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Attention to : Mr Craig DUNCAN
STANDARD COMMUNICATIONS PTY. LTD.

6, Frank Street

GLADESVILLE NSW 2111
AUSTRALIE

Toulouse, July 10th, 2003

TRANSMITTAL SHEET N° BE 03.123AP/ET – GP/SH

Number	DESIGNATION	COMMENTS
1	TEST REPORT OF 406 MHz DISTRESS BEACON : Manufacturer : Standard Communications PTY. LTD Beacon model : MT400 EPIRB	Reference : M4586 Std Com Other addressees : - 1 copy to Mr S. MIKAILOV (COSPAS/SARSAT Sec) and - 1 copy to Mr M. SARTHOU (CNES – DSO/RC/AS)

Best Regards.

P. O.
S. Ygousin.

Gérard PEYROU
TECHNOLOGIC TESTS DEPARTMENT

ATTENTION
NOUVELLE ADRESSE :
2 rond-point Pierre Guillaumat

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L'Intelligence de l'Environnement

Toulouse, 25 June 2003

INTESPACE reference : M4586 Std Com

TEST REPORT OF
406 MHz DISTRESS BEACON

MANUFACTURER :	STANDARD COMMUNICATIONS PTY. LTD.
BEACON MODEL :	MT400 EPIRB

Written : 25 June 2003
By : Gérard PEYROU
Visa :

Approved : 8 July 2003
By : Didier NAWS
Visa :

Quality Control : 10.07.03
By : André LOUIT
Visa :

Distribution :

- Mr	Craig DUNCAN	STANDARD COMMUNICATIONS PTY. LTD.	(1 copy)
- Mr	S. MIKAILOV	COSPAS/SARSAT Sec	(1 copy)
- Mr	M. SARTHOU	CNES - DSO/RC/AS	(1 copy)
- INTESPACE		ITS/AP/ET	(1 copy)

The COFRAC Test section accreditation proves the technical hability of the laboratory for tests or analysis under the authority of the accreditation

cofrac ESSAIS Accréditation N° 1-0743 Scope given on request

18, avenue Edouard Belin – B.P. 4356 – 31029 TOULOUSE Cedex 4 – Tél. +33 (0) 5 61 28 11 11 – Fax : +33 (0) 5 61 28 11 12
S.A. au capital de 8 800 000 F – R.C.S. TOULOUSE B 326 100 971 – SIRET 326 100 971 00018 – APE 743 B – TVA : FR16326100971

1 - ADMINISRATION

1.1. WORK ORDER

Manufacturer : STANDARD COMMUNICATIONS PTY. LTD.
Address : 6, Frank Street - GLADESVILLE NSW 2111 AUSTRALIA

Represented by : Mr Craig DUNCAN

1.2. INTESPACE TEST CENTER

The test operations have been conducted by : Mr G. PEYROU

1.3. SCHEDULE

Start of test:	31 mars 2003
End of test :	20 mai 2003

1.4. WORK REFERENCE : **M4586**

1.5. EQUIPMENT UNDER TEST

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

- Commercial designation :
- Model : MT400
- Sérial number: C204 and C203

2 - TEST FACILITIES

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

3 - STANDARS AND TEST PROCEDURES APPLICABLE

COSPAS-SARSAT standards :

- "C/S T. 001- Issue 3 - Revision 3 - October 1999 "
- "C/S T. 007- Issue 3 - Revision 9 - October 2002"

INTESPACE Radio Beacon Test Procédures :

- " COSPAS-SARSAT Certification Test"	Réf. ITS : 572 AP/QA
- " 406 MHz Caracteristic Antenna Test "	Réf. ITS : 566 AP/QA
- " Radio Beacon Test Report "	Réf. ITS : 579 AP/QA-f

4 - RESULTS

See the following pages :

- application form for a COSPAS-SARSAT 406 MHz beacon Type Approval Certificate,
- summary of 406 MHz beacon test results
- test results : data and graphs
- Annex A : Antenna test results (Test out of Cofrac Accreditation Scope)
- and Annex B : Manufacturer technical data

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

Beacon Manufacturer : STANDARD COMMUNICATIONS PTY. LTD.

Beacon model : MT400

Beacon Number : C204

Name and Location of Beacon Test Facility : INTESPACE / CNES Toulouse

Beacon Type : Aviation : ☐ Land : ☐ Maritime : ☑

Antenna Model : Standard Communication

Specified Operating Temperature Range -20 °C to 55 °C

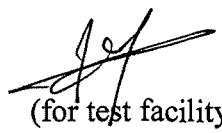
Specified Operating Lifetime : 24 hr ☐ 48 hr ☑ Other ☐ Specify :

Beacon Battery Type(s)

Chemistry	: LiSO2
Manufacturer & model n°	: SAFT / LO 26 SX
Size & number of cells	: D Size / 2 Cells

Extra Features in Beacon	**No**	**Yes**	**Details**	
a) Auxiliary Radio-Locating Device :	☐	☑	Frequency Power Tx. Duty Cycle	: 121.5 MHz : 17 dBm (50 Ω) : Continious (>96%)
b) Transmits Encoded Position Data	☑	☐	Nav. Device Type Manufacturer Model	: : : :
c) Transmits Long Message (144 bits)	☑	☐		
c) Automatic Activation :	☑	☐		
d) Built-in Strobe light :	☐	☑	Intensity Flash rate	: >0,75 Cd : 20/21 per min
e) Selft-test mode	☐	☑		
f) Other	☐	☑	Specify	: Audible Annunciator

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

Dated : 17/10/2003 Signed : 

(for test facility)

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	36,5	36,1	35,5	
o Power output rise time		< 5	ms	1,56	1,61	1,79	Graphs p, 20, 23 and 26
o power output 1 ms before burst		must be < -10 dBm	√ *	√	√	√	Graphs pages 14 to 16
2 - DIGITAL MESSAGE							Data and graphs pages 17 to 26
	Bits number						
o bit sync	1-15	15 bits "1"	√	√	√	√	
o frame sync	16-24	9 bits (000101111)	√	√	√	√	
o format flag	25	1 bit	√	0	0	0	
o protocol flag	26	1 bit	√	1	1	1	
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	data bits	000000	000000	000000	
o additional data/BCH (if applicable)	113-144	32 bits	√	N/A	N/A	N/A	Not applicable
o position error (if applicable)		< 5	km	N/A	N/A	N/A	

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 17 to 26
o repetition rate :						
minimum T_R =	47,5	seconds	48,0	48,5	49,0	
maximum T_R =	52,5	seconds	52,5	52,0	52,5	
o bit rate						
minimum f_b =	396	bits/sec.	399,65	399,66	399,65	
maximum f_b =	404	bits/sec.	399,71	399,73	399,71	
o total transmission time :						
short message =	435.6 - 444.4	ms	440,59	440,43	440,32	
long message (optional) =	514.8 - 525.2	ms				
o CW preamble						
minimum T_1 =	158,4	ms	160,47	160,30	160,14	
maximum T_1 =	161,6	ms	160,55	160,37	160,23	
o first burst delay	> 47,5	seconds	> 47,5	> 47,5	> 47,5	

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 17 to 26
o rise time	50 - 250	microsec.	210	220	230	
o fall time	50 - 250	microsec.	210	210	210	
o phase deviation : positive	+ (1.0 to 1.2)	radians	+ 1,04	+ 1,04	+ 1,05	Overshoot just in the spec
o phase deviation : negative	- (1.0 to 1.2)	radians	- 1,16	- 1,07	- 1,01	limits
o symmetry measurement	≤ 0.05		+ 0,0080	+ 0,0120	4E-06	
5 - 406 MHz TRANSMITTED FREQUENCY						Data pages 18, 21 and 24
o nominal value	as specified in C/S T.001 and C/S T.012	MHz	406,0279447	406,0279432	406,0279400	
o short term stability	≤ 2×10^{-9}	/100 ms	2,55E-10	3,41E-10	2,97E-10	
o medium term stability						
. slope	(-1 to +1) $\times 10^{-9}$	/minute	-7,62E-11	-7,45E-11	-6,86E-11	
. residual frequency variation	≤ 3×10^{-9}		3,32E-10	8,03E-10	4,78E-10	
6 - SPURIOUS EMISSION ** (into 50 ohms)						See graphs pages 27 to 30
o in-band (406.0 - 406.1 MHz)	see spurious emission mask 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 31 to 37
o nominal transmitted frequency	as specified in C/S T.001 and C/S T.012	MHz	406,0279439	406,0279439	406,0279390	
Modulation :						
o rise time	50 - 250	microsec.	219,6	209,6	229,5	
o fall time	50 - 250	microsec.	199,6	219,6	199,6	
o phase deviation : positive	+ (1.0 to 1.2)	radians	1,04	1,03	1,05	Overshoot just in the spec
o phase deviation : negative	- (1.0 to 1.2)	radians	-1,16	-1,07	-1,02	limits
o symmetry measurement	≤ 0.05	√	+ 0,0120	+ 0,0120	+ 0,0080	
o digital message	must be correct	√	√	√	√	
8 - SELF-TEST MODE (if applicable)						Data pages 38 to 40
o frame sync	9 bits (011010000)	√		√		
o format flag	1/0	bit		0		
o single radiated burst	≤ 440 /520 (+1%)	ms		440,12		
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 B
o single burst verification	one burst	√		√		
o provides for beacon 15 Hex ID	must be correct	√		√		Data page 39

PARAMÈTRES TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS
9 - THERMAL SHOCK (30° C change)**				Data and graphs pages 41 to 48
o Soak temperature :		°C	Tsoak = 22	
o Measurement temperature :		°C	TMeas = -8	
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	406,027946 / 406,027958	
- short term stability	$\leq 2 \times 10^{-9}$	/100 ms	2,08E-10	
- medium term stability :				
. slope	$(-1 \text{ to } +1) \times 10^{-9}$	/minute	4,71E-11	
. residual frequency variation	$\leq 3 \times 10^{-9}$		6,63E-10	
o Transmitted power output	35 - 39	dBm	35,95	
o Digital message	must be corect	√	√	

PARAMÈTRES TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS
10 - OPERATING LIFETIME AT MINIMUM TEMPERATURE **				Data and graphs pages 49 to 63
o Duration	> 24	hours	49,5 hours at Tmin = -20 °C	
o Transmitted frequency :				
- nominal value	as specified in C/S T.001 and C/S T.012	MHz	406,027919 / 406,027934	
- short term stability		/100 ms	≤ 7,0E-10	
- medium term stability				
. slope	(-1 to +1) x 10^{-9}	/minute	-1.5E-10 / 1.5E-10	
. residual frequency variation	≤ 3 x 10^{-9}		≤ 8,0E-10	
o Transmitted power output	35 - 39	dBm	36,5 / 36,8	
o Digital message	must be corect	√	√	
11 - TEMPERATURE GRADIENT ** (5° C/hr)				Data and graphs pages 64 to 73
o Transmitted frequency :				
- nominal value	as specified in C/S T.001 and C/S T.012	MHz	406,024939 / 406,024963	
- short term stability	≤ 2 x 10^{-9}	/100 ms	≤ 4,0E-10	
- medium term stability				
. slope	(-1 to +1) x 10^{-9}	/minute	-4E-10 / 5E-10	
. residual frequency variation	≤ 3 x 10^{-9}		≤ 1,3E-9	
o Transmitted power output	35 - 39	dBm	35,3 / 36,5	
o Digital message	must be corect	√	√	
12 - LONG TERM FREQUENCY STABILITY	as specified in C/S T.001 and C/S T.012	MHz		Constructor explanations on Annex B
o Data provided		√		

PARAMÈTRES TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS
13 - PROTECTION AGAINST CONTINUOUS TRANSMISSION	≤ 45	seconds	≤ 1,5 seconds	Constructor explanations on Annex B
o Description provided		√		(p 2&3 of ED030703-01 Doc
14 - SATELLITE QUALITATIVE TESTS **	successfully located by satellites / LUT			Data and graphs pages 74 to 82
o Results provided		√	√	
15 - ANTENNA CHARACTERISTICS				Antenna test report Annex A page 83
o Polarization	linear or RHCP	√ √	√	
o VSWR	≤ 1.5	-	/	
o ERP max EOL	≤ 20	Watts	20,5	Just
o ERP min EOL	≥ 1.6	Watts	2,5	
o azimuth gain variation at 40° elevation angle	≤ 3	dB	0,5	
16 - BEACON CODING SOFTWARE				
o sample message provided for each coding option of the applicable coding protocol types	must be correct (attach to report)	√		See manufacturer doc. Annex B
o sample messages provided , if applicable, with encoded positions at least 5 km apart	must be correct (attach to report)	√		
o sample self-test message provided for each coding option of the applicable coding protocol types	must be correct (attach to report)	√		

PARAMÈTRES TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS
17 - NAVIGATION SYSTEM** (as applicable)				See data page
o position data default values	must be correct	√		
o position acquisition time	< 30	minutes		
o encoded positon data update interval	> 20	minutes		
o positon data input update interval (as applicable)	20 / 1	minutes		
o delta offset :				
- positive direction	must be correct	√		
- negative direction	must be correct	√		
- overrange to 2 times coarse res.	must be correct	√		
o last valid position :				
- retained after nav signal lost	4	hours		
- cleared when beacon reactived	must be correct	√		
o design data provided on protection against beacon degradation due to navigation device, interface or signal failure or malfunction	no degradation	√		

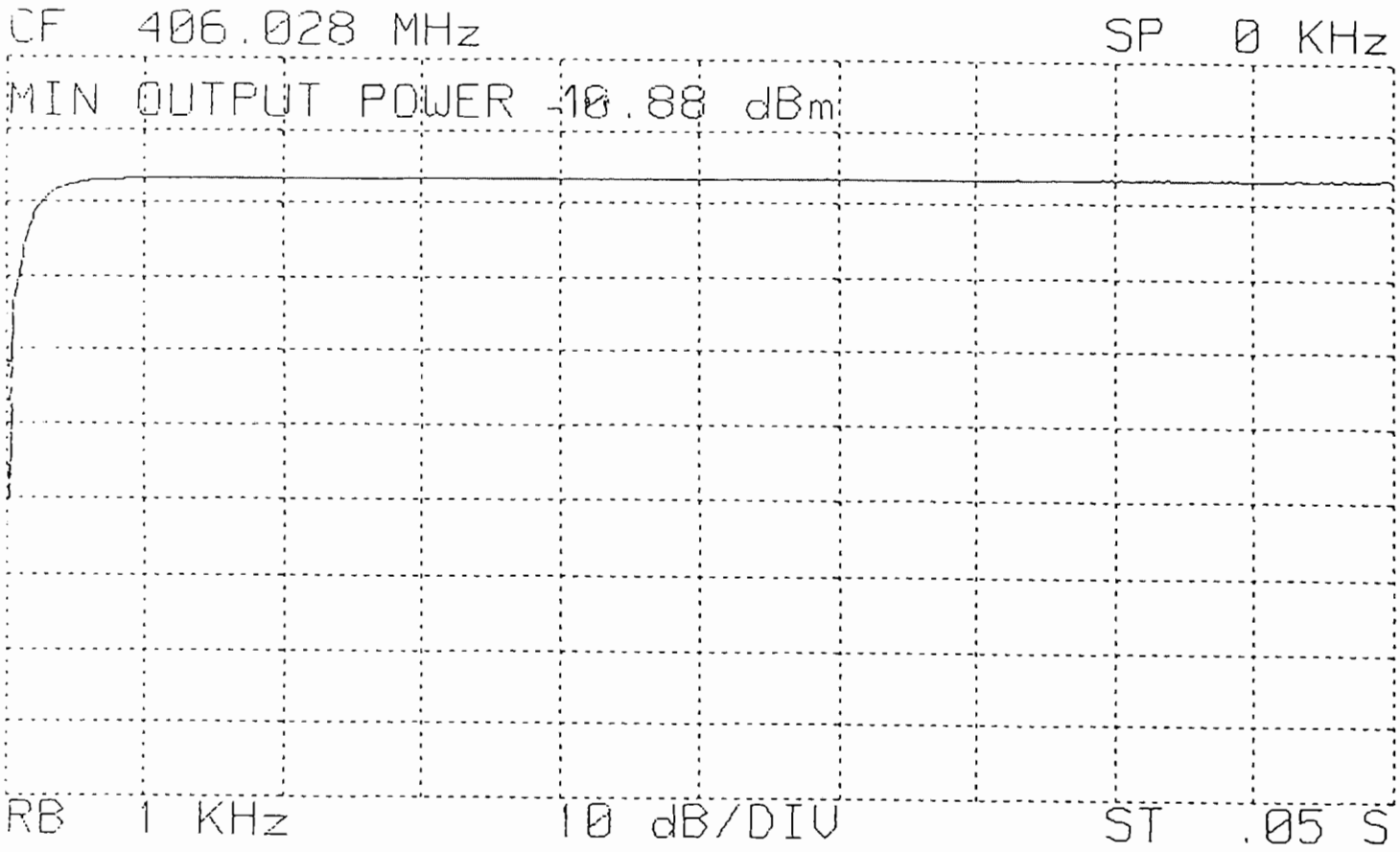
* the ticks mark √ can be used where indicated to record that the requirement is met (no value needs to be shown).

** attach graphs of test results for test number 6, 9, 10 and 11 and a summary table of results for test number 14, and, if applicable , test number 17.

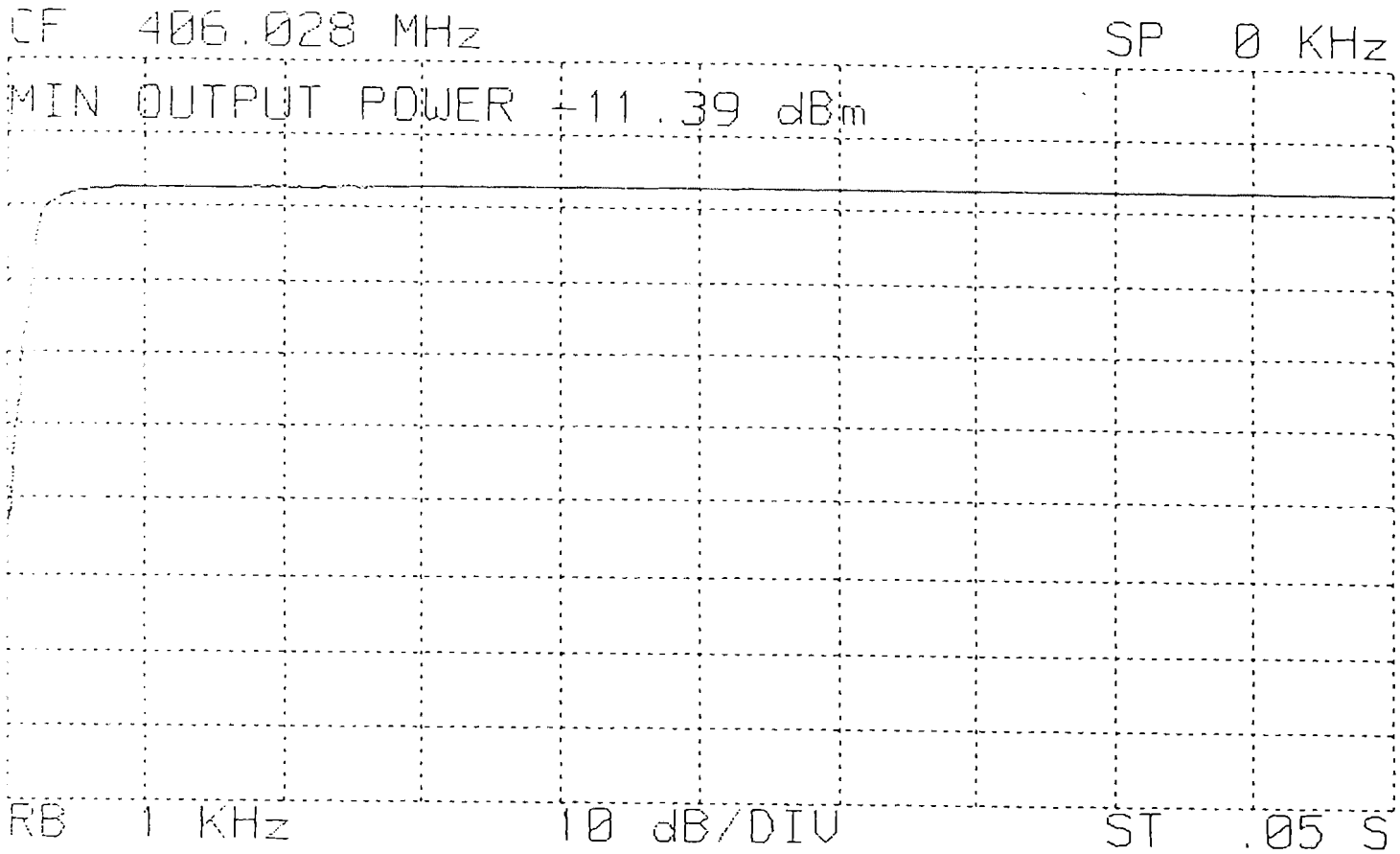
TRANSMITTER OUTPUT POWER RISE TIME TEST RESULT ON MT400 STANDARD COMMUNICATIONS PTY. LTD. EPIRB N° C204
(1 ms before 10 % of the burst)

at -20° C, 22° C and 55° C

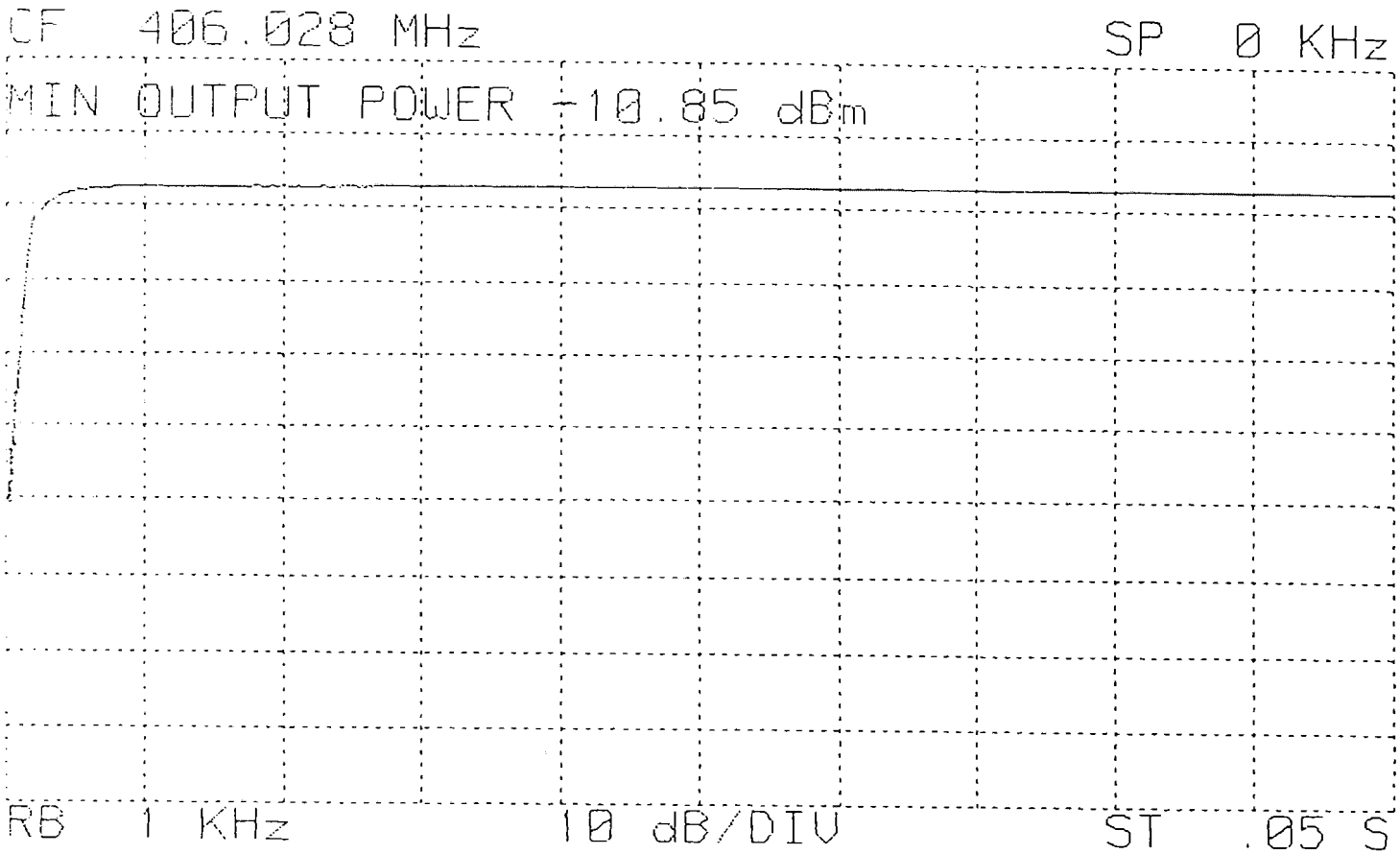
Output Power Risetime at -20°C



Output Power Risetime at 22°C



Output Power Risetime at 55°C



CERTIFICATION TEST RESULTS ON
MT400 STANDARD COMMUNICATIONS PTY. LTD. EPIRB
N° C204

at -20° C, 22° C and 55° C

Certification Test at -20°C Date of test : 10 Apr 2003

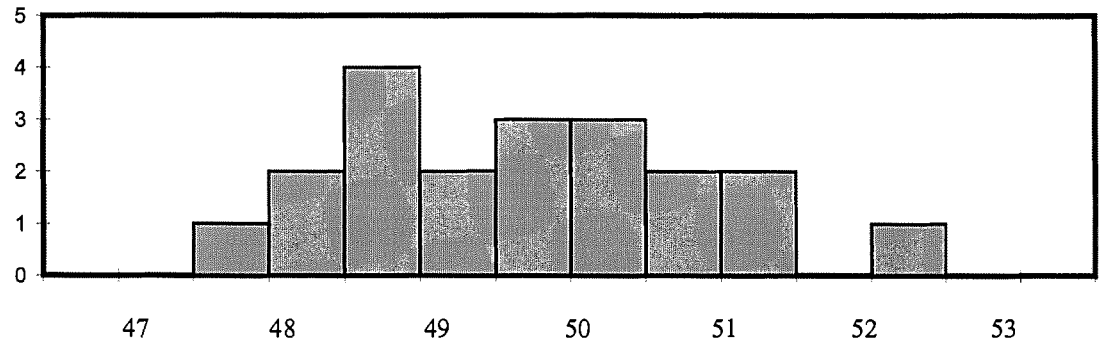
Manufacturer : Standard-Communications
Beacon Type : MT400
Number : C204

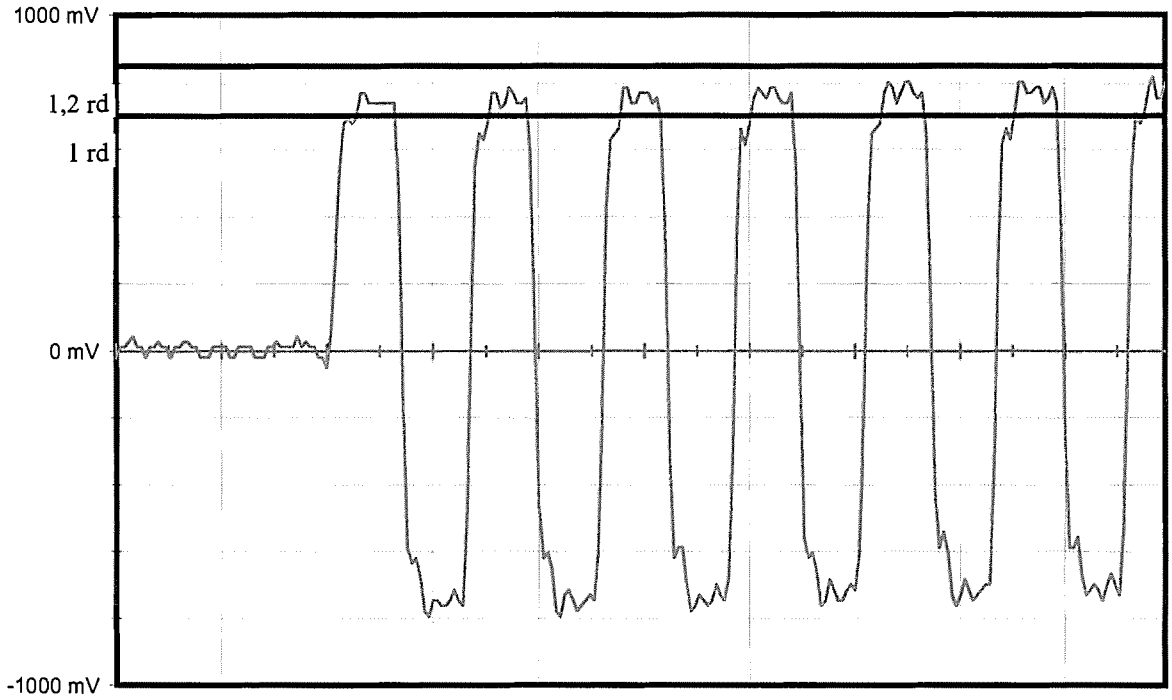
Message

Message received		FFFE2F5F7F03C480000009C00400
Format Flag	25	0
Protocol flag	26	1
Ident./Position code	27-85	BEFE07890000001
Country Code/Country	27-36	503 /
Protocol Code : U/Std-Nat	37-39/37-40	111
Protocol Code Used	37-39/37-40	Test
Identification Data	40-85/41-64/41-58	1E
Identification Used		:::::::
Calculated BCH1	25-85	70010
Readed BCH1	86-106	70010
Homing	84-85	01
Em.cod/nat.use/supp.data	107-112	000000
Emer cod / Encod pos data	107	0
Activation type	108	0 Manual
Calculated BCH2	107-132	
Readed BCH2	133-144	
Latitude position		
Longitude position		
Delta position		

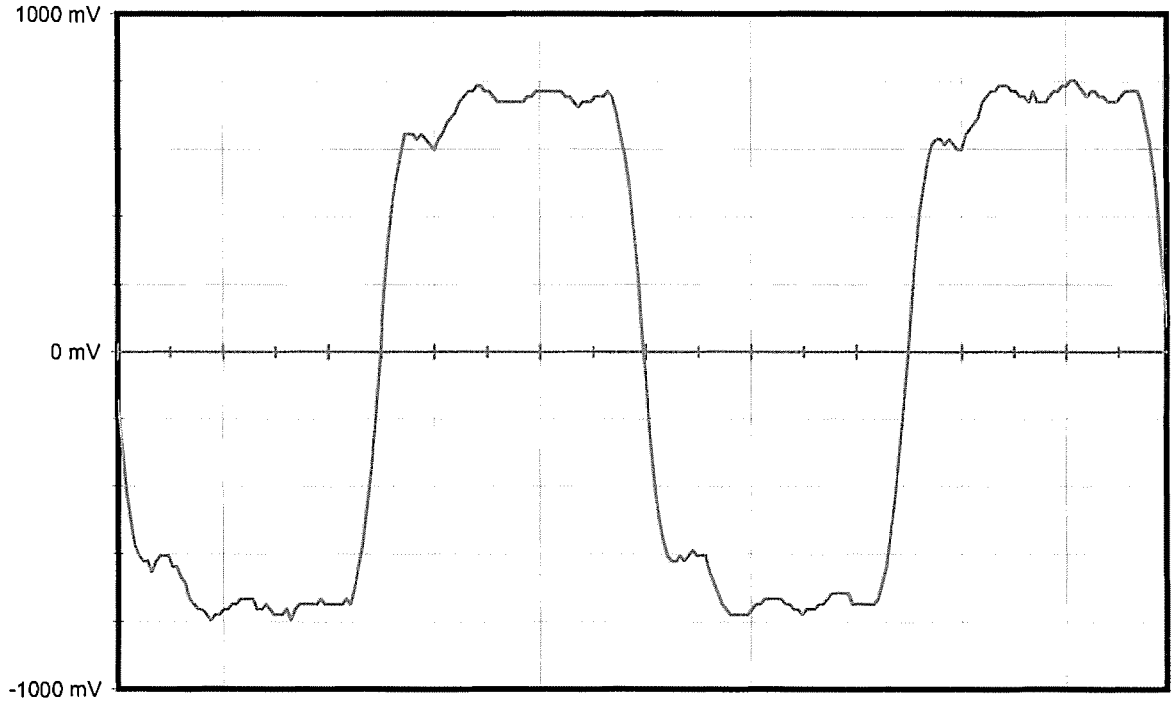
Electrical and other parameters

CW preamble	ms	158,4 <	< 162,6	160,52
Total transmission time	ms	434,6 <	<445,4	440,59
Modulation frequency	Hz	395,4<	< 404,6	399,68
Phase deviation : total	rd		<=2,40	2,21
Phase deviation : positive	rd	1,00 <	< 1,20	1,04
Phase deviation : negative	rd	-1,20 <	< -1,00	-1,16
Symmetry measurement	%		<=5 %	0,80
Nominal frequency : F2	Hz			406027944,67
Short term2				3,23E-10
Short term3				2,55E-10
Slope				-7,62E-11
Residual				3,32E-10
406 MHz power output	dBm			36,5
Homing frequency	MHz			121,50008
121,5 MHz power output	dBm			18,5
Soak temperature	°C			-21,0
Extra feature				No

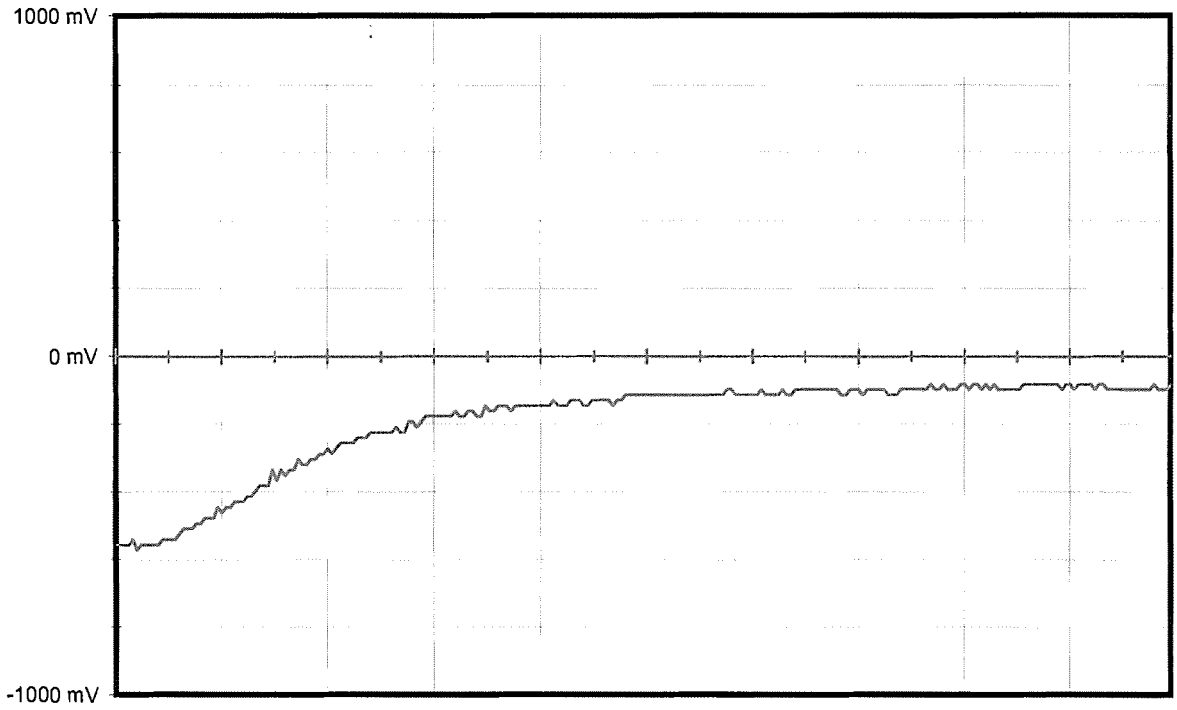




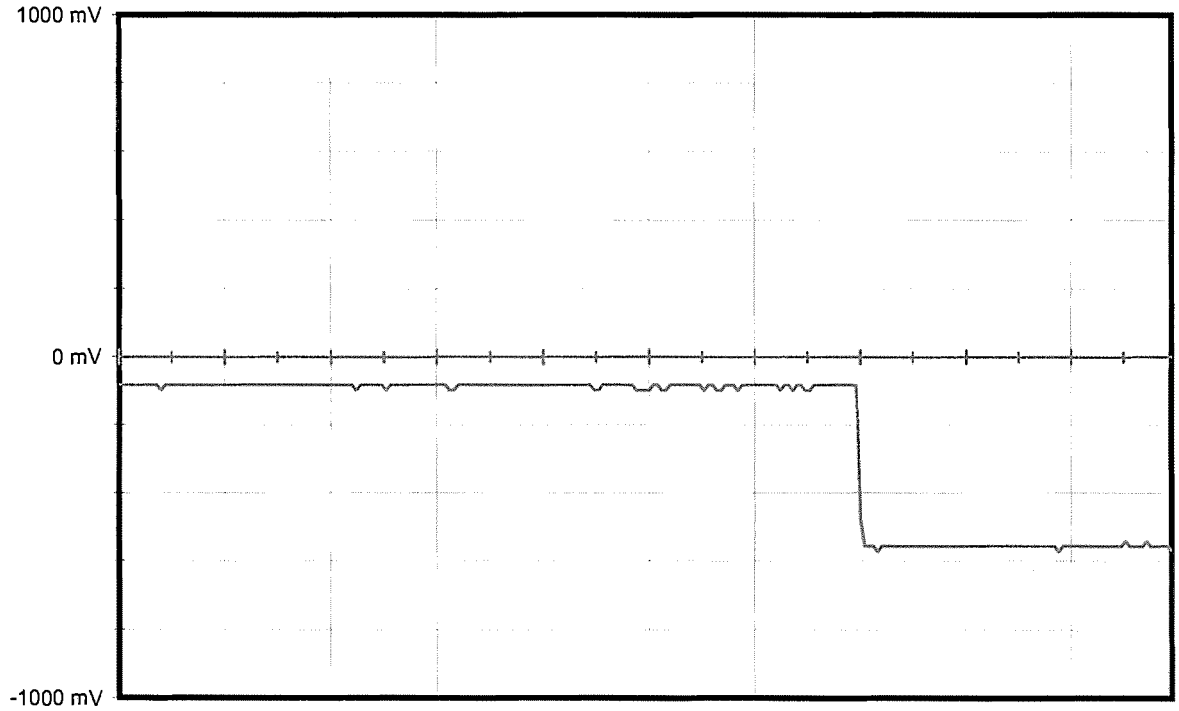
0 ms 10 ms 20 ms
Vmarker1 850 mv ==> 1,2 rd 2 ms/div.
Vmarker2 700 mv ==> 1 rd



8 ms 10,5 ms 13 ms
Duty Cycle : 0,00799596 0,5 ms/div.
falltime(1)<= 209,581 us risetime(1)<= 209,58 us
+width(1) 1,23753 ms -widht(1) 1,25748 ms



-1 ms 1,5 ms 4 ms
risetime(1)<= 1556,89 us 0,5 ms/div.



-3,5 ms -1 ms 1,5 ms
falltime(1)<= 29,9399 us 0,5 ms/div.

Certification Test at 22°C Date of test : 31-mars-2003

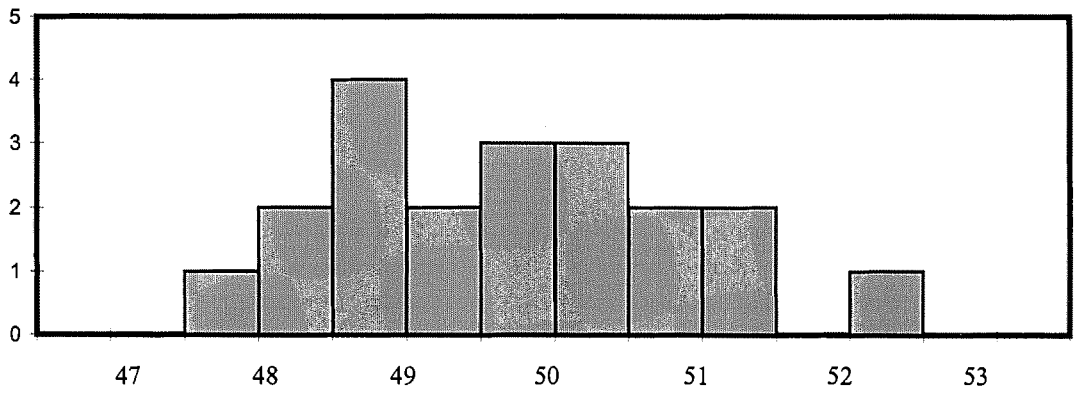
Manufacturer : Standard-Communications
Beacon Type : MT400
Number : C204

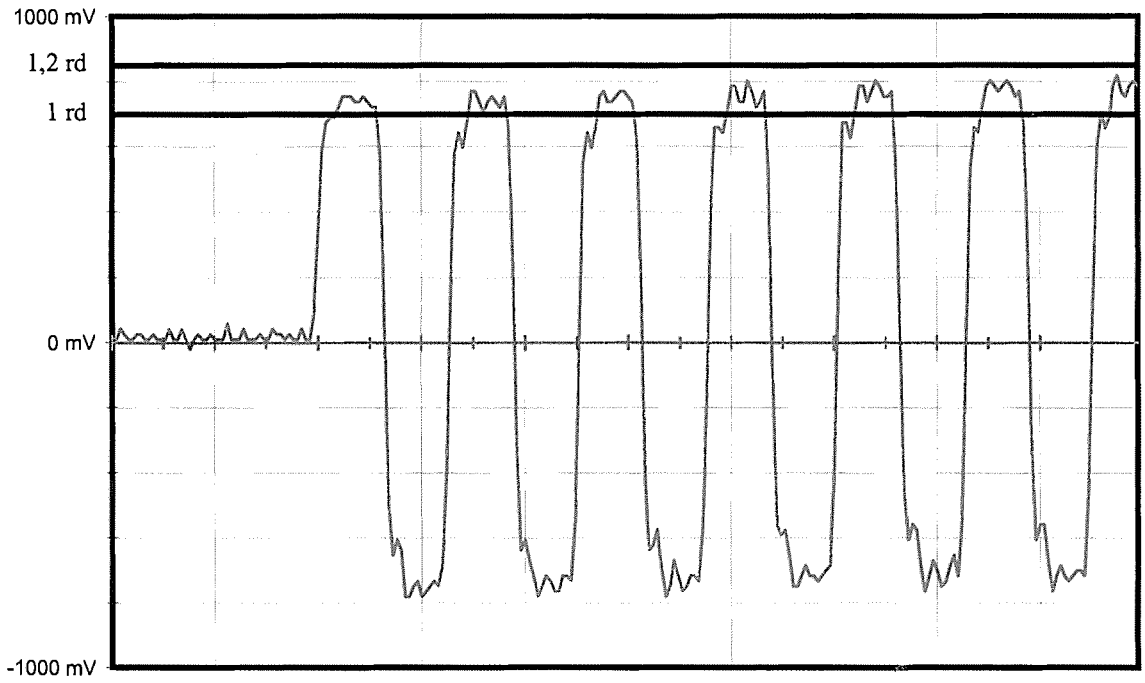
Message

Message received		FFFE2F5F7F03C480000009C00400
Format Flag	25	0
Protocol flag	26	1
Ident./Position code	27-85	BEFE07890000001
Country Code/Country	27-36	503 /
Protocol Code : U/Std-Nat	37-39/37-40	111
Protocol Code Used	37-39/37-40	Test
Identification Data	40-85/41-64/41-58	1E
Identification Used		:::::::
Calculated BCH1	25-85	70010
Readed BCH1	86-106	70010
Homing	84-85	01
Em.cod/nat.use/supp.data	107-112	000000
Emer cod / Encod pos data	107	0
Activation type	108	0
Calculated BCH2	107-132	
Readed BCH2	133-144	
Latitude position		
Longitude position		
Delta position		

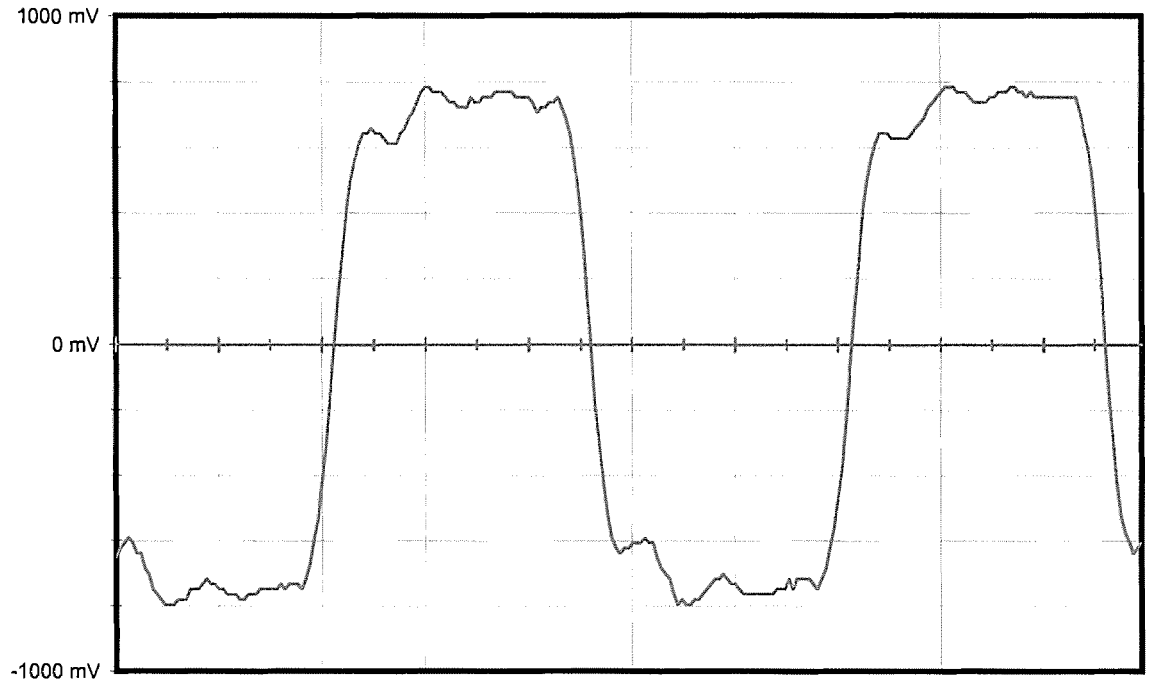
Electrical and other parameters

CW preamble	ms	158,4 <	< 162,6	160,34
Total transmission time	ms	434,6 <	<445,4	440,43
Modulation frequency	Hz	395,4<	< 404,6	399,70
Phase deviation : total	rd		<=2,40	2,11
Phase deviation : positive	rd	1,00 <	< 1,20	1,04
Phase deviation : negative	rd	-1,20 <	< -1,00	-1,07
Symmetry measurement	%		<=5 %	1,20
Nominal frequency : F2	Hz			406027943,20
Short term2				2,81E-10
Short term3				3,41E-10
Slope				-7,45E-11
Residual				8,03E-10
406 MHz power output	dBm			36,1
Homing frequency	MHz			121,50
121,5 MHz power output	dBm			18,6
Soak temperature	°C			22,2
Extra feature				No

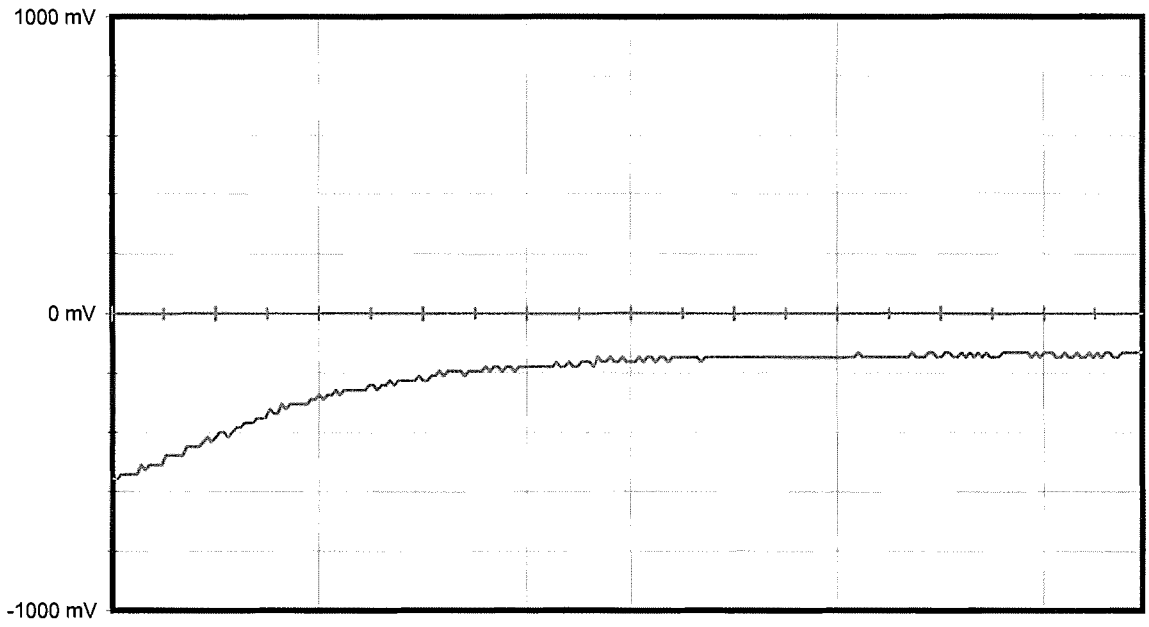




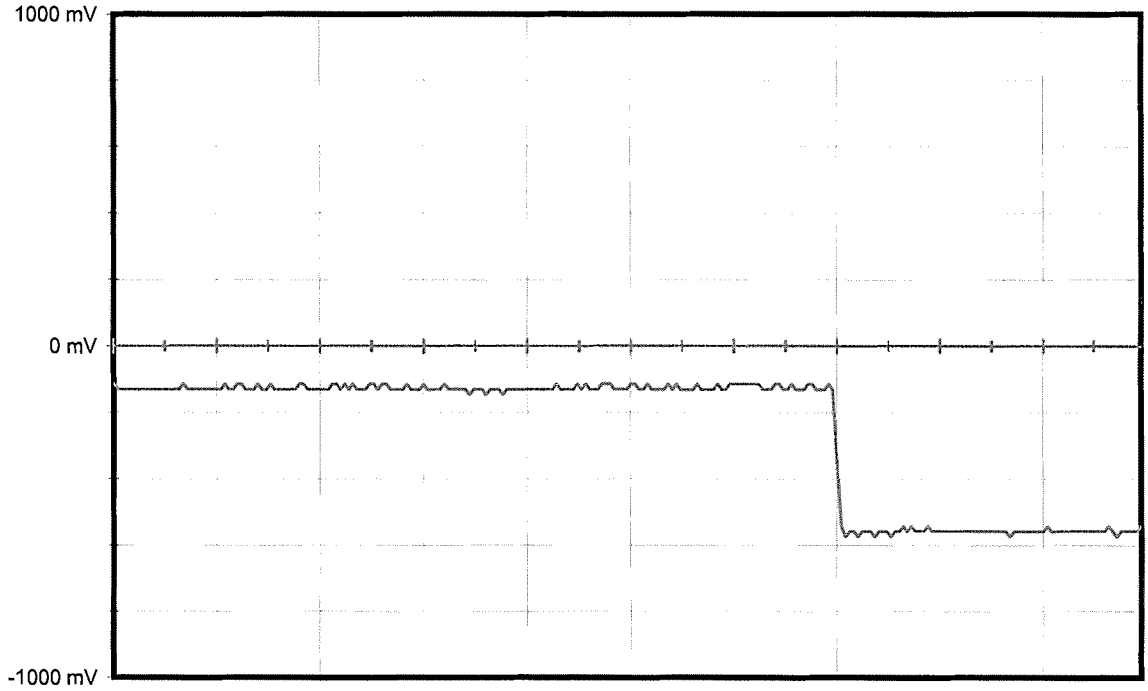
0 ms 10 ms 20 ms
Vmarker1 850 mv ==> 1,2 rd 2 ms/div.
Vmarker2 700 mv ==> 1 rd



8 ms 10,5 ms 13 ms
Duty Cycle : 0,011952191 0,5 ms/div.
falltime(1)<= 209,581 us risetime(1)<= 219,56 us
+width(1) 1,23752 ms -widht(1) 1,26746 ms



-1 ms 1,5 ms 4 ms
risetime(1)<= 1606,79 us 0,5 ms/div.



-3,5 ms -1 ms 1,5 ms
falltime(1)<= 29,9399 us 0,5 ms/div.

Certification Test at 55°C Date of test : 1 Apr 2003

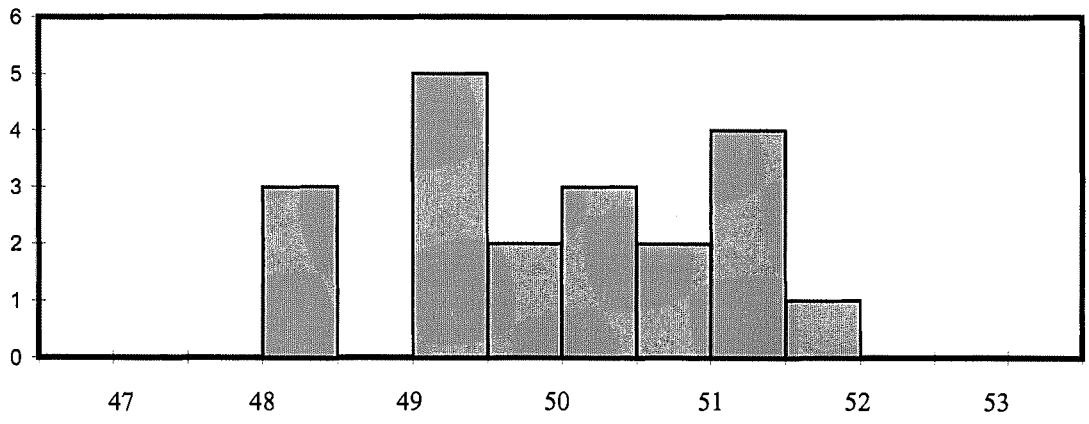
Manufacturer : Standard-Communications
Beacon Type : MT400
Number : C204

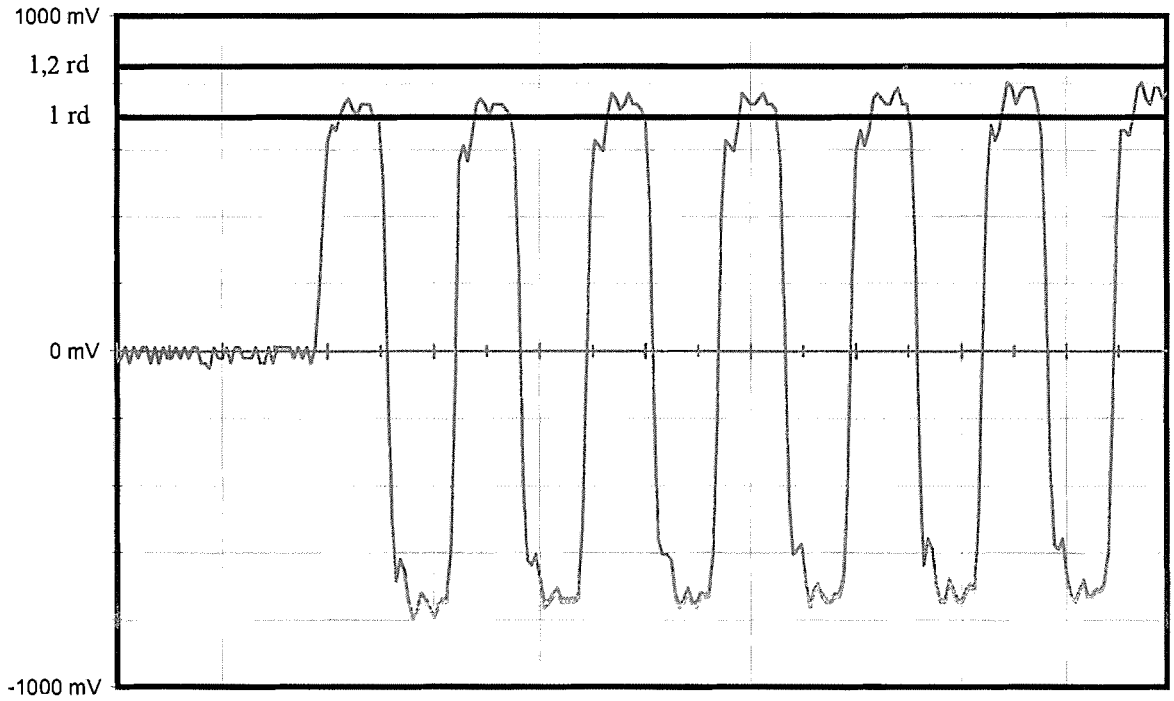
Message

Message received		FFFE2F5F7F03C480000009C00400
Format Flag	25	0
Protocol flag	26	1
Ident./Position code	27-85	BEFE07890000001
Country Code/Country	27-36	503 /
Protocol Code : U/Std-Nat	37-39/37-40	111
Protocol Code Used	37-39/37-40	Test
Identification Data	40-85/41-64/41-58	1E
Identification Used		:::::::
Calculated BCH1	25-85	70010
Readed BCH1	86-106	70010
Homing	84-85	01
Em.cod/nat.use/supp.data	107-112	000000
Emer cod / Encod pos data	107	0
Activation type	108	0
Calculated BCH2	107-132	
Readed BCH2	133-144	
Latitude position		
Longitude position		
Delta position		

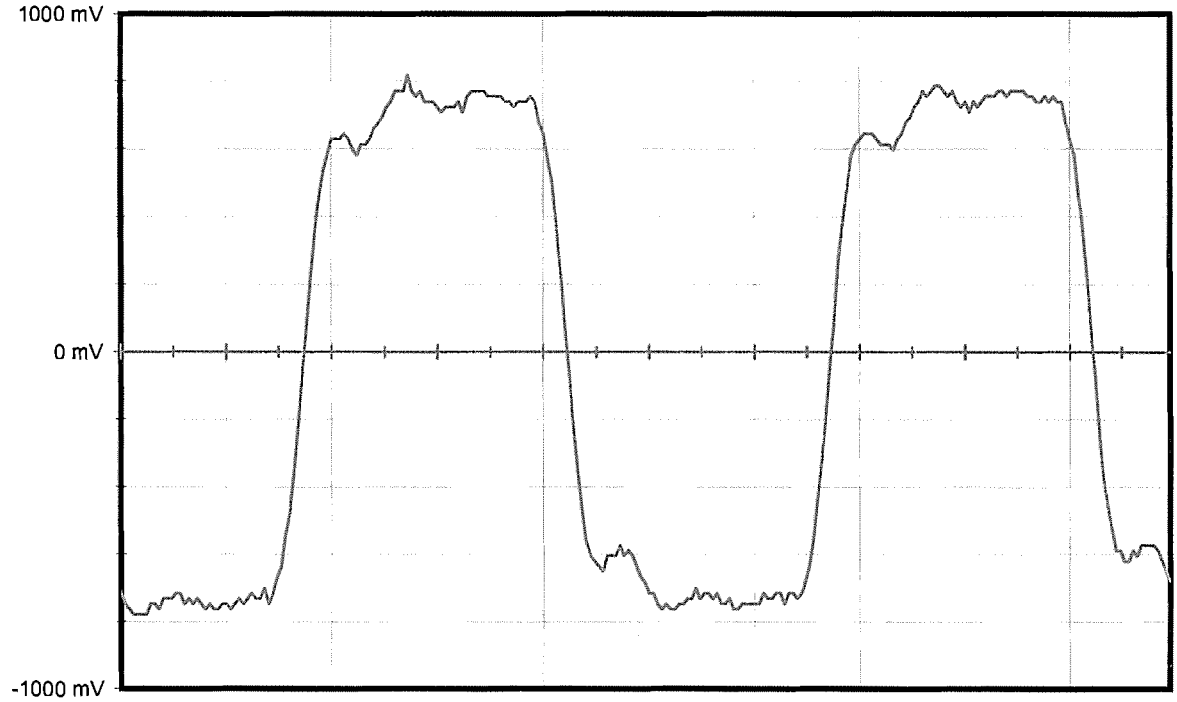
Electrical and other parameters

CW preamble	ms	158,4 <	< 162,6	160,18
Total transmission time	ms	434,6 <	<445,4	440,32
Modulation frequency	Hz	395,4<	< 404,6	399,68
Phase deviation : total	rd		<=2,40	2,06
Phase deviation : positive	rd	1,00 <	< 1,20	1,05
Phase deviation : negative	rd	-1,20 <	< -1,00	-1,01
Symmetry measurement	%		<=5 %	0,00
Nominal frequency : F2	Hz			406027940,00
Short term2				2,51E-10
Short term3				2,97E-10
Slope				-6,86E-11
Residual				4,78E-10
406 MHz power output	dBm			35,5
Homing frequency	MHz			121,50
121,5 MHz power output	dBm			17,7
Soak temperature	°C			52,8
Extra feature				No

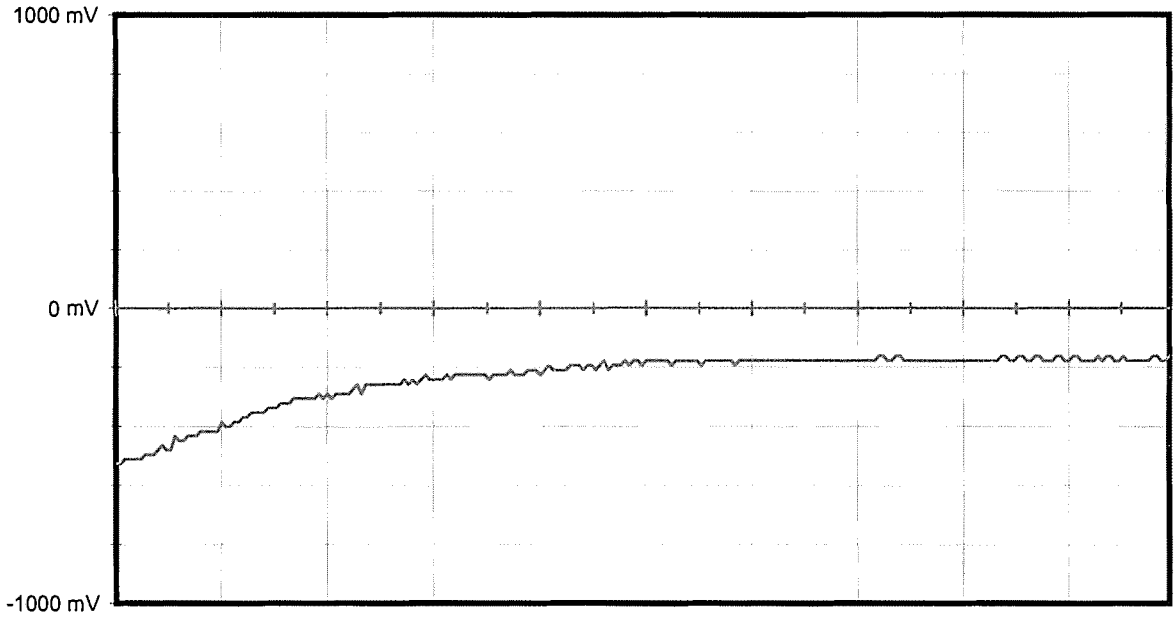




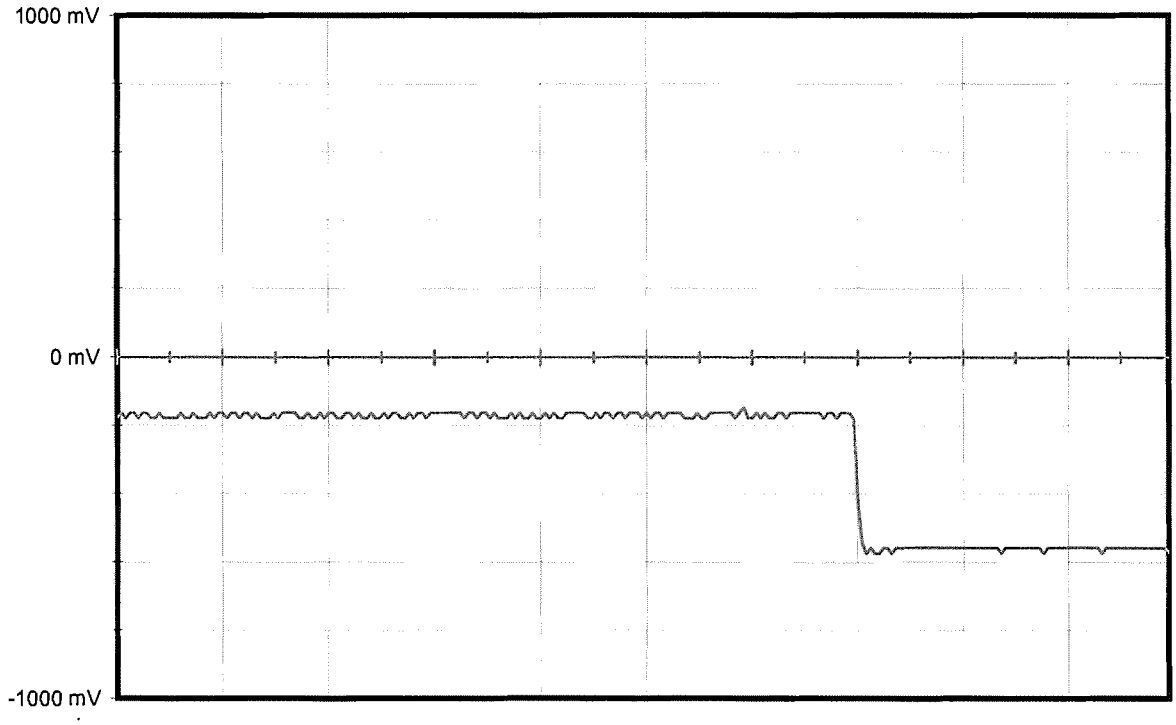
0 ms 10 ms 20 ms
Vmarker1 850 mv ==> 1,2 rd 2 ms/div.
Vmarker2 700 mv ==> 1 rd



8 ms 10,5 ms 13 ms
Duty Cycle : 4,008E-06 0,5 ms/div.
falltime(1)<= 209,58 us risetime(1)<= 229,541 us
+width(1) 1,2475 ms -widht(1) 1,24751 ms



-1 ms 1,5 ms 4 ms
risetime(1)<= 1786,43 us 0,5 ms/div.

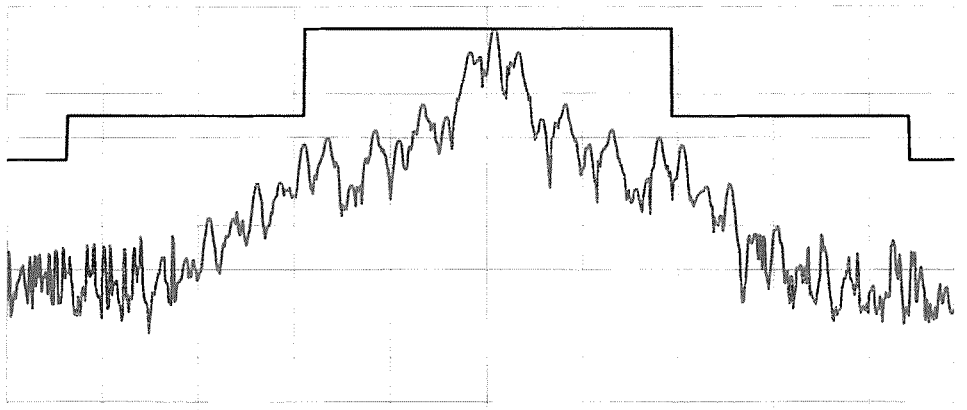


-3,5 ms -1 ms 1,5 ms
falltime(1)<= 29,9399 us 0,5 ms/div.

SPURIOUS EMISSIONS RESULTS
MT400 STANDARD COMMUNICATIONS PTY. LTD. EPIRB
N° C204
at -20° C, 22° C and 55° C

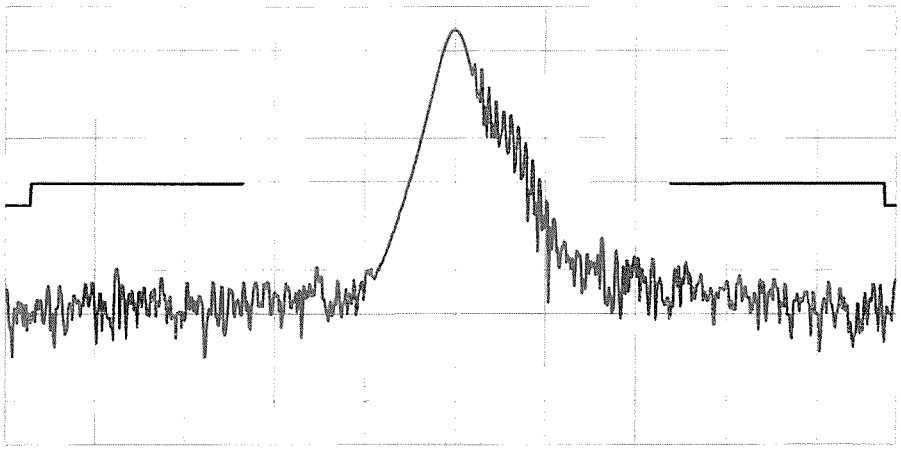
STANDARD COMMUNICATIONS PTY. LTD.
MT400
C204
Certification nominale
406 MHz
-20 °C

CF : 406,028 MHz SP : 16 KHz



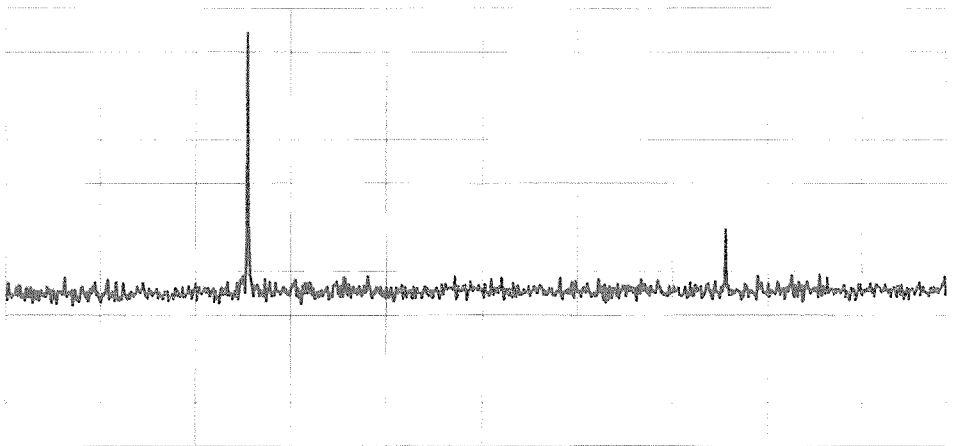
Rb : 0,1 KHz 10 dB/div. St : 4,8 S

CF : 406,028 MHz SP : 50 KHz



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

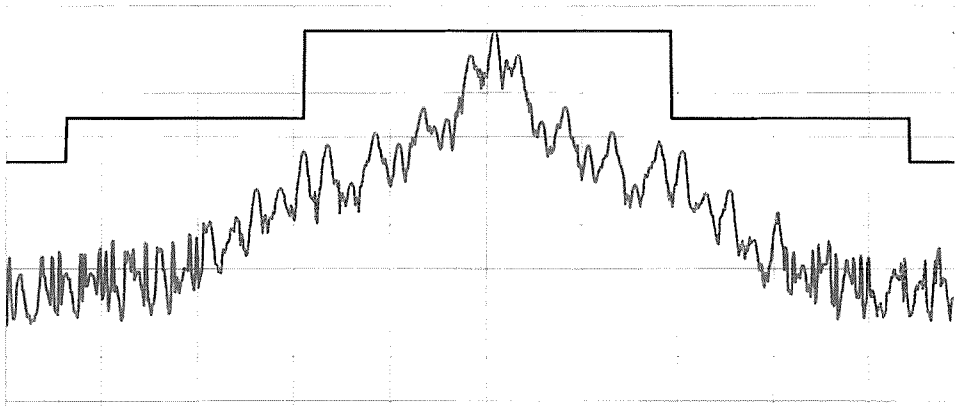
CF : 600 MHz Delta : -44,83 dB SP : 800000 KHz



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

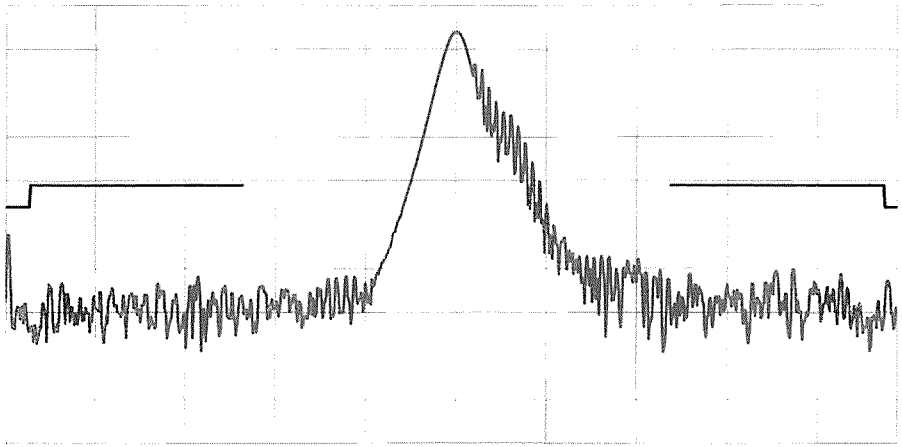
STANDARD COMMUNICATIONS PTY. LTD.
MT400
C204
Certification nominale
406 MHz
22 °C

CF : 406,028 MHz SP : 16 KHz



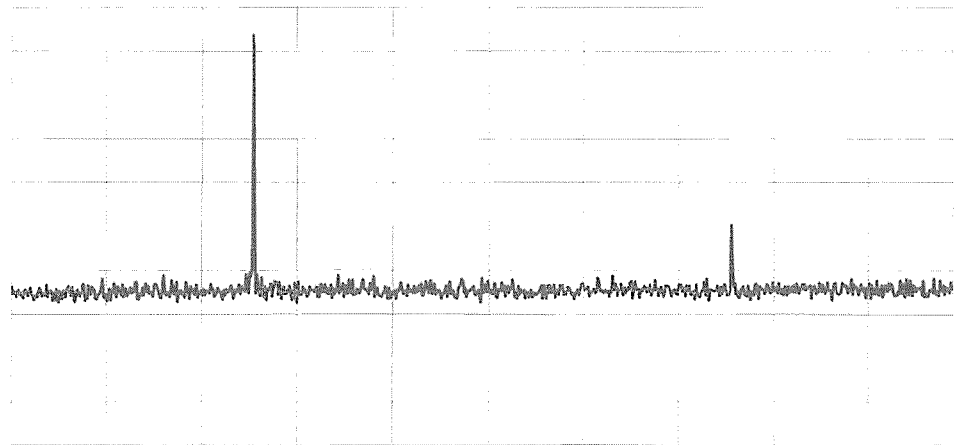
Rb : 0,1 KHz 10 dB/div. St : 4,8 S

CF : 406,028 MHz SP : 50 KHz



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

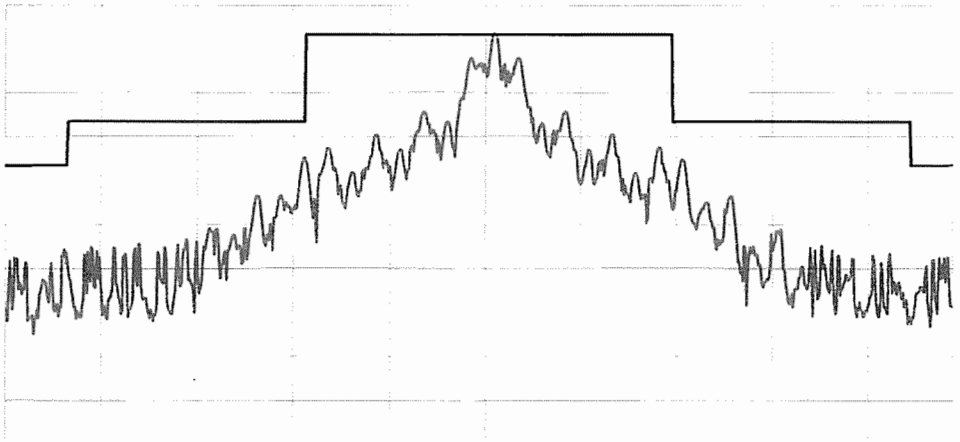
CF : 600 MHz Delta : -43,34 dB SP : 800000 KHz



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

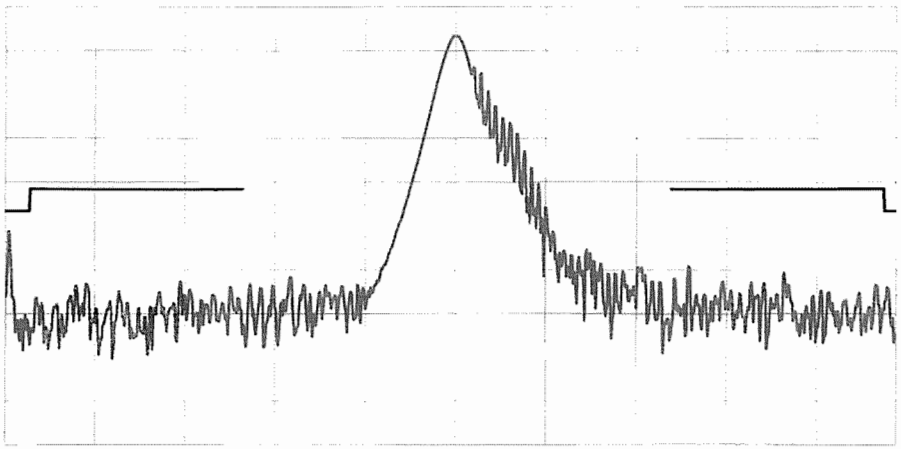
STANDARD COMMUNICATIONS PTY. LTD.
MT400
C204
Certification nominale
406 MHz
55 °C

CF : 406,028 MHz SP : 16 KHz



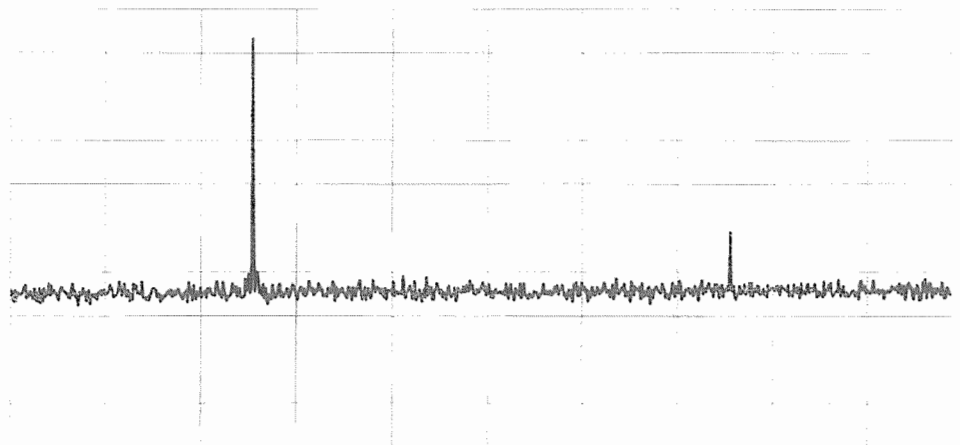
Rb : 0,1 KHz 10 dB/div. St : 4,8 S

CF : 406,028 MHz SP : 50 KHz



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

CF : 600 MHz Delta : -44,13 dB SP : 800000 KHz



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

406 MHz VSWR 3:1 TEST RESULTS ON
MT400 STANDARD COMMUNICATIONS PTY. LTD. EPIRB
N° C204

at -20° C, 22° C and 55° C

Certification Test VSWR at -20°C Date of test : 10 Apr 2003

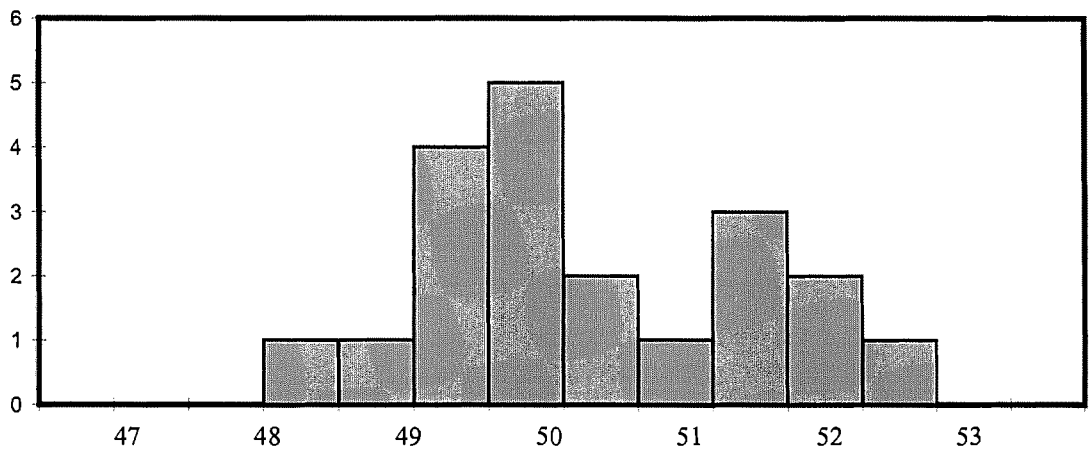
Manufacturer : Standard-Communications
Beacon Type : MT400
Number : C204

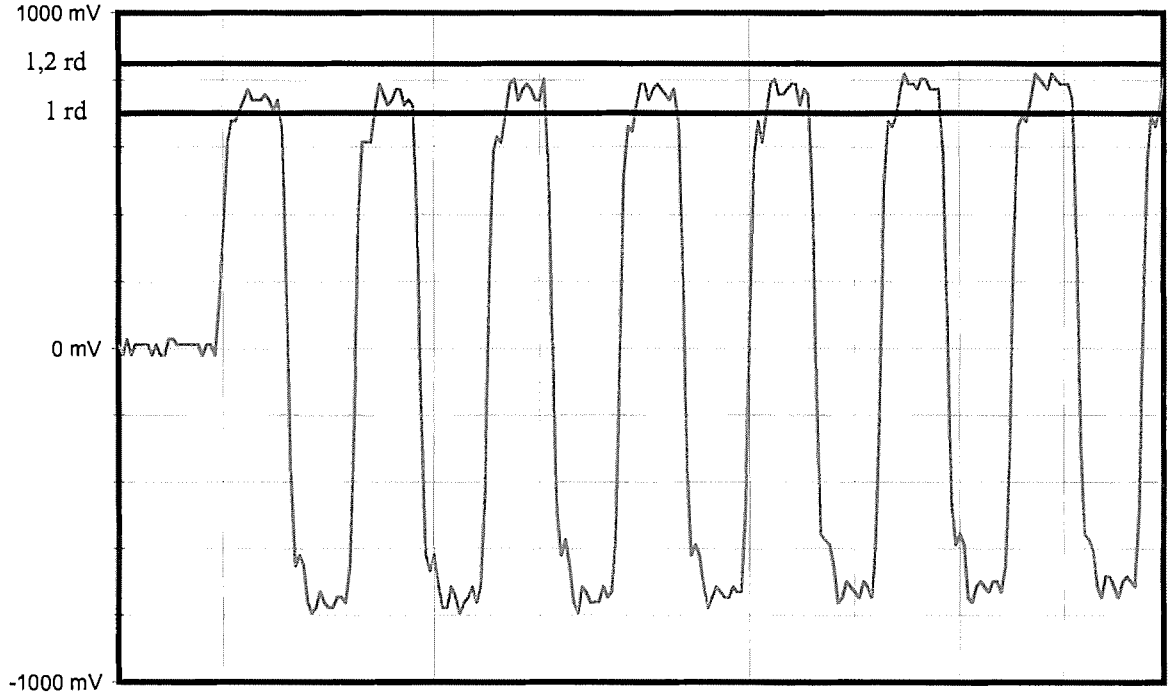
Message

Message received		FFFE2F5F7F03C480000009C00400
Format Flag	25	0
Protocol flag	26	1
Ident./Position code	27-85	BEFE07890000001
Country Code/Country	27-36	503 /
Protocol Code : U/Std-Nat	37-39/37-40	111
Protocol Code Used	37-39/37-40	Test
Identification Data	40-85/41-64/41-58	1E
Identification Used		:::::::
Calculated BCH1	25-85	70010
Readed BCH1	86-106	70010
Homing	84-85	01
Em.cod/nat.use/supp.data	107-112	000000
Emer cod / Encod pos data	107	0
Activation type	108	0
Calculated BCH2	107-132	
Readed BCH2	147-144	
Latitude position		
Longitude position		
Delta position		

Electrical and other parameters

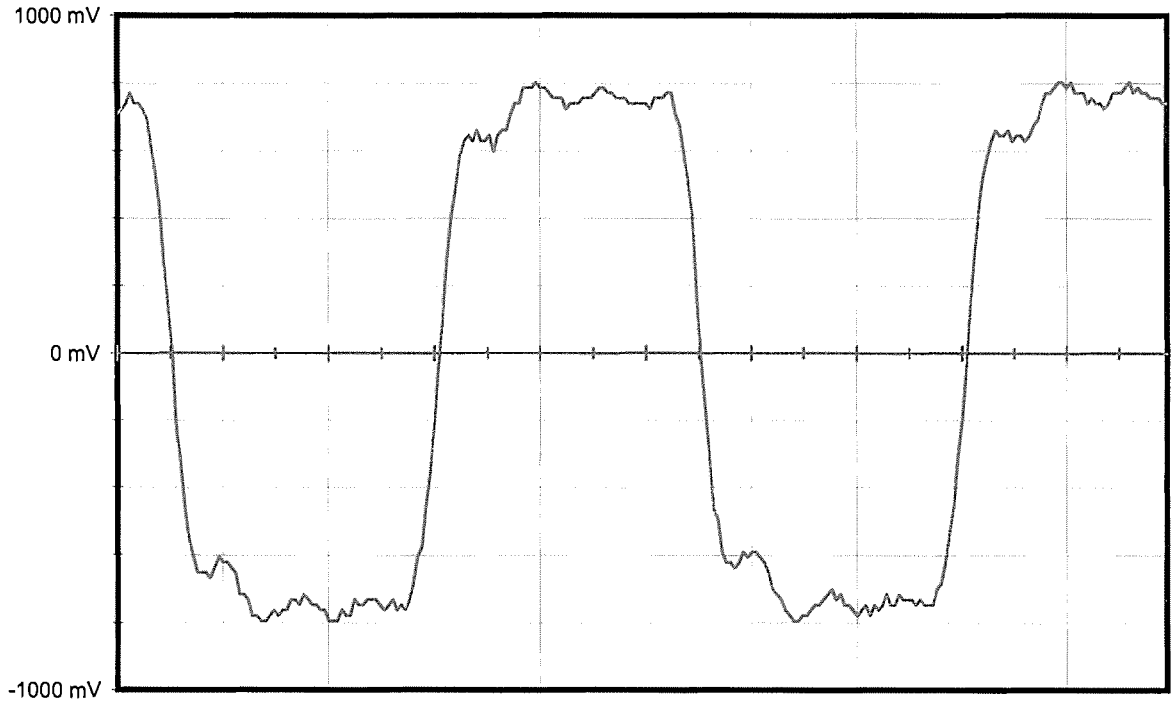
Rise time Modulation	ms			0,2196
Fall time Modulation	ms			0,1996
Phase deviation :positive	rd	1,00 <	< 1,20	1,04
Phase deviation : negative	rd	-1,20 <	< -1,00	-1,16
Symmetry measurement	%		<=5 %	1,20
Nominal frequency : F2	Hz			406027943,88





Vmarker1 850 mv ==> 1,2 rd
Vmarker2 700 mv ==> 1 rd

2 ms/div.



Duty Cycle : 0,01204412
falltime(1)<= 199,601 us
+width(1) 1,22755 ms

0,5 ms/div.
risetime(1)<= 219,561 us
-widht(1) 1,25748 ms

Certification Test VSWR at 22°C Date of test : 31 mars 2003

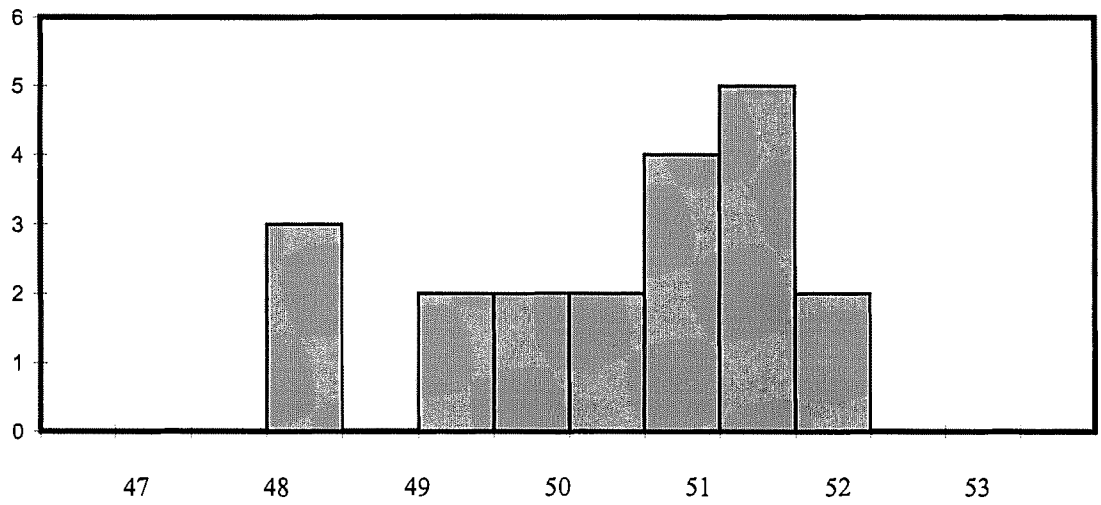
Manufacturer : Standard-Communications
Beacon Type : MT400
Number : C204

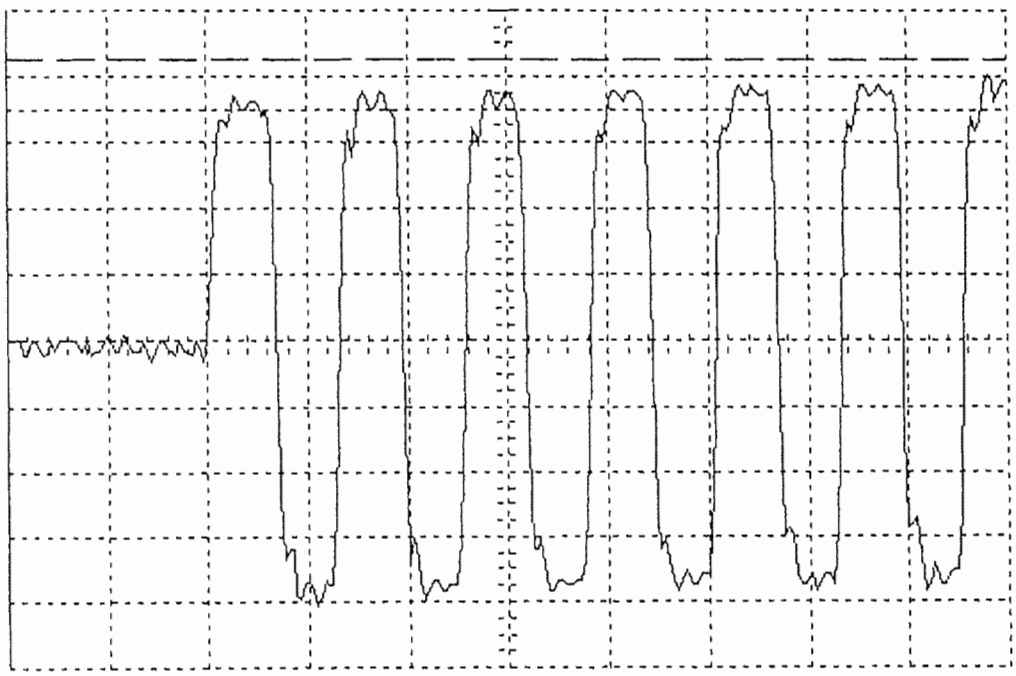
Message

Message received		FFFE2F5F7F03C480000009C00400
Format Flag	25	0
Protocol flag	26	1
Ident./Position code	27-85	BEFE07890000001
Country Code/Country	27-36	503 /
Protocol Code : U/Std-Nat	37-39/37-40	111
Protocol Code Used	37-39/37-40	Test
Identification Data	40-85/41-64/41-5	1E
Identification Used		:::::::
Calculated BCH1	25-85	70010
Readed BCH1	86-106	70010
Homing	84-85	01
Em.cod/nat.use/supp.data	107-112	000000
Emer cod / Encod pos data	107	0
Activation type	108	0
Calculated BCH2	107-132	
Readed BCH2	147-144	
Latitude position		
Longitude position		
Delta position		

Electrical and other parameters

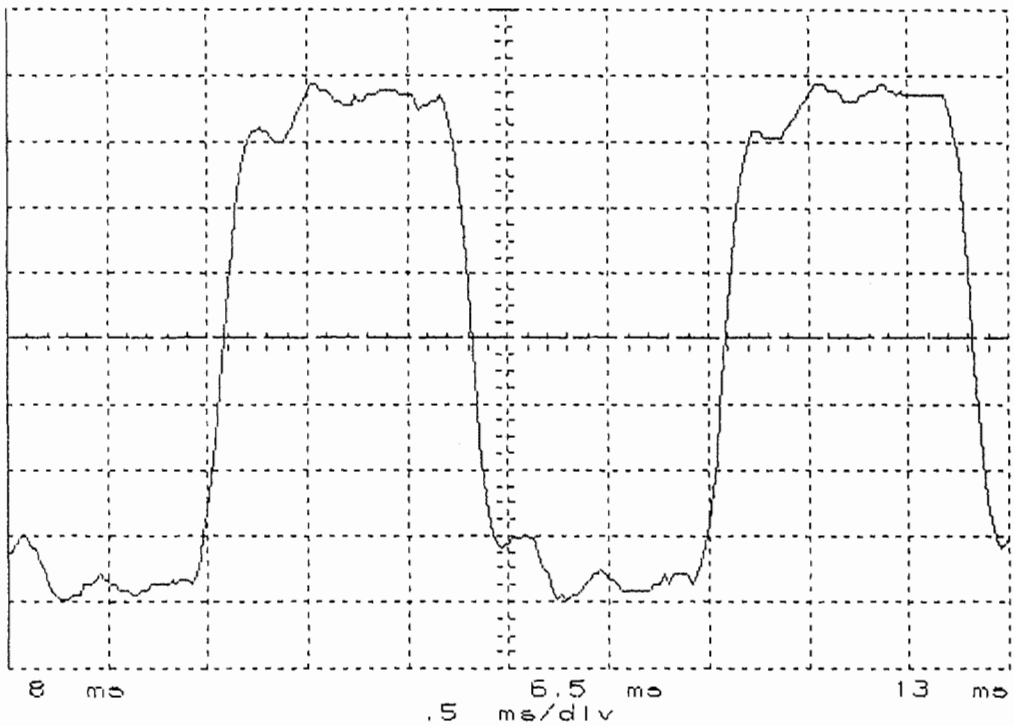
Rise time Modulation	ms			0,2096
Fall time Modulation	ms			0,2196
Phase deviation :positive	rd	1,00 <	< 1,20	1,03
Phase deviation : negative	rd	-1,20 <	< -1,00	-1,07
Symmetry measurement	%		<=5 %	1,20
Nominal frequency : F2	Hz			406027943,88





Vmarker2(1) 700 mv ==> 1 rd
Vmarker1(1) 850 mv ==> 1.2 rd

DUTY CYCLE : .011952191235



falltime(1) <= 209.58 us risetime(1) <= 219.56 us
+width(1) 1.23752 ms -width(1) 1.26746 ms

Certification Test VSWR at 55°C Date of test : 11 Apr 2003

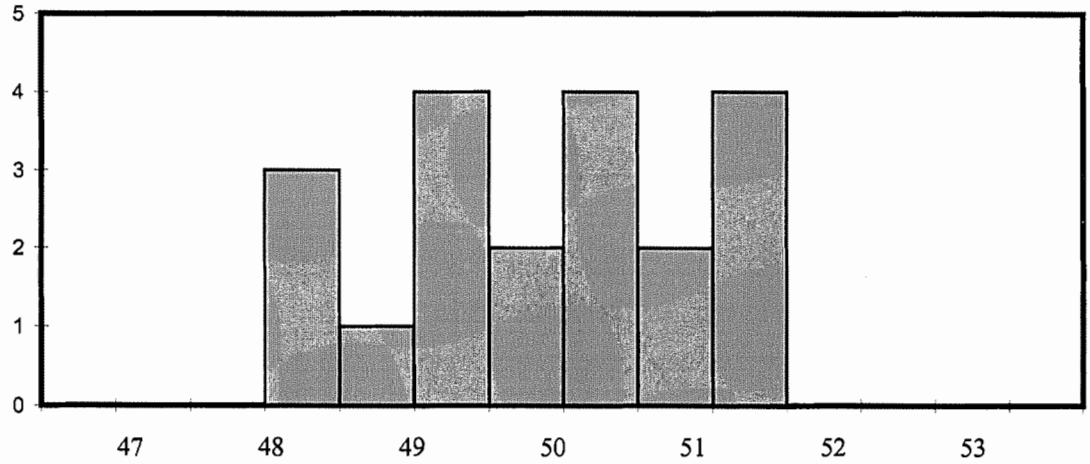
Manufacturer : Standard-Communications
Beacon Type : MT400
Number : C204

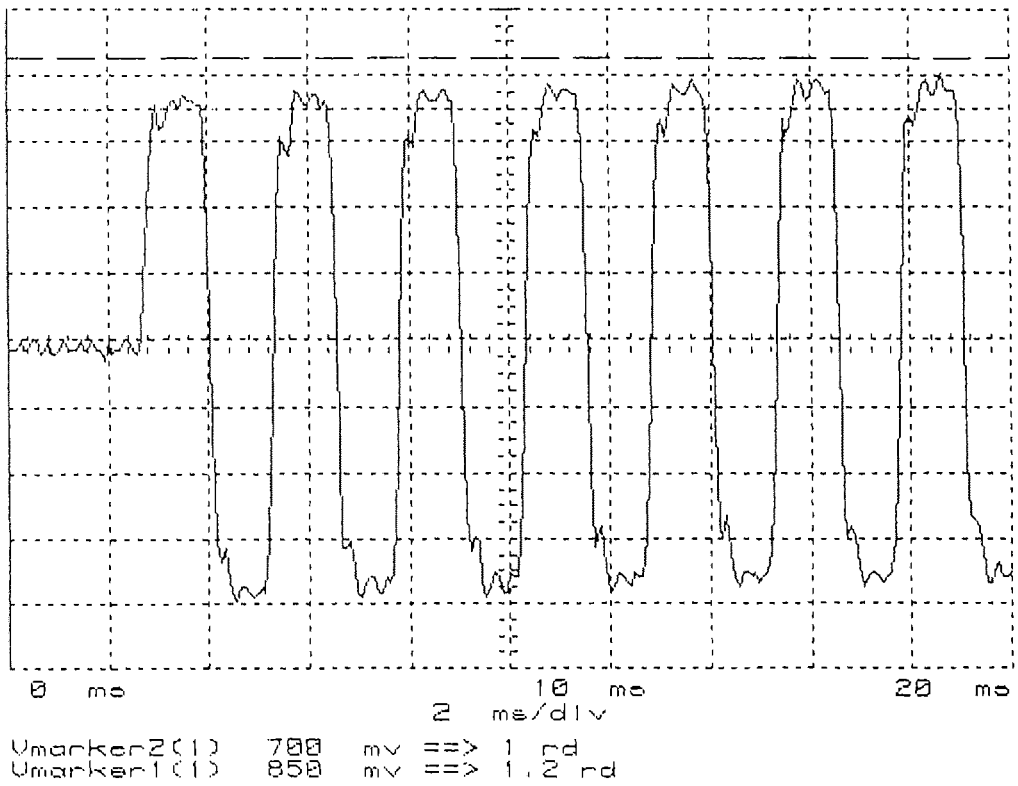
Message

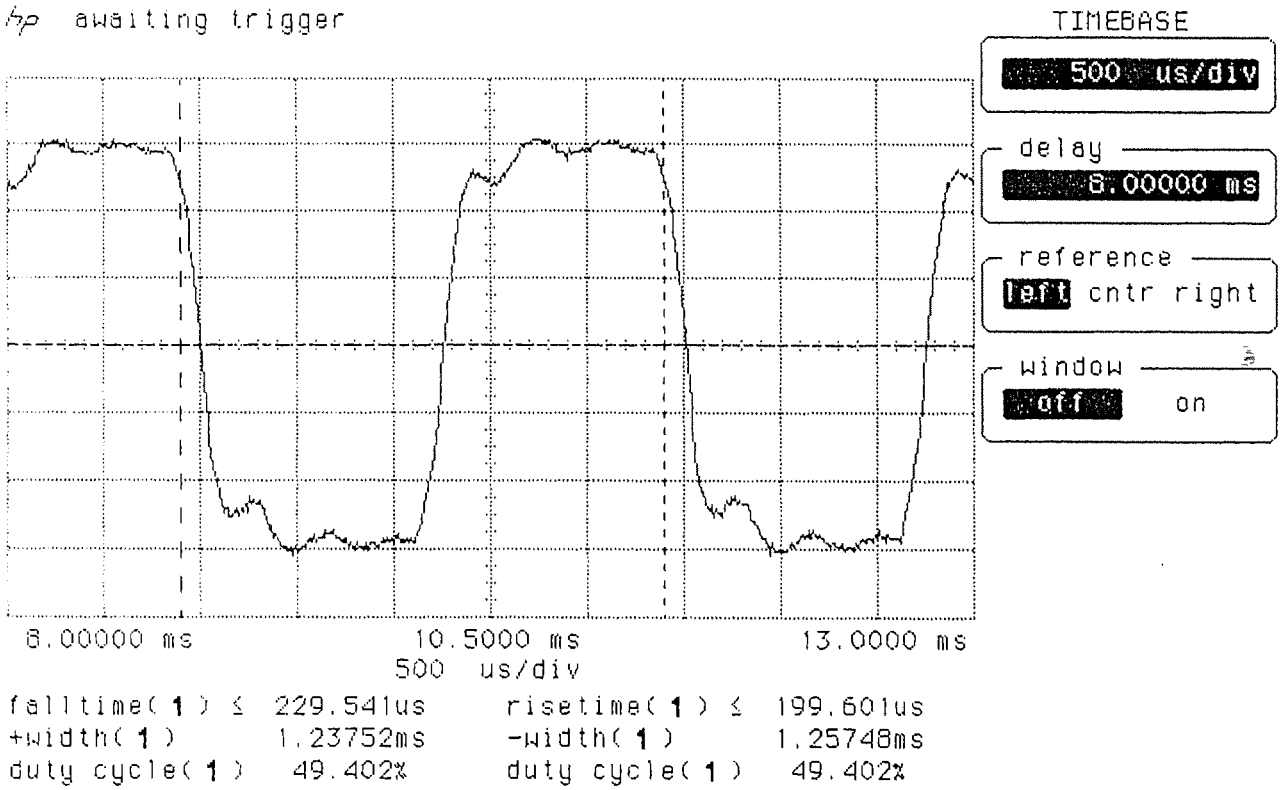
Message received		FFFE2F5F7F03C480000009C00400
Format Flag	25	0
Protocol flag	26	1
Ident./Position code	27-85	BEFE07890000001
Country Code/Country	27-36	503 /
Protocol Code : U/Std-Nat	37-39/37-40	111
Protocol Code Used	37-39/37-40	Test
Identification Data	40-85/41-64/41-58	1E
Identification Used		:::::::
Calculated BCH1	25-85	70010
Readed BCH1	86-106	70010
Homing	84-85	01
Em.cod/nat.use/supp.data	107-112	000000
Emer cod / Encod pos data	107	0
Activation type	108	0
Calculated BCH2	107-132	
Readed BCH2	147-144	
Latitude position		
Longitude position		
Delta position		

Electrical and other parameters

Rise time Modulation	ms			0,1996
Fall time Modulation	ms			0,2295
Phase deviation :positive	rd	1,00 <	< 1,20	1,05
Phase deviation : negative	rd	-1,20 <	< -1,00	-1,02
Symmetry measurement	%		<=5 %	0,80
Nominal frequency : F2	Hz			406027938,97




0 ms
10 ms
20 ms
2 ms/div
Vmarker2(1) 700 mv ==> 1 rd
Vmarker1(1) 850 mv ==> 1.2 rd


awaiting trigger
TIMEBASE
500 us/div
delay
8.00000 ms
reference
left cntr right
window
off on
8.00000 ms
10.5000 ms
13.0000 ms
500 us/div
falltime(1) ≤ 229.541us
+width(1) 1.23752ms
duty cycle(1) 49.402%
risetime(1) ≤ 199.601us
-width(1) 1.25748ms
duty cycle(1) 49.402%

SELF-TEST MODE CONTROL ON
MT400 STANDARD COMMUNICATIONS PTY. LTD. EPIRB
N° C204

at 22° C

intespace
L'Intelligence de l'Environnement

Message at 22°C

Manufacturer	Standard-Communications
Beacon model	MT400
Serial number	C204
Date of test	2 Apr 2003
Temperature	23,4
Message received	FFFED05F7F03C480000009C00400
Frame synchro. pattern	011010000

Total transmission time	ms 434.6<	ms 445.4<	440,12

406 MHz BEACON SELF-TEST CHARACTERISTICS

406 MHz beacon Model(s) : MT400

	Answer (X) Yes	No
1. Does beacon have a self-test mode ?	☑	☐
If yes :		
• does self-test have a separate switch position ?	☑	☐
• does self-test switch automatically return to normal position when released ? if not, how long until the first "distress" message is emitted :	☑	☐
• does self-test transmit a 406 MHz signal ?	☑	☐
if yes :		
- unmodulated signal only	☐	☑
- normal data, but with inverted frame synchronization pattern	☑	☐
- 1 burst only	☑	☐
• does self-test transmit a 121.5 MHz signal ?	☑	☐
if yes :		
- for less than 1 second	☑	☐
- continually while self-test switch is actived	☐	☑
- other (please specify) : Unmodulated at peak RF power	☑	
• does self-test transmit any other frequency (e.g. 243 MHz) ?	☐	☑
2. Result of self-test is indicated by :		
• pass/fail display indicator light	☑	☐
• strobe light flash	☑	☐
• other (please specify) : Audible annunciator	☑	
3. Can the self-test be performed without removing the beacon from its mounting bracket ?	☑	☐
4. What parameters are internally tested by the self-test ?		
• battery voltage	☑	☐
• RF power	☑	☐
• approximate RF frequency	☐	☑
• phase locked loop	☑	☐
• other (please specify) : System User data (eg UIN) memory parity check	☑	
5. Do the above characteristics apply to this beacon model :		
• **for all countries where beacon is sold ,** if no, please specify :	☑	☐
• **for all production serial numbers ?** if no, specify :	☑	☐

6. Comments

THERMAL SHOCK TEST RESULT ON
MT400 STANDARD COMMUNICATIONS PTY. LTD. EPIRB
N° C204

22°C to -8°C

Temperature Soak : 22°C
Temperature Measure : -8°C

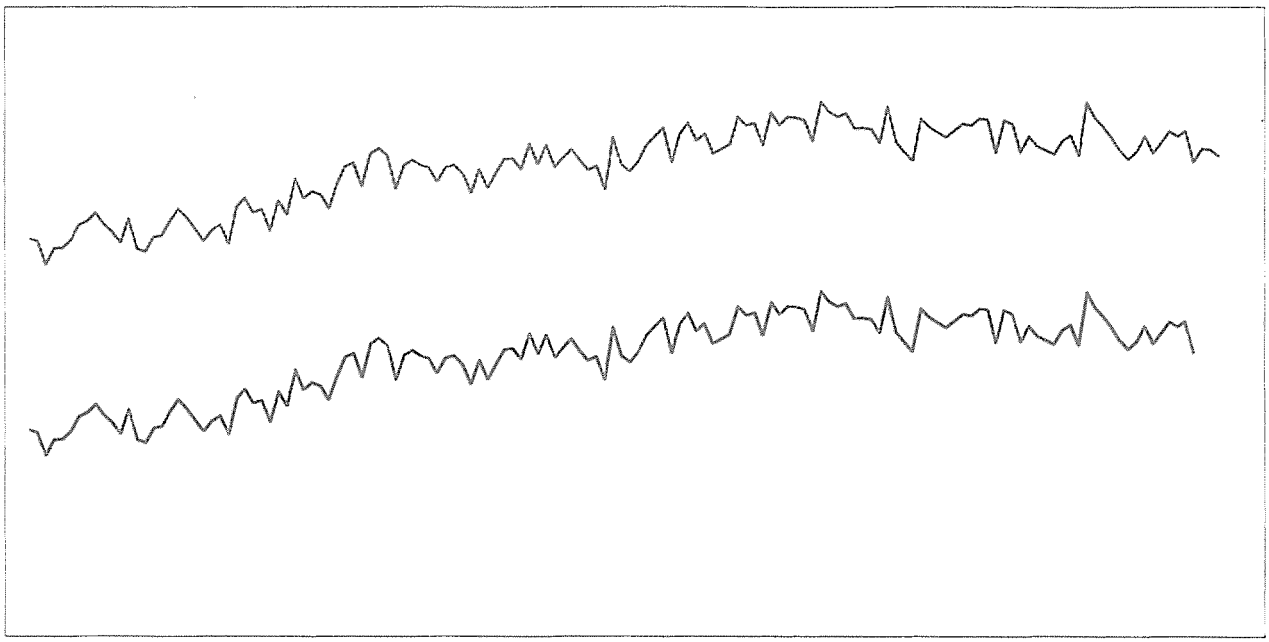
No	Δ Frequency (Hz)	Temp. (°C)	P406 (dBm)	P121.5 (dBm)
1	49945,48	-8,9	36,3	18,5
2	49944,90	22,8	36,3	18,5
3	49945,58	22,9	36,2	18,5
4	49945,61	22,9	36,3	18,4
5	49945,79	22,9	36,2	18,5
6	49946,40	22,9	36,2	18,5
7	49946,00	22,9	36,2	18,4
8	49946,29	22,9	36,1	18,4
9	49947,18	23,0	36,2	18,3
10	49947,55	22,9	36,1	18,2
11	49947,33	23,0	36,1	18,3
12	49946,87	22,9	36,1	18,4
13	49947,88	23,0	36,1	18,4
14	49947,30	22,0	36,1	18,3
15	49948,10	22,1	36,0	18,4
16	49948,15	22,0	36,1	18,4
17	49948,16	22,1	36,0	17,9
18	49949,03	22,1	36,0	17,8

No	Temp.	Slope	Sigma	P406	Short term	P121.5
1	22,2	6,3E-10	7,8E-10	36,1	1,8E-10	18,4
18	22,1	4,7E-11	6,6E-10	35,9	2,1E-10	18,3
31	22,1	1,2E-10	6,5E-10	35,9	2,5E-10	18,0
61	22,0	2,3E-11	6,3E-10	35,8	1,7E-10	18,3
91	21,8	8,9E-11	6,4E-10	35,8	2,6E-10	18,3
121	22,0	2,5E-12	7,4E-10	35,8	1,9E-10	18,3

Beacon message at the end of Thermal Shock Test :
FFFE2F5F7F03C480000009C00400

Frequency variation

406024958



406024946

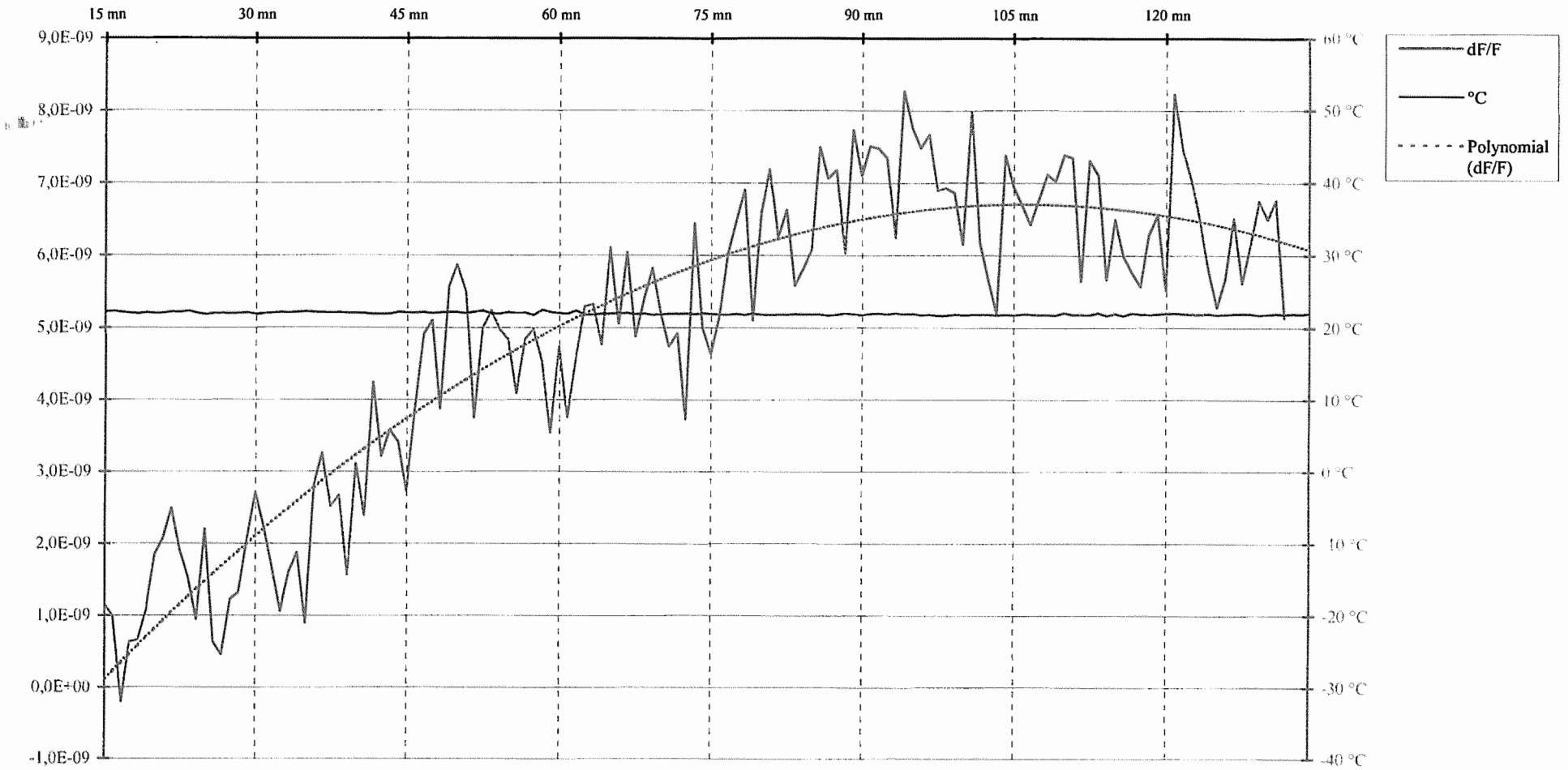
Initial tracing Smoothed tracing

THERMAL SHOCK TEST / 30 °C change (22 °C to -8 ° C)

Manufacturer : STANDARD COMMUNICATIONS PTY. LTD.
Model : MT400
Number : C204

Date : 8 Apr 2003
Time : 11:02:36

FREQUENCY VARIATION

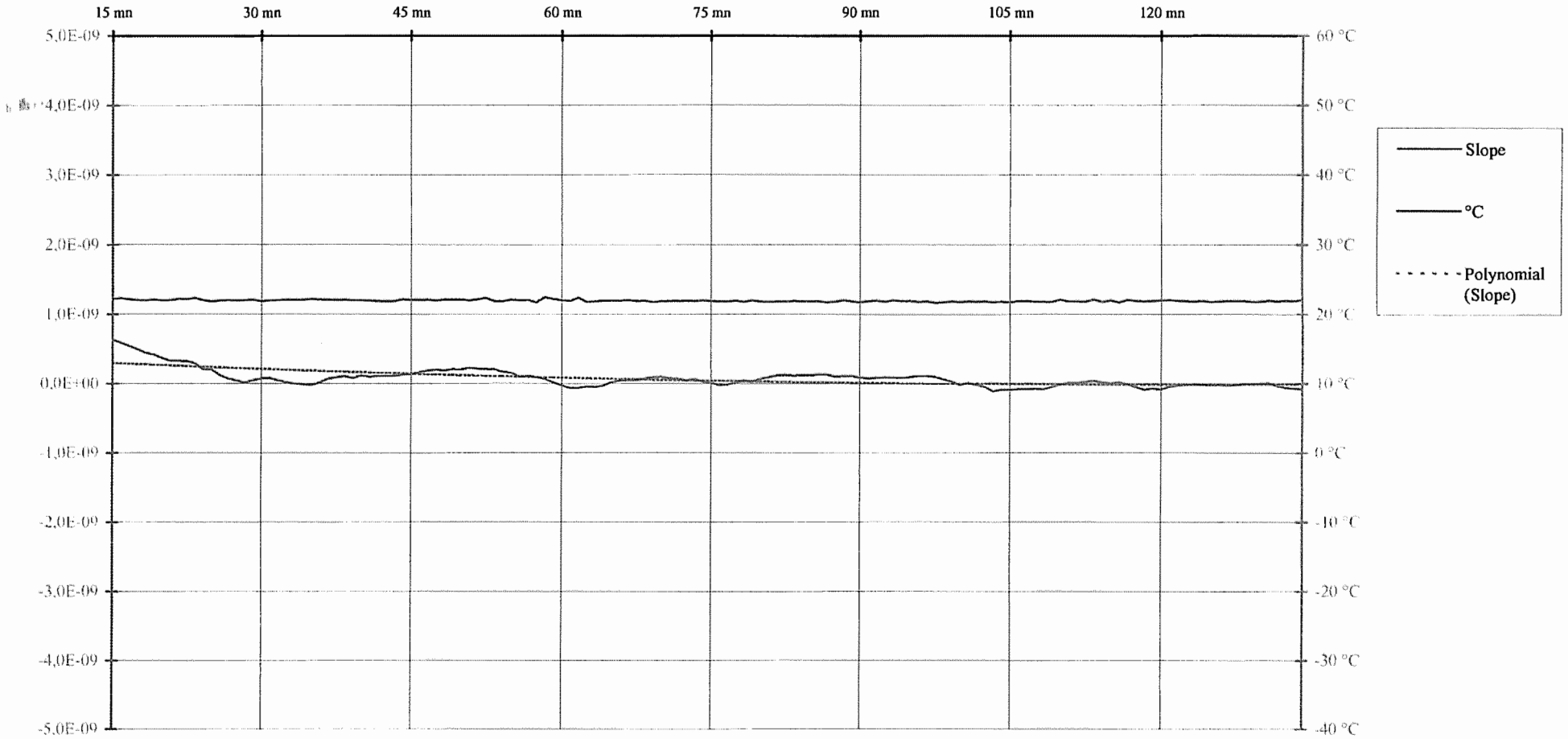


THERMAL SHOCK TEST / 30 °C change (22 °C to -8 ° C)

Manufacturer : STANDARD COMMUNICATIONS PTY. LTD.
Model : MT400
Number : C204

Date : 8 Apr 2003
Time : 11:02:36

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

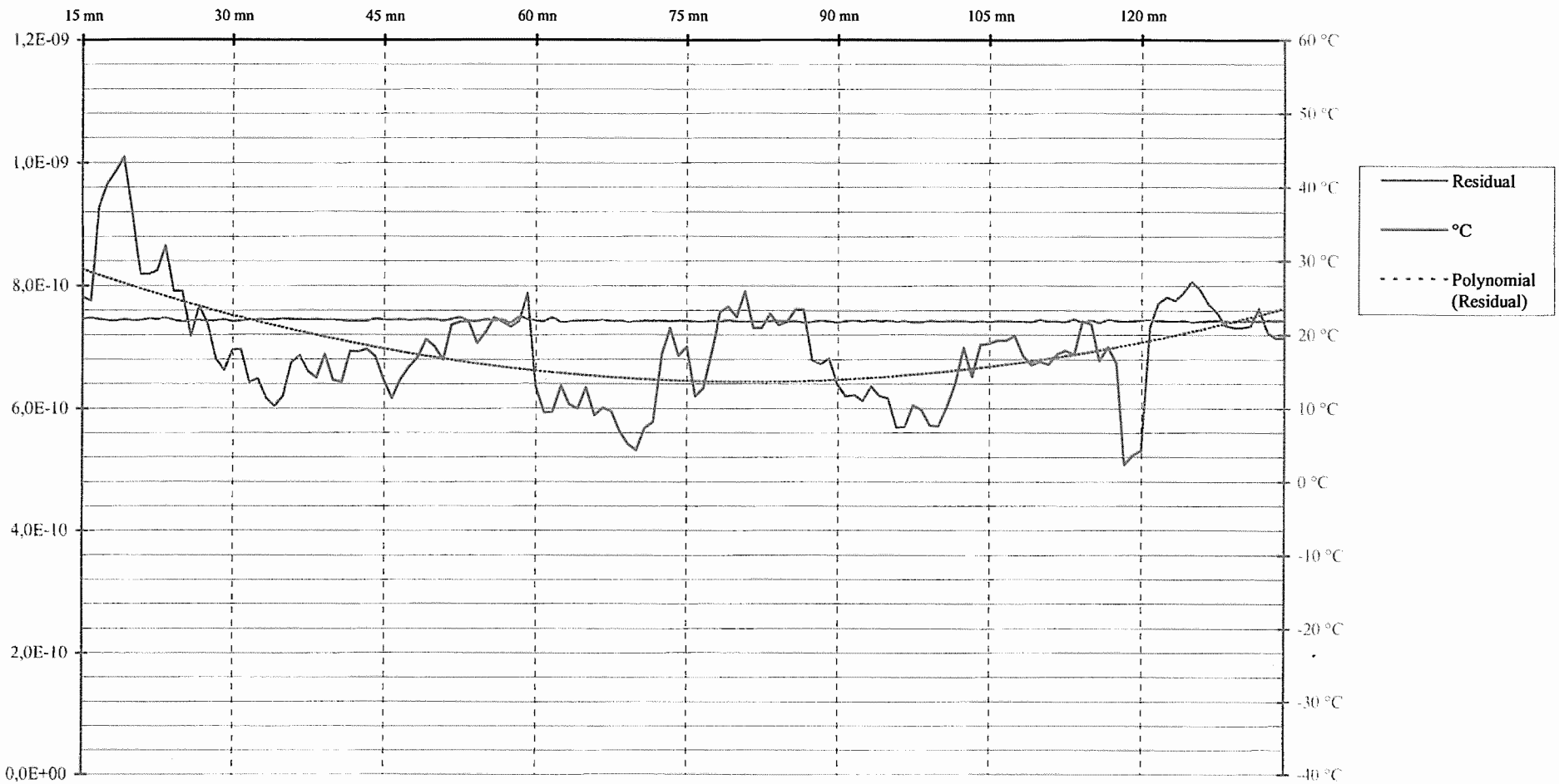


THERMAL SHOCK TEST / 30 °C change (22 °C to -8 ° C)

Manufacturer : STANDARD COMMUNICATIONS PTY. LTD.
Model : MT400
Number : C204

Date : 8 Apr 2003
Time : 11:02:36

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

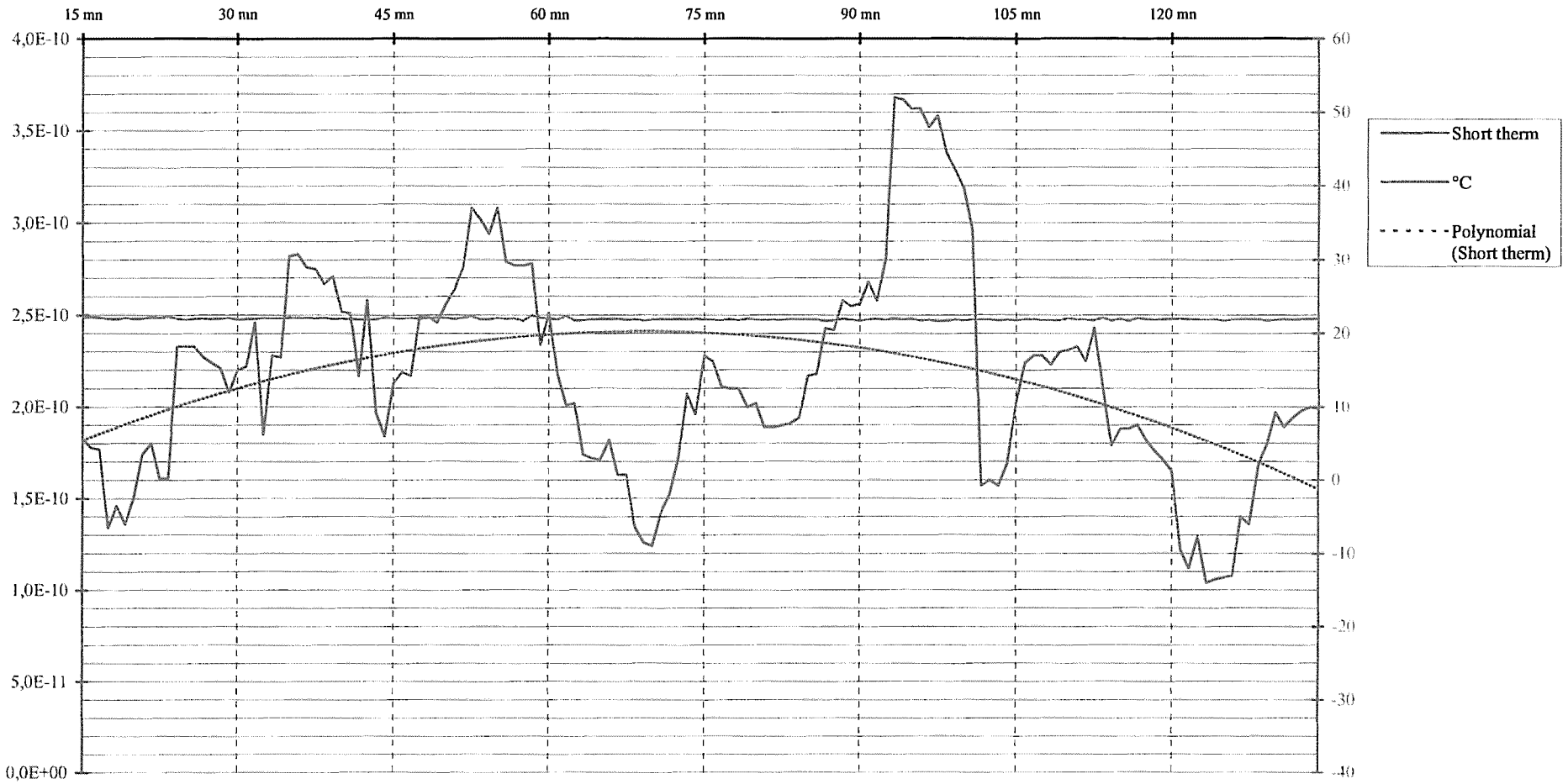


THERMAL SHOCK TEST / 30 °C change (22 °C to -8 ° C)

Manufacturer : STANDARD COMMUNICATIONS PTY. LTD.
Model : MT400
Number : C204

Date : 8 Apr 2003
Time : 11:02:36

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

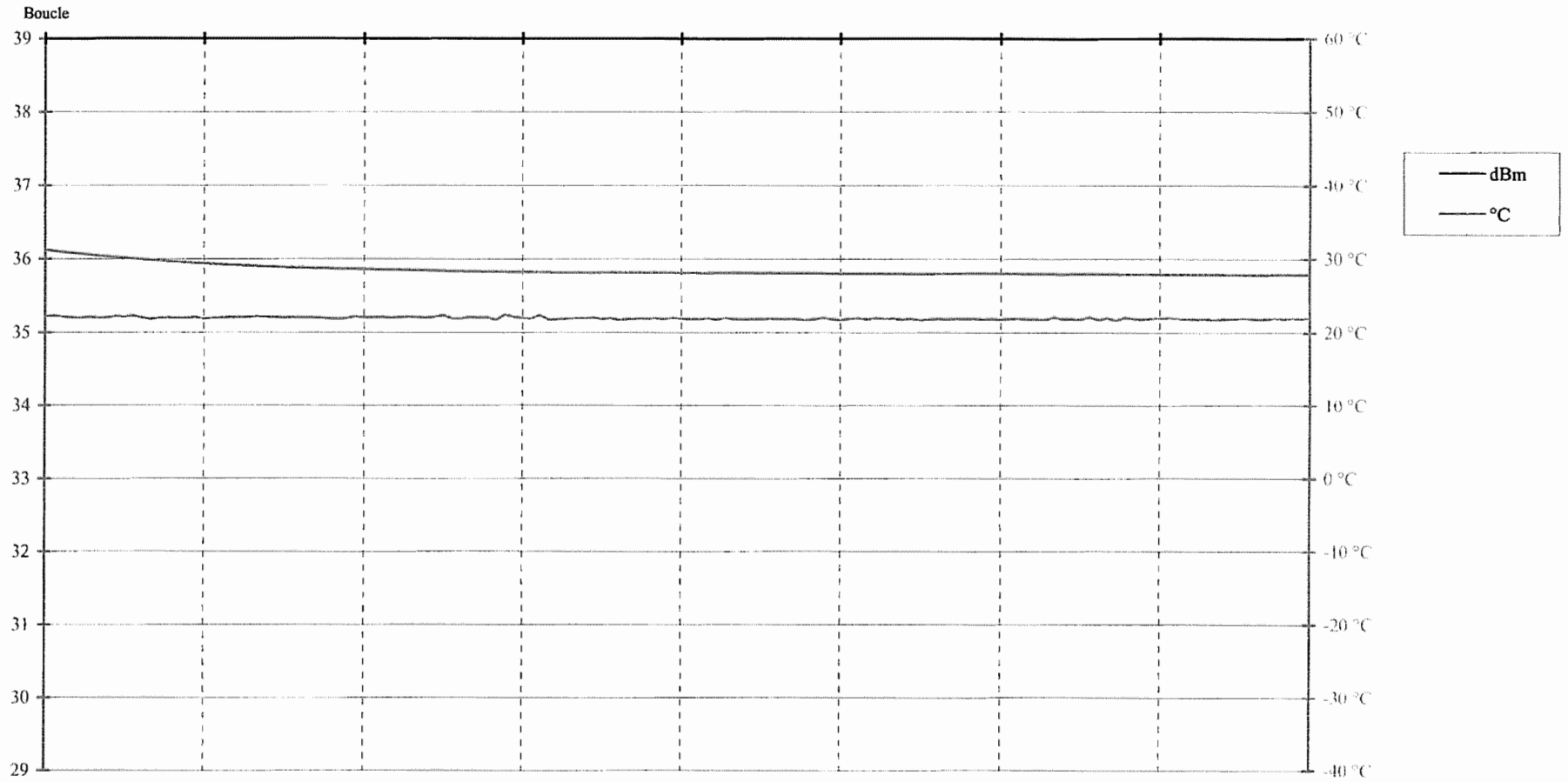


THERMAL SHOCK TEST / 30 °C change (22 °C to -8 ° C)

Manufacturer : STANDARD COMMUNICATIONS PTY. LTD.
Model : MT400
Number : C204

Date : 8 Apr 2003
Time : 11:02:36

OUTPUT POWER (35 to 39 dBm)



OPERATING LIFE TEST RESULTS ON
MT400 STANDARD COMMUNICATIONS PTY. LTD. EPIRB
N° C204

-20 °C

Note : Before the Operating Life Test the batteries have been discharged during 4hrs 26minutes with beacon on normal operation at ambient temperature following manufacturer note : "MT400 Qualification Testing" joint in Annex B