	N/A	00101100010111011100
Encoded Position Data Source From Internal Navigation Device	107	1
North	108	0
Latitude (degrees): 47	109-115	0101111
Latitude (minutes): 44	116-119	1011
West	120	1
Longitude (degrees): 3	121-128	00000011
Longitude (minutes): 24	129-132	0110
Encoded BCH 2:	133-144	010101010011
Calculated BCH 2:	N/A	010101010011
15 Hex ID:	N/A	992830C30C30DD0

FFFED0CC94186186186E8162F72FE0FF0146

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201	27-36	0011001001
User type: Maritime User	37-39	010
Maritime MMSI (6 digits): 999999	40-75	000011000011000011000011000011000011
Specific bcn: 1	76-81	011101
Spare	82-83	00
Aux radio device: No Auxiliary Radio-locating Device	84-85	00
Encoded BCH 1:	86-106	00101100010111011100
Calculated BCH 1:	N/A	00101100010111011100
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	992830C30C30DD0

Maritime User Protocol with Radio Call Sign

FFFE2FCC9526F6F06B2E872397A5F9037C97

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201	27-36	0011001001
User type: Maritime User	37-39	010
Radio Call Sign (6 digits): XPA02	40-75	100100110111101101111000001101011001
Specific bcn: 1	76-81	011101
Spare	82-83	00
Aux radio device: No Auxiliary Radio-locating Device	84-85	00
Encoded BCH 1:	86-106	11100100011100101110
Calculated BCH 1:	N/A	11100100011100101110
Encoded Position Data Source From Internal Navigation Device	107	1
North	108	0
Latitude (degrees): 47	109-115	0101111
Latitude (minutes): 48	116-119	1100
West	120	1
Longitude (degrees): 3	121-128	00000011
Longitude (minutes): 28	129-132	0111
Encoded BCH 2:	133-144	110010010111
Calculated BCH 2:	N/A	110010010111
15 Hex ID:	N/A	992A4DEDE0D65D0

FFFE2FCC9526F6F06B2E872397A5F7036553

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201	27-36	0011001001
User type: Maritime User	37-39	010
Radio Call Sign (6 digits): XPA02	40-75	100100110111101101111000001101011001
Specific bcn: 1	76-81	011101
Spare	82-83	00
Aux radio device: No Auxiliary Radio-locating Device	84-85	00
Encoded BCH 1:	86-106	11100100011100101110
Calculated BCH 1:	N/A	11100100011100101110
Encoded Position Data Source From Internal Navigation Device	107	1
North	108	0
Latitude (degrees): 47	109-115	0101111
Latitude (minutes): 44	116-119	1011
West	120	1
Longitude (degrees): 3	121-128	00000011
Longitude (minutes): 24	129-132	0110
Encoded BCH 2:	133-144	010101010011
Calculated BCH 2:	N/A	010101010011
15 Hex ID:	N/A	992A4DEDE0D65D0

FFFED0CC9526F6F06B2E872397AFE0FF0146

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201	27-36	0011001001
User type: Maritime User	37-39	010
Radio Call Sign (6 digits): XPA02	40-75	100100110111101101111000001101011001
Specific bcn: 1	76-81	011101
Spare	82-83	00
Aux radio device: No Auxiliary Radio-locating Device	84-85	00
Encoded BCH 1:	86-106	11100100011100101110
Calculated BCH 1:	N/A	11100100011100101110
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	992A4DEDE0D65D0

Radio Call Sign User Protocol

FFFE2FCC9DBDBC1A554E866553A5F9037C97

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201	27-36	0011001001
User type: Radio Call Sign	37-39	110
Radio Call Sign Identification: XPA02	40-75	110111101101111000001101001010101010
Specific bcn: 1	76-81	011101
Spare	82-83	00
Aux radio device: No Auxiliary Radio-locating Device	84-85	00
Encoded BCH 1:	86-106	11001100101010011110
Calculated BCH 1:	N/A	11001100101010011110
Encoded Position Data Source From Internal Navigation Device	107	1
North	108	0
Latitude (degrees): 47	109-115	0101111
Latitude (minutes): 48	116-119	1100
West	120	1
Longitude (degrees): 3	121-128	00000011
Longitude (minutes): 28	129-132	0111
Encoded BCH 2:	133-144	110010010111
Calculated BCH 2:	N/A	110010010111
15 Hex ID:	N/A	993B7B7834AA9D0

FFFE2FCC9DBDBC1A554E866553A5F7036553

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201	27-36	0011001001
User type: Radio Call Sign	37-39	110
Radio Call Sign Identification: XPA02	40-75	110111101101111000001101001010101010
Specific bcn: 1	76-81	011101
Spare	82-83	00
Aux radio device: No Auxiliary Radio-locating Device	84-85	00
Encoded BCH 1:	86-106	11001100101010011110
Calculated BCH 1:	N/A	11001100101010011110
Encoded Position Data Source From Internal Navigation Device	107	1
North	108	0
Latitude (degrees): 47	109-115	0101111
Latitude (minutes): 44	116-119	1011
West	120	1
Longitude (degrees): 3	121-128	00000011
Longitude (minutes): 24	129-132	0110
Encoded BCH 2:	133-144	010101010011
Calculated BCH 2:	N/A	010101010011

FFFED0CC9DBDBC1A554E866553AFE0FF0146

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201	27-36	0011001001
User type: Radio Call Sign	37-39	110
Radio Call Sign Identification: XPA02	40-75	110111101101111000001101001010101010
Specific bcn: 1	76-81	011101
Spare	82-83	00
Aux radio device: No Auxiliary Radio-locating Device	84-85	00
Encoded BCH 1:	86-106	11001100101010011110
Calculated BCH 1:	N/A	11001100101010011110
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	993B7B7834AA9D0

Serial user FF EPIRB

FFFE2FCC96A000C6007CE70B3A25F9037C97

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201	27-36	0011001001
User type: Serial User	37-39	011
Serial Type: Float Free EPIRB with Serial Identification Number	40-42	010
Cospas-Sarsat Certificate Number in bits 74-83: Yes	43	1
Serial Number: 99	44-63	00000000000001100011
All 0s or National Use	64-73	0000000000
C/S Number or National Use (bit 43 refers): 999	74-83	1111100111
Aux radio device: No Auxiliary Radio-locating Device	84-85	00
Encoded BCH 1:	86-106	11100001011001 1101000
Calculated BCH 1:	N/A	11100001011001 1101000
Encoded Position Data Source From Internal Navigation Device	107	1
North	108	0
Latitude (degrees): 47	109-115	0101111
Latitude (minutes): 48	116-119	1100
West	120	1
Longitude (degrees): 3	121-128	00000011
Longitude (minutes): 28	129-132	0111
Encoded BCH 2:	133-144	110010010111
Calculated BCH 2:	N/A	110010010111
15 Hex ID:	N/A	992D40018C00F9C

FFFE2FCC96A000C6007CE70B3A25F7036553

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201	27-36	0011001001
User type: Serial User	37-39	011
Serial Type: Float Free EPIRB with Serial Identification Number	40-42	010
Cospas-Sarsat Certificate Number in bits 74-83: Yes	43	1
Serial Number: 99	44-63	00000000000001100011
All 0s or National Use	64-73	0000000000
C/S Number or National Use (bit 43 refers): 999	74-83	1111100111
Aux radio device: No Auxiliary Radio-locating Device	84-85	00
Encoded BCH 1:	86-106	11100001011001 1101000
Calculated BCH 1:	N/A	11100001011001 1101000
Encoded Position Data Source From Internal Navigation Device	107	1
North	108	0
Latitude (degrees): 47	109-115	0101111
Latitude (minutes): 44	116-119	1011
West	120	1
Longitude (degrees): 3	121-128	00000011
Longitude (minutes): 24	129-132	0110
Encoded BCH 2:	133-144	010101010011
Calculated BCH 2:	N/A	010101010011
15 Hex ID:	N/A	992D40018C00F9C

FFFED0CC96A000C6007CE70B3A2FE0FF0146

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201	27-36	0011001001
User type: Serial User	37-39	011
Serial Type: Float Free EPIRB with Serial Identification Number	40-42	010
Cospas-Sarsat Certificate Number in bits 74-83: Yes	43	1
Serial Number: 99	44-63	00000000000001100011
All 0s or National Use	64-73	0000000000
C/S Number or National Use (bit 43 refers): 999	74-83	1111100111
Aux radio device: No Auxiliary Radio-locating Device	84-85	00
Encoded BCH 1:	86-106	11100001011001 1101000
Calculated BCH 1:	N/A	11100001011001 1101000
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	992D40018C00F9C

Serial user NON FF EPIRB

FFFE2FCC972000C6007CE2C9C9A5F9037C97

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201	27-36	0011001001
User type: Serial User	37-39	011
Serial Type: Non Float Free EPIRB with Serial Identification	40-42	100
Cospas-Sarsat Certificate Number in bits 74-83: Yes	43	1
Serial Number: 99	44-63	00000000000001100011
All 0s or National Use	64-73	0000000000
C/S Number or National Use (bit 43 refers): 999	74-83	1111100111
Aux radio device: No Auxiliary Radio-locating Device	84-85	00
Encoded BCH 1:	86-106	01011001001 1100100110
Calculated BCH 1:	N/A	01011001001 1100100110
Encoded Position Data Source From Internal Navigation Device	107	1
North	108	0
Latitude (degrees): 47	109-115	0101111
Latitude (minutes): 48	116-119	1100
West	120	1
Longitude (degrees): 3	121-128	00000011
Longitude (minutes): 28	129-132	0111
Encoded BCH 2:	133-144	110010010111
Calculated BCH 2:	N/A	110010010111
15 Hex ID:	N/A	992E40018C00F9C

FFFE2FCC972000C6007CE2C9C9A5F7036553

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201	27-36	0011001001
User type: Serial User	37-39	011
Serial Type: Non Float Free EPIRB with Serial Identification	40-42	100
Cospas-Sarsat Certificate Number in bits 74-83: Yes	43	1
Serial Number: 99	44-63	00000000000001100011
All 0s or National Use	64-73	0000000000
C/S Number or National Use (bit 43 refers): 999	74-83	1111100111
Aux radio device: No Auxiliary Radio-locating Device	84-85	00
Encoded BCH 1:	86-106	01011001001 1100100110
Calculated BCH 1:	N/A	01011001001 1100100110
Encoded Position Data Source From Internal Navigation Device	107	1
North	108	0
Latitude (degrees): 47	109-115	0101111
Latitude (minutes): 44	116-119	1011
West	120	1
Longitude (degrees): 3	121-128	00000011
Longitude (minutes): 24	129-132	0110
Encoded BCH 2:	133-144	010101010011
Calculated BCH 2:	N/A	010101010011
15 Hex ID:	N/A	992E40018C00F9C

FFFED0CC972000C6007CE2C9C9AFE0FF0146

ITEM	BITS	VALUE
Message format: long format	25	1
Protocol: User	26	1
Country code: 201	27-36	0011001001
User type: Serial User	37-39	011
Serial Type: Non Float Free EPIRB with Serial Identification	40-42	100
Cospas-Sarsat Certificate Number in bits 74-83: Yes	43	1
Serial Number: 99	44-63	00000000000001100011
All 0s or National Use	64-73	0000000000
C/S Number or National Use (bit 43 refers): 999	74-83	1111100111
Aux radio device: No Auxiliary Radio-locating Device	84-85	00
Encoded BCH 1:	86-106	01011001001 1100100110
Calculated BCH 1:	N/A	01011001001 1100100110
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	992E40018C00F9C

ANNEX I

LIST OF TEST LABORATORY EQUIPMENT AND
TABLE OF LABORATORY MEASUREMENT UNCERTAINTIES

LIST OF MEASUREMENT EQUIPEMENTS

Name	Manufacturer	Type	S/N	Last Verification/Calibration	Periodicity (months)
Hygrometer	Rotronic	Hygropalm 3	21458500	30/09/2008	12
Spectrum analyzer	Hewlett-Packard	70000	2620A00494	25/09/2008	12
Cospas / Sarsat mobile test bench	SERPE-IESM	RMD01	004996	01/03/2008	0
10MHz rubidium frequency reference	Timelink Microsystèmes	90011-F	00279BL	22/08/2008	12
Temperature and humidity chamber	Sapratin	Climats 137H60/1,5E	S4880	28/12/2007	24
Frequency meter	Hewlett-Packard	5345A	2928A13449	21/08/2008	12
RF generator	Hewlett-Packard	8657A	2944A01809	22/08/2008	24
GPS repeater	ROJONE	061-A	98/06MI-150	06/06/2008	0
Multimeter	Keithley	2000	0678112	19/08/2008	12
Numeric scope	Hewlett-Packard	54501A	2930A12096	22/03/2007	24
Power probe	BIRD	4022	9043	28/08/2007	24
Power probe	Hewlett-Packard	8482A	2652A17549	01/08/2008	12
ARGOS-SARSAT Certification rack	EMP	88211	1	26/09/2008	12
Powermeter	BIRD	4421	2742	28/08/2007	24
Powermeter	Hewlett-Packard	437B	2835U00248	01/08/2008	12
GNSS RF Simulator	Spirent	STR4500	1552	CNES	0

TABLE OF UNCERTAINTIES

UNCERTAINTY	Unit	C/S requirement +/-	Labratory estimate +/-
REPETITION PERIOD	s	0,01	2,4E-03
CW PREAMBLE	ms	1,0	1,0E-02
TOTAL TRANSMISSION TIME	ms	1,0	1,0E-02
SPURIOUS POWER LEVEL	dB	2	1,6
BIT RATE	bits/s	0,6	0,01
NOMINAL FREQUENCY AT 406MHz	Hz	100	0,1
NOMINAL FREQUENCY AT 121,5MHz	Hz	100	3,7
FREQUENCY STABILITY (short term)	F0	1E-10	3,0E-11
FREQUENCY STABILITY (slope)	F0	1E-10	9,0E-12
TRANSMITTED POWER	dB	0,5	4,1E-01
POWER 1MS BEFORE 10% OF MAX	dB	n/a	3,3
CARRIER RISE TIME	ms	0,5	0,10
MODULATION RISE TIME	µs	25	12
PHASE MODULATION	rad	0,04	0,001
AMPLITUDE SYMMETRY	%	n/a	0,1
MODULATION SYMMETRY	%	1	0,7
CURRENT CONSUMPTION	%	n/a	5
TEMPERATURE NEAR BEACON	°C	2	1,7
CONTROL OF ENVIRONMENT TEMPERATURE	°C	n/a	0,9
ANTENNA MEASUREMENT (406MHz)	dB	3	2,2
VSWR	n/a	n/a	0,2

All uncertainties are provided with a coverage factor k = 2 (95%)

ANNEX II

C/S Annex L - Beacon Quality Assurance Plan

ANNEX L

BEACON QUALITY ASSURANCE PLAN

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

KANNAD
ZI des Cinq Chemins
56520 GUIDEL – France

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

SAFELINK, P/N= 5106419
(Model, 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 :
  - *121.5 MHz transmitter control (frequency / power / modulation / consumption)*
  - *Global spectrum control (406 MHz and 121.5 MHz)*

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 resubmit 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 subjected 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 : 29/05/2009 Signed : Stéphane JINCHELEAU, Technical Manager LP SAR marine
(Name, Position and signature of Beacon Manufacturer Representative)

KANNAD
SAS au capital de 2.000.000 €
ZI des Cinq Chemins - 56520 GUIDEL (France)
BP 23
Tél. : 02 97 02 42 29
Fax : 02 97 65 00 20
RCS Lorient B 347 055 744
TVA FR 67 347 055 744
SIRET 500 855 749 00014 - APE 2790 Z

- END OF ANNEX L -