

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.
G. Peyrou*

Gérard PEYROU
TECHNOLOGIC TESTS DEPARTMENT

ATTENTION
NOUVELLE ADRESSE :
2 rond-point Pierre Guillaumat

Toulouse, 25 June 2003

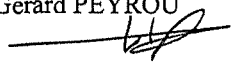
INTESPACE reference : M4586 Std Com

**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 : 22.07.03

By : André LOUÏL

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)

This document may not be reproduced other than in full .
It includes 92 pages and 2 annexes . A part of reproduction
must be submitted at the laboratory authorization .

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



Accréditation
N° 1-0743
Scope
given
on request

1 - ADMINISTRATION

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 - STANDARDS 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 Characteristic 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)

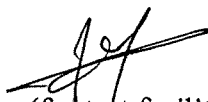
Chemistry : LiSO2
Manufacturer & model n° : SAFT / LO 26 SX
Size & number of cells : D Size / 2 Cells

Extra Features in Beacon	No	Yes	Details
a) Auxiliary Radio-Locating Device :	☐	☒	Frequency : 121.5 MHz Power : 17 dBm (50 Ω) Tx. Duty Cycle : Continuous (>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 : >0,75 Cd Flash rate : 20/21 per min
e) Self-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						
o bit sync	15 bits "1"	√	√	√	√	Data and graphs pages 17 to 26
o frame sync	9 bits (000101111)	√	√	√	√	
o format flag	1 bit	√	0	0	0	
o protocol flag	1 bit	√	1	1	1	
o identification/position code	59 bits	√	√	√	√	
o BCH code	21 bits	√	√	√	√	
o emerg. code/nat. use/supplem. data	6 bits	data bits	000000	000000	000000	
o additional data/BCH (if applicable)	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							
repetition rate :	minimum T _R =	47,5	seconds	48,0	48,5	49,0	Data and graphs pages 17 to 26
	maximum T _R =	52,5	seconds	52,5	52,0	52,5	
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	
total transmission time :	short message =	435.6 - 444.4	ms	440,59	440,43	440,32	
	long message (optional) =	514.8 - 525.2	ms				
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	
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						
o biphas-L		√	√	√	√	Data and graphs 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 limits
o phase deviation : negative	- (1.0 to 1.2)	radians	- 1,16	- 1,07	- 1,01	
o symmetry measurement	≤ 0.05		+ 0,0080	+ 0,0120	4E-06	
5 - 406 MHz TRANSMITTED FREQUENCY						
o nominal value	as specified in C/S T.001 and C/S T.012	MHz	406,0279447	406,0279432	406,0279400	Data pages 18, 21 and 24
o short term stability	≤ 2 x 10 ⁻⁹	/100 ms	2,55E-10	3,41E-10	2,97E-10	
o medium term stability . slope	(-1 to +1) x 10 ⁻⁹	/minute	-7,62E-11	-7,45E-11	-6,86E-11	
. residual frequency variation	≤ 3 x 10 ⁻⁹		3,32E-10	8,03E-10	4,78E-10	
6 - SPURIOUS EMISSION ** (into 50 ohms)						
o in-band (406.0 - 406.1 MHz)	see spurious emission mask in C/S T.001	√	√	√	√	See graphs pages 27 to 30

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 circuit, then while VSWR is 3:1, measure : o nominal transmitted frequency Modulation : o rise time o fall time o phase deviation : positive o phase deviation : negative o symmetry measurement o digital message						See data and graphs pages 31 to 37
	as specified in C/S T.001 and C/S T.012	MHz	406,0279439	406,0279439	406,0279390	
	50 - 250	microsec.	219,6	209,6	229,5	
	50 - 250	microsec.	199,6	219,6	199,6	
	+ (1.0 to 1.2)	radians	1,04	1,03	1,05	
	- (1.0 to 1.2)	radians	-1,16	-1,07	-1,02	Overshoot just in the spec limits
	≤ 0.05	✓	+ 0,0120	+ 0,0120	+ 0,0080	
	must be correct	✓	✓	✓	✓	
8 - SELF-TEST MODE (if applicable) o frame sync o format flag o single radiated burst o default position data (if applicable) o description provided o design data provided on protection against repetitive self-test mode transmissions o single burst verification o provides for beacon 15 Hex ID	9 bits (011010000)	✓	✓			Data pages 38 to 40
	1/0	bit	0			
	≤ 440 / 520 (+1%)	ms	440,12			
	must be correct	✓	✓			
	protection provided	✓	✓			Manufacturer doc.
	one burst	✓	✓			Annex B
	must be correct	✓	✓			Data page 39

A map of the state of Georgia with a small rectangle indicating the location of the study area in the northwestern part of the state.

Table C2 : SUMMARY OF 406 MHz BEACON TEST RESULTS

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

Table C2 : SUMMARY OF 406 MHz BEACON 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 ✓	≤ 1,5 seconds	Constructor explanations on Annex B (p 2&3 of ED030703-01 Doc
14 - SATELLITE QUALITATIVE TESTS ** o Results provided	successfully located by satellites / LUT	✓	✓	Data and graphs pages 74 to 82
15 - ANTENNA CHARACTERISTICS o Polarization	linear or RHCP	✓	✓	Antenna test report Annex A page 83
o VSWR	≤ 1.5	-	/	Just
o ERP _{max} EOL	≤ 20	Watts	20,5	
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)	✓		

Table C2 : SUMMARY OF 406 MHz BEACON TEST RESULTS

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 position data update interval	> 20	minutes		
o position 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 reactivated	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.

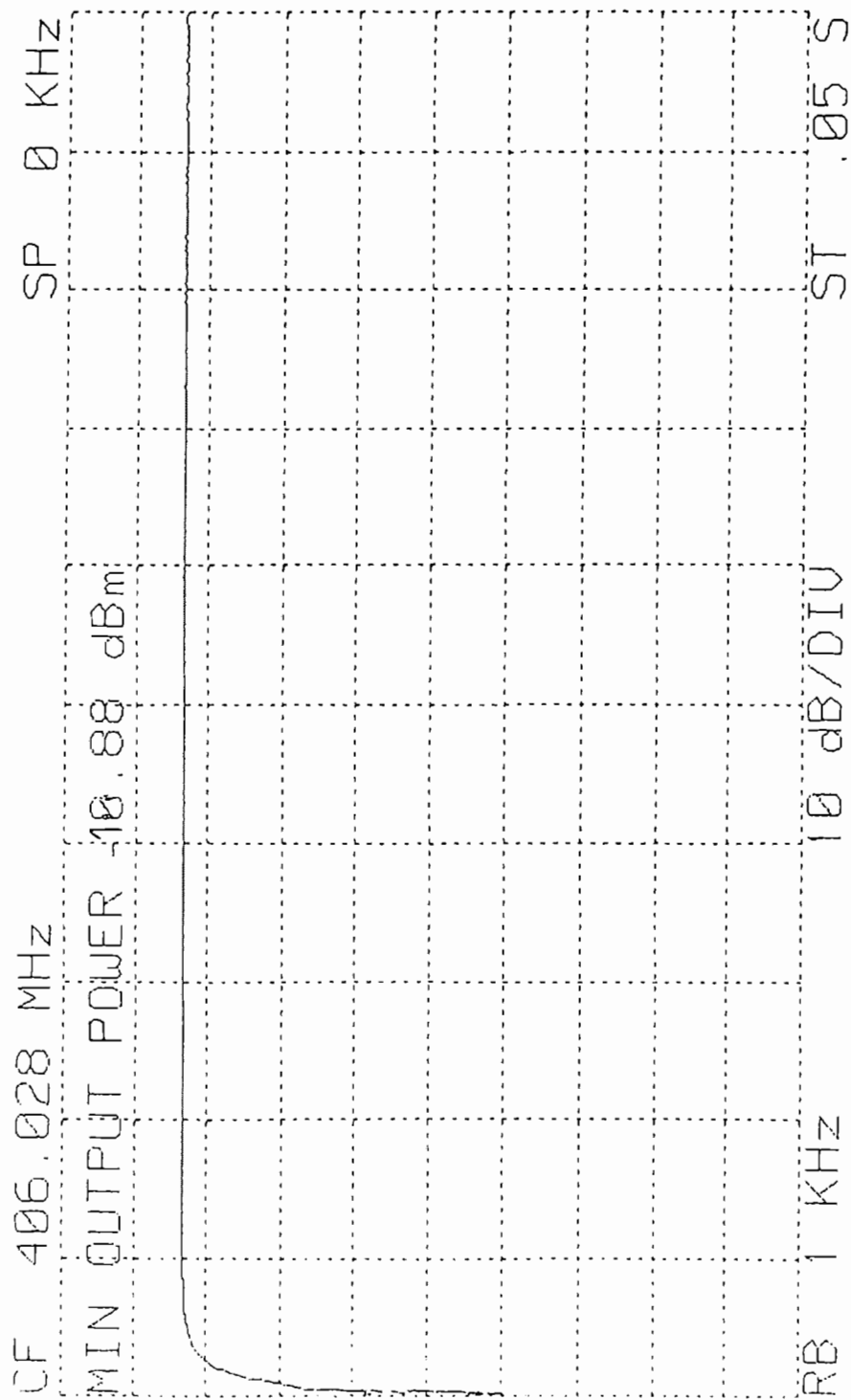
**TRANSMITTER OUTPUT POWER RISE TIME TEST RESULT ON
MT400 STANDARD COMMUNICATIONS PTY. LTD. EPIRB**

N° C204

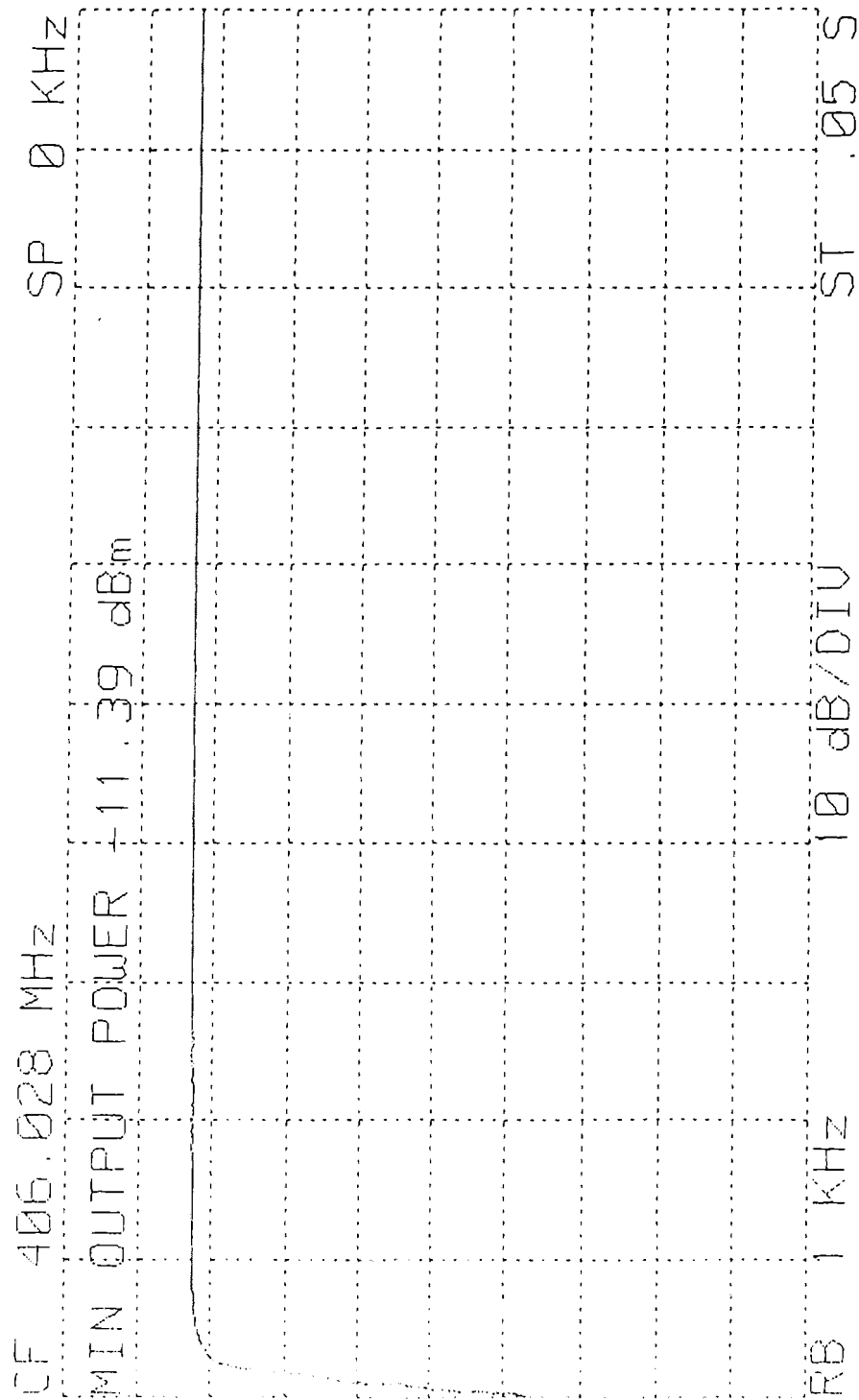
(1 ms before 10 % of the burst)

at -20° C, 22° C and 55° C

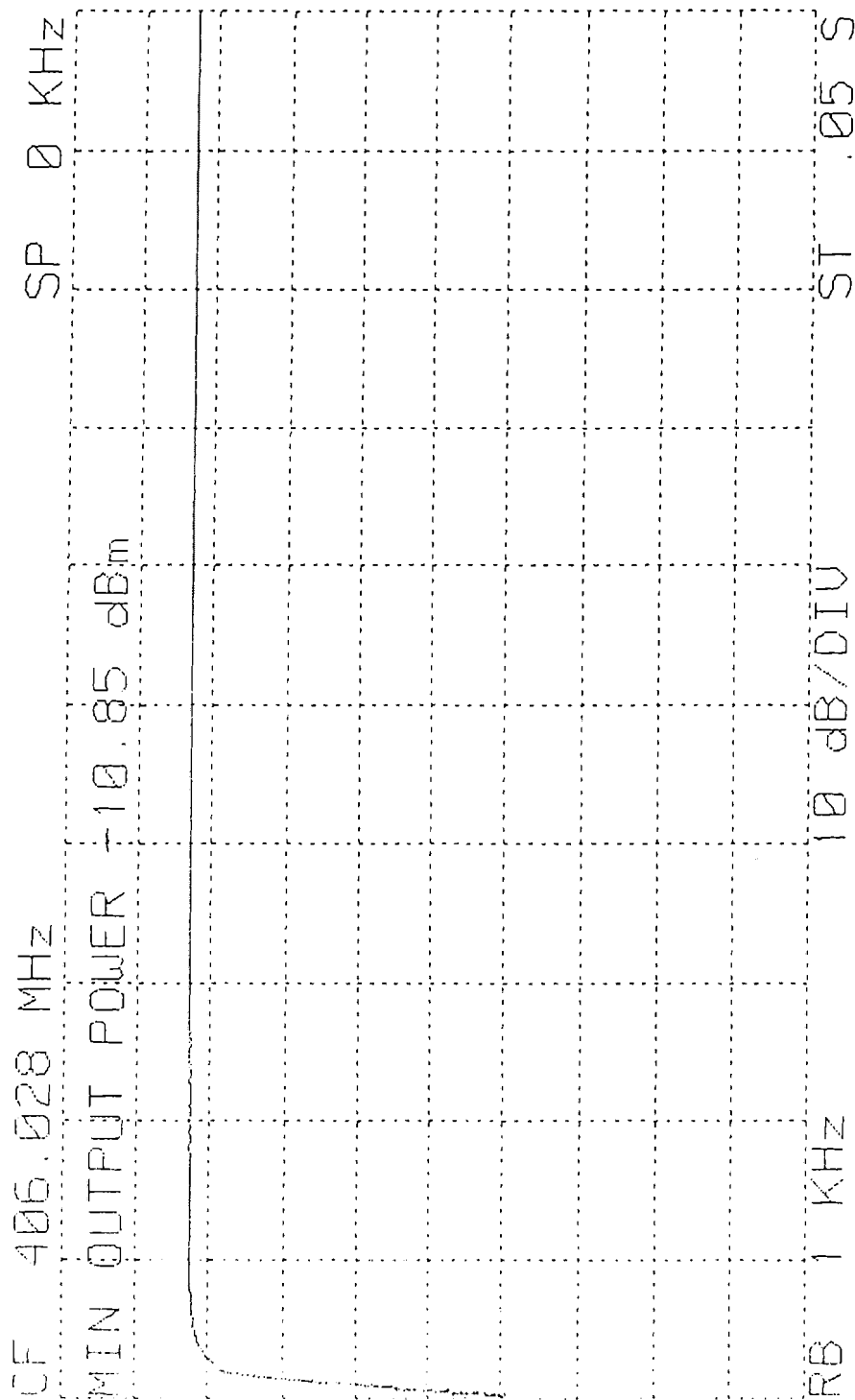
Output Power Risetime at -20°C



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

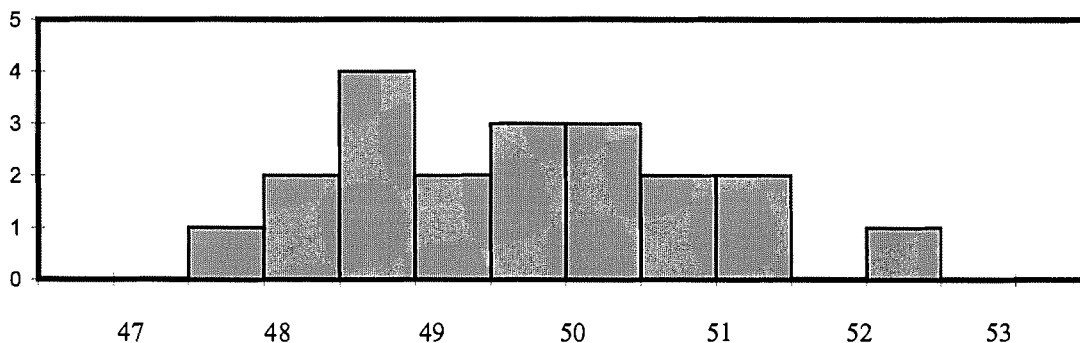
Number : C204

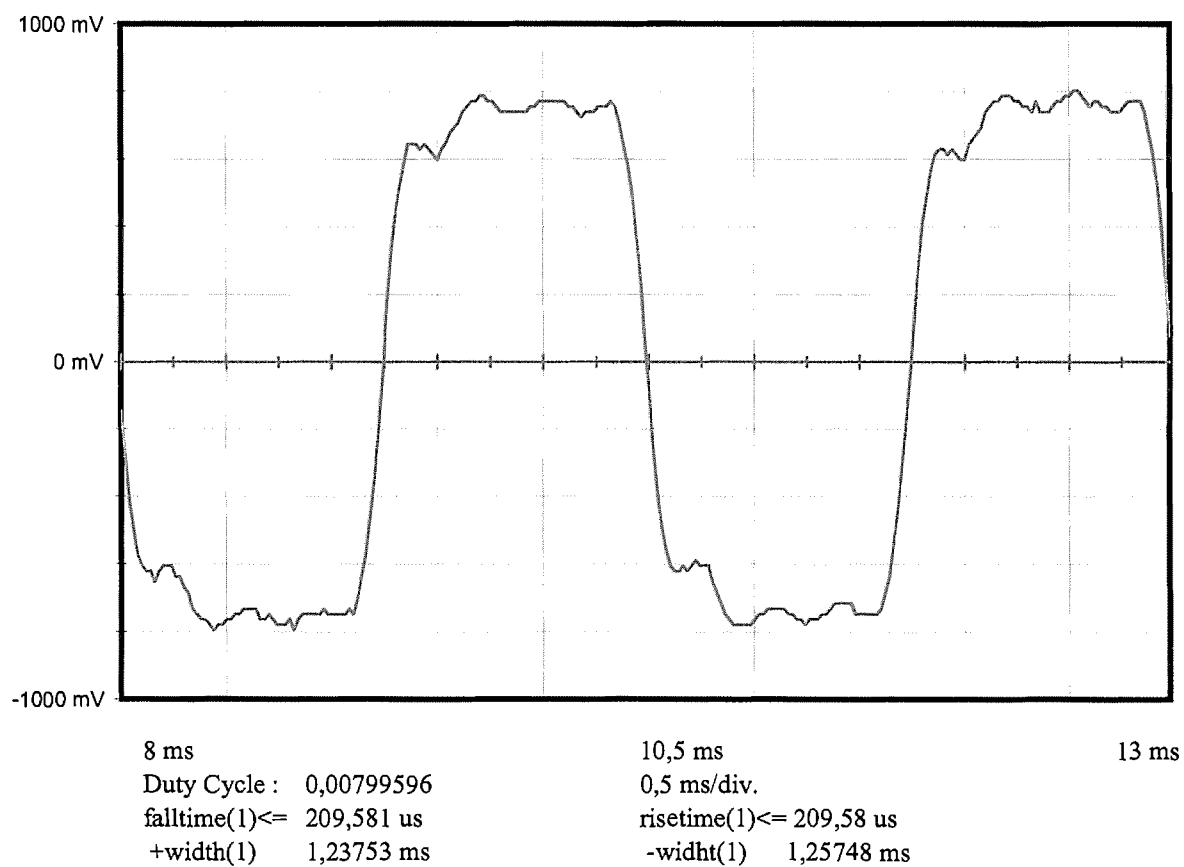
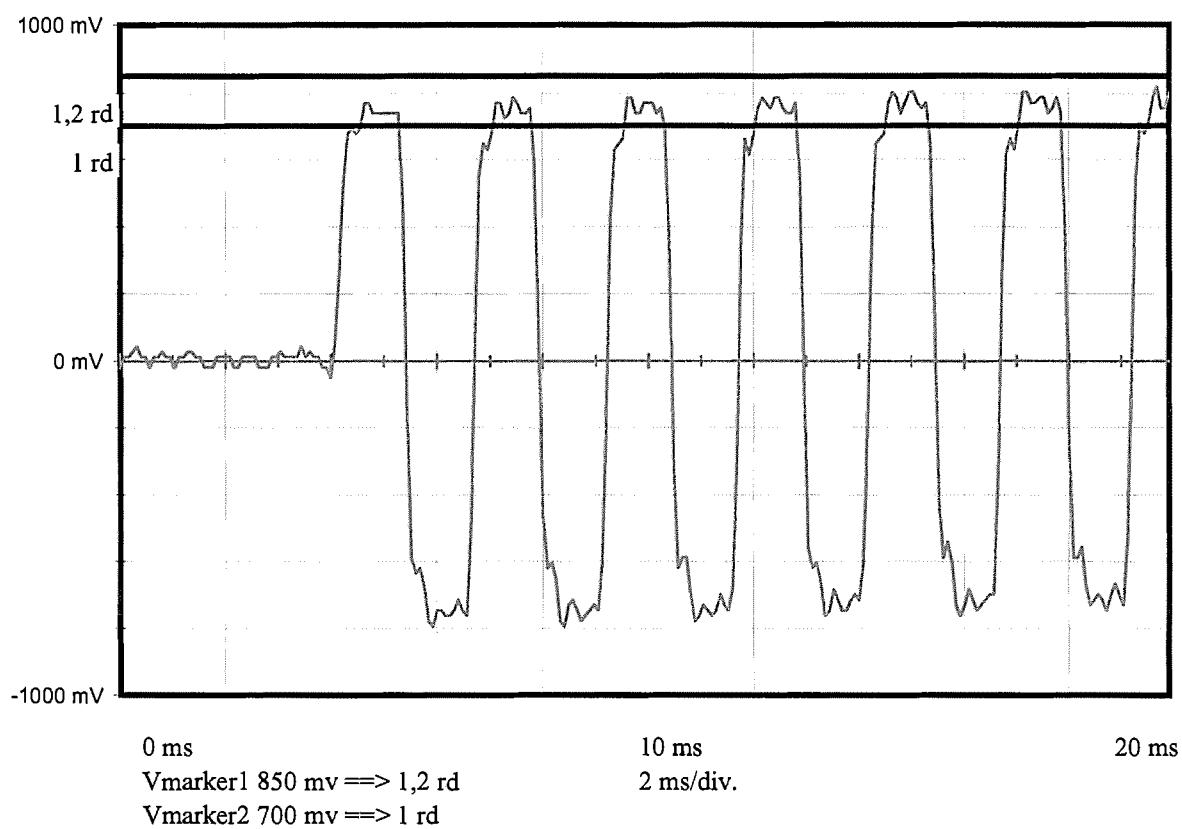
Message

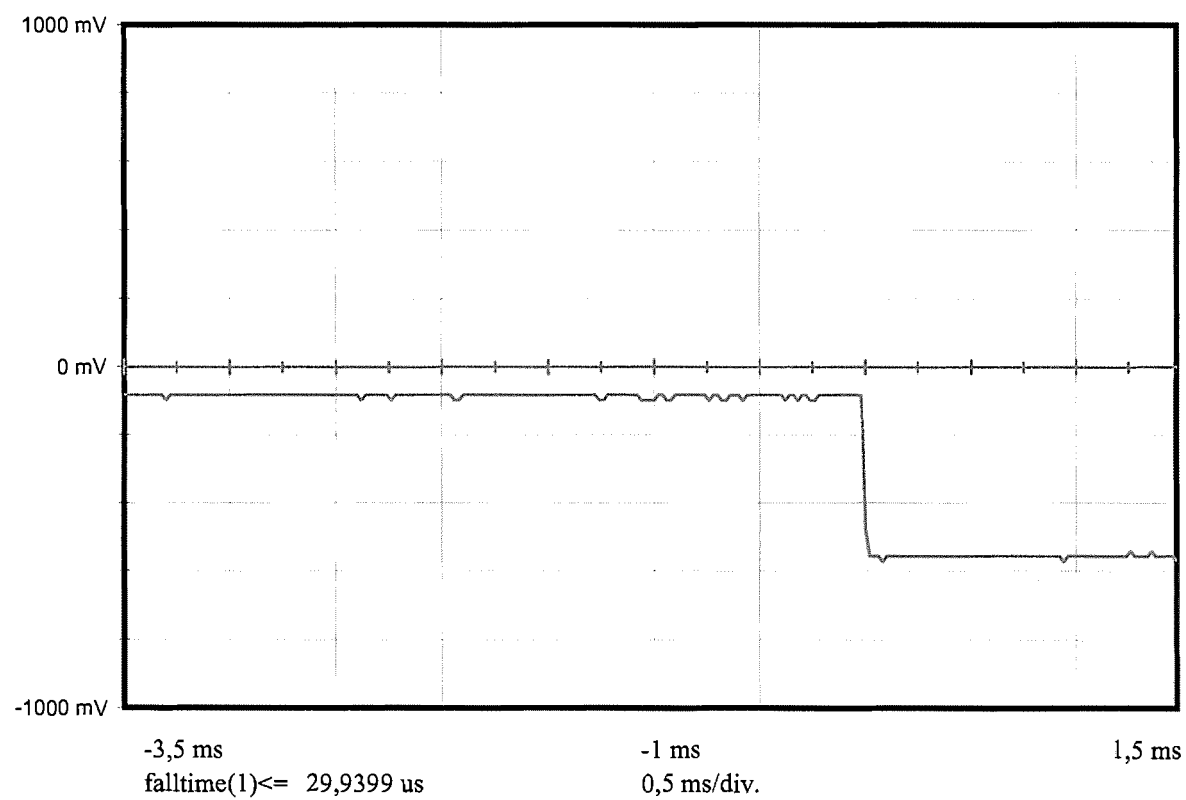
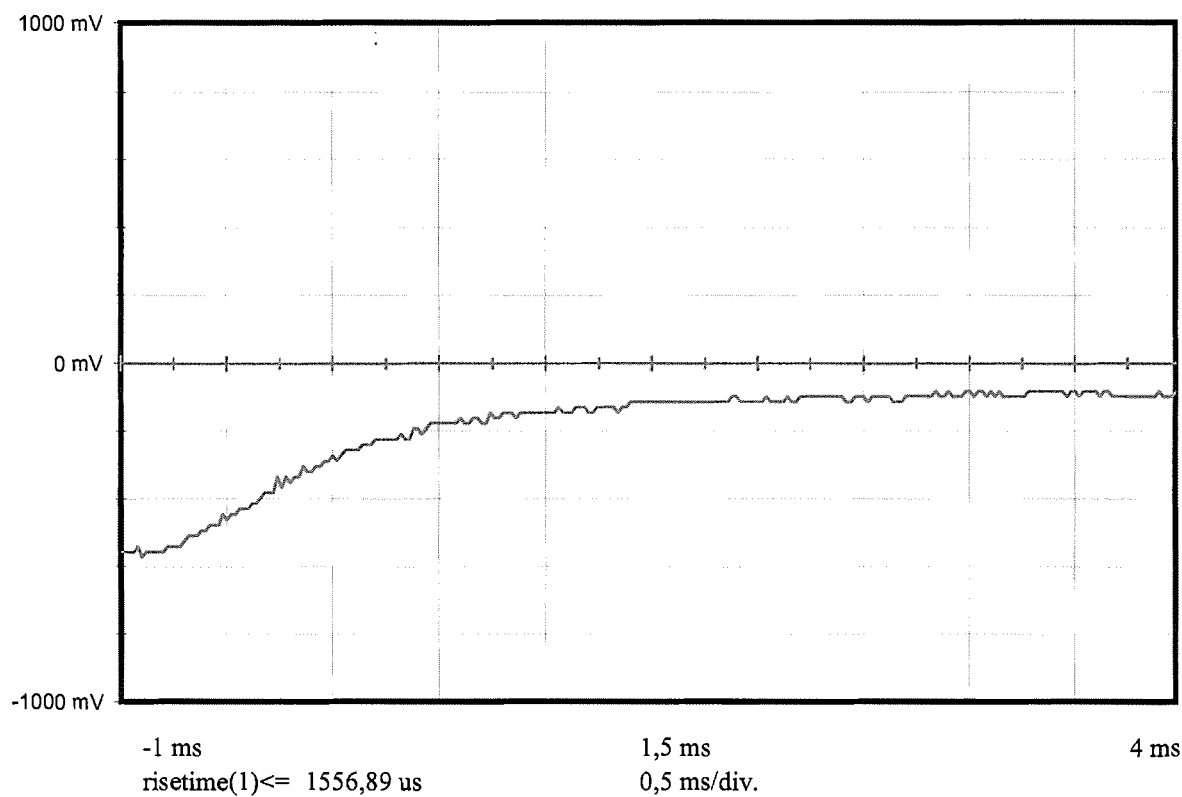
Message received		FFFE2F5F7F03C480000009C00400
Format Flag	25	0
Protocol flag	26	1
Ident./Position code	27-85	BEFE07890000001
Country Code/Country	27-36	503 /
Protocol Code : U/Std-Nat	37-39/37-40	111
Protocol Code Used	37-39/37-40	Test
Identification Data	40-85/41-64/41-58	1E
Identification Used		
Calculated 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







Certification Test at 22°C

Date of test : 31-mars-2003

Manufacturer : Standard-Communications

Beacon Type : MT400

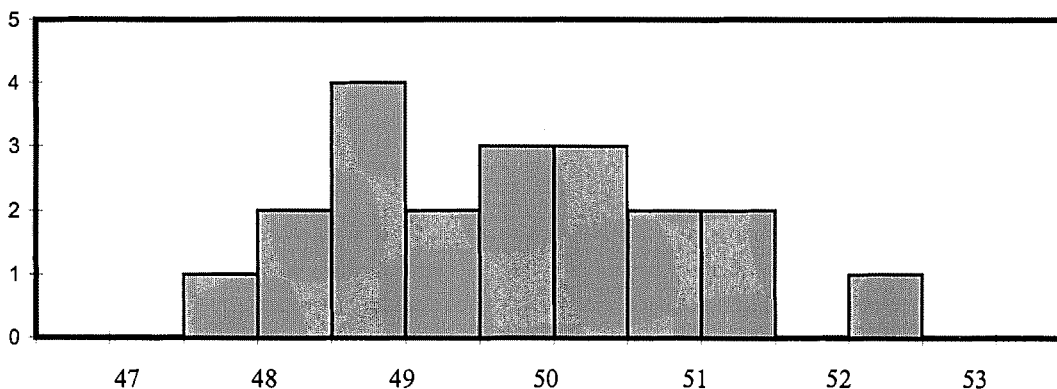
Number : C204

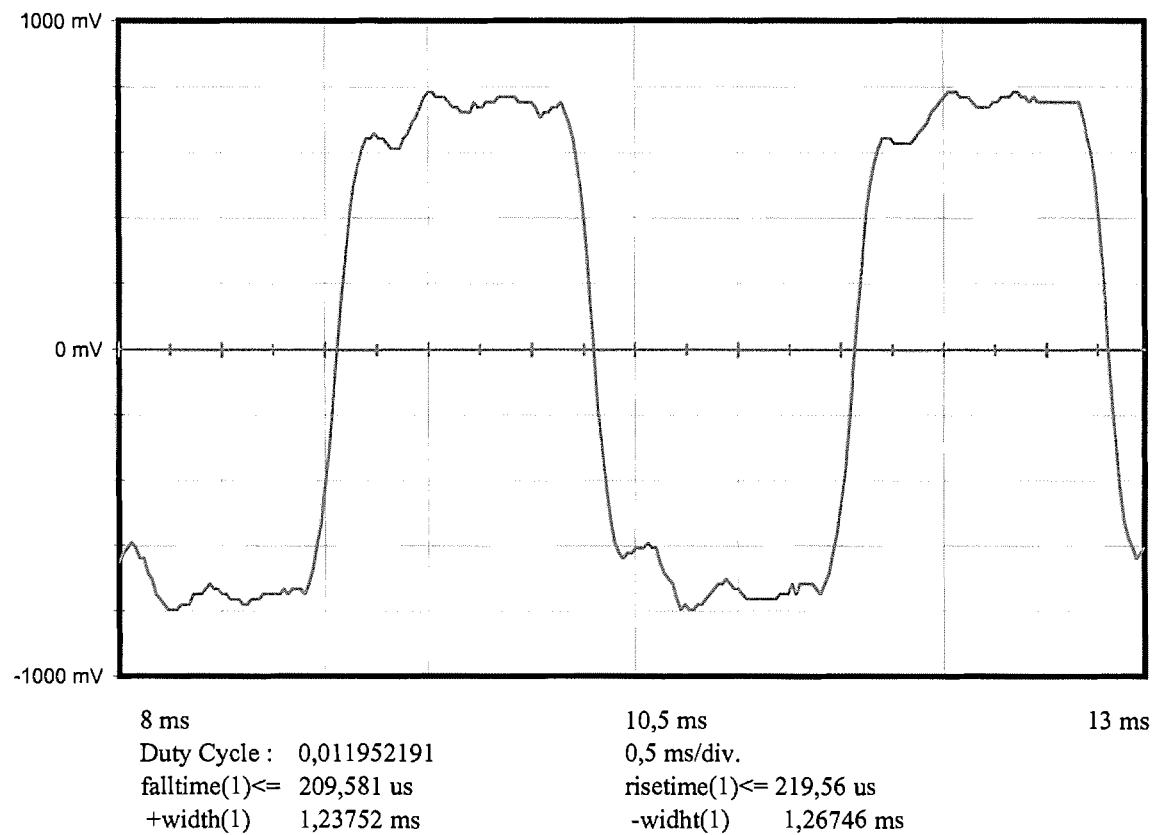
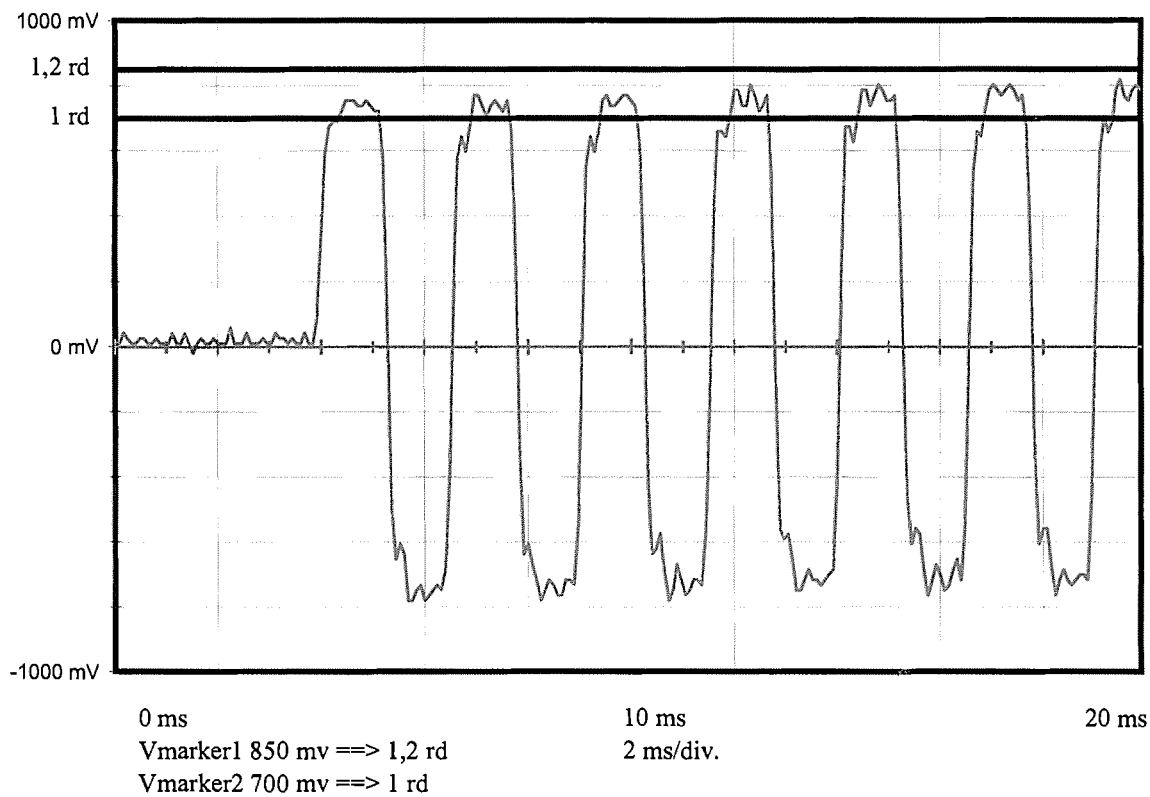
Message

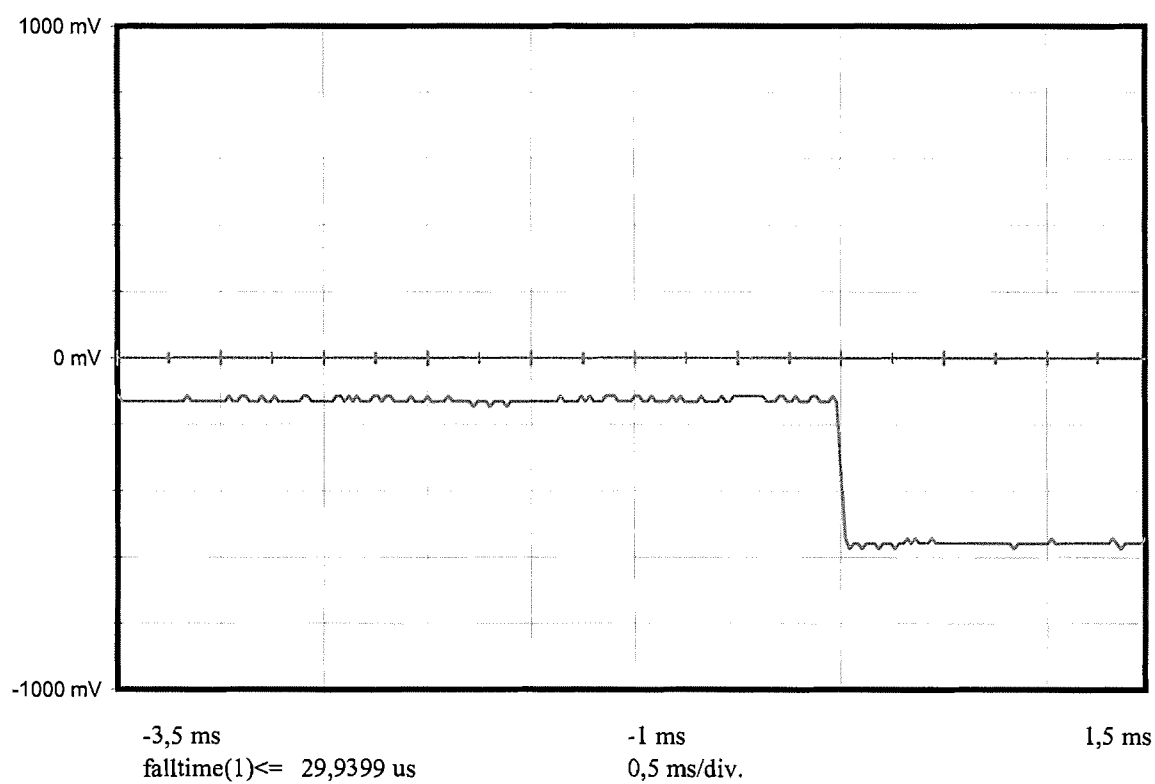
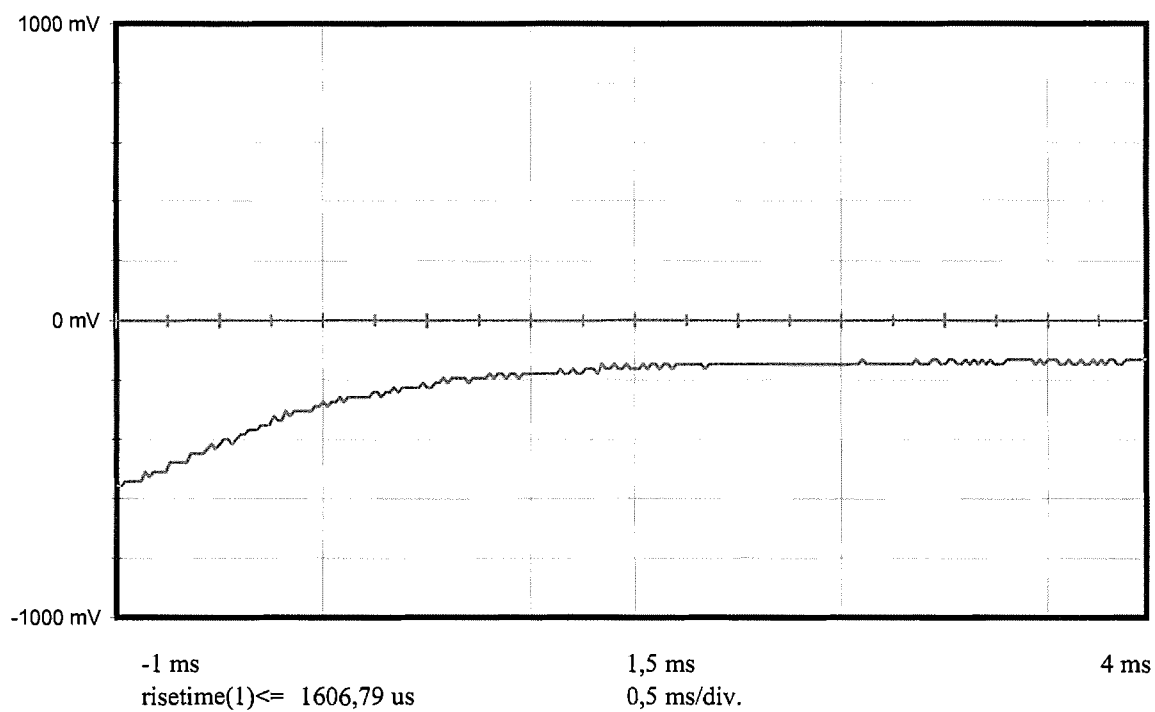
Message received		FFFE2F5F7F03C480000009C00400
Format Flag	25	0
Protocol flag	26	1
Ident./Position code	27-85	BEFE07890000001
Country Code/Country	27-36	503 /
Protocol Code : U/Std-Nat	37-39/37-40	111
Protocol Code Used	37-39/37-40	Test
Identification Data	40-85/41-64/41-58	1E
Identification Used		
Calculated 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







Certification Test at 55°C

Date of test : 1 Apr 2003

Manufacturer : Standard-Communications

Beacon Type : MT400

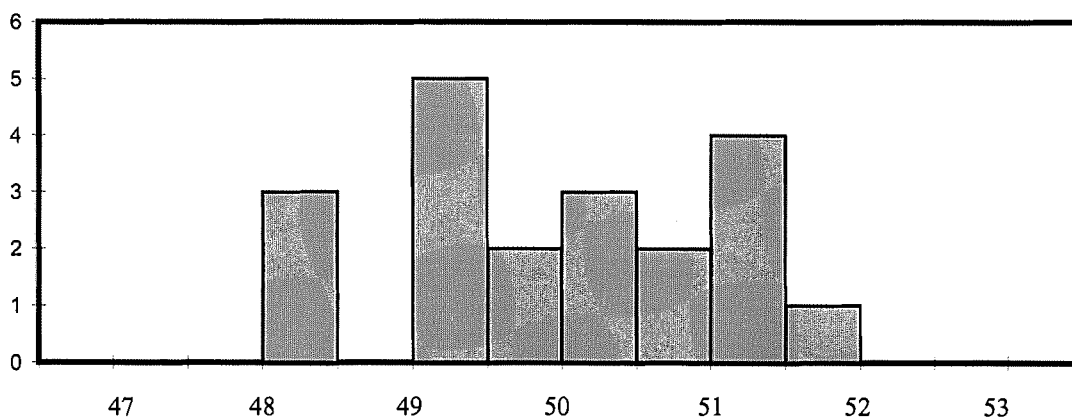
Number : C204

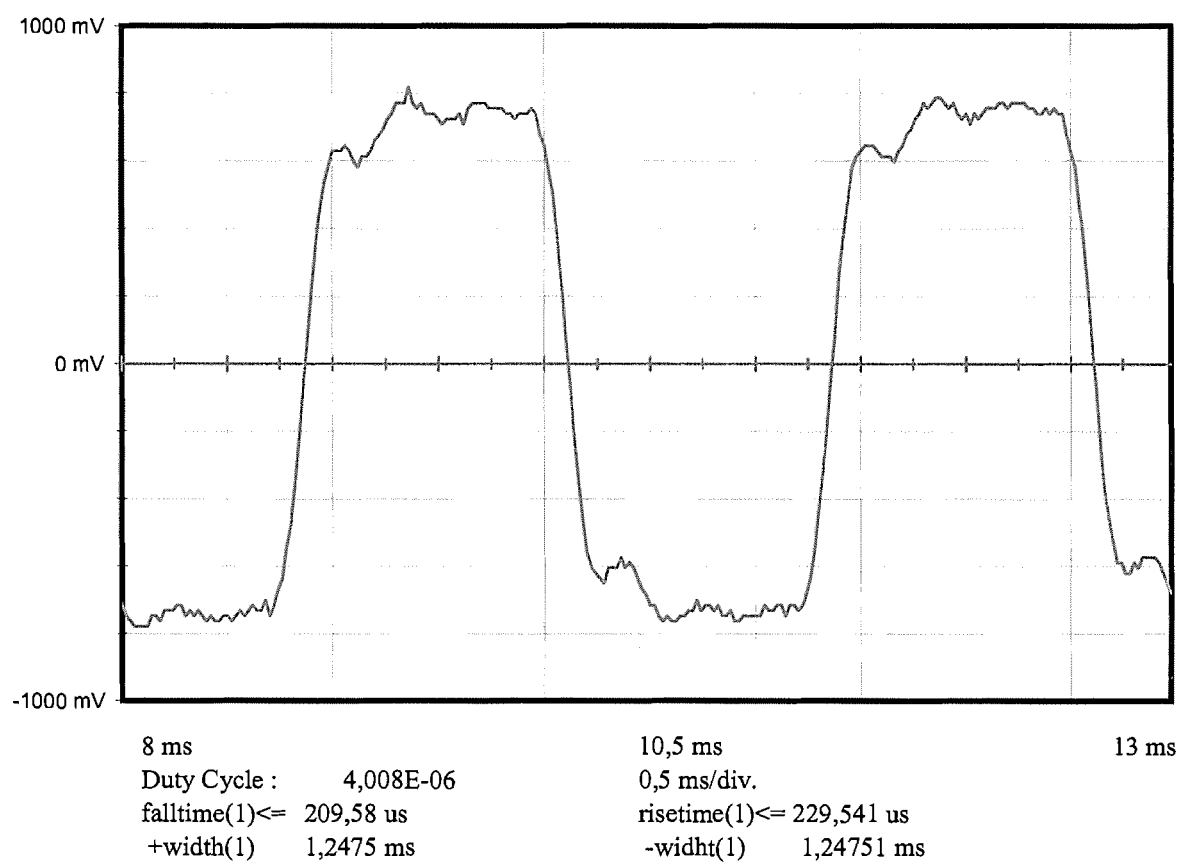
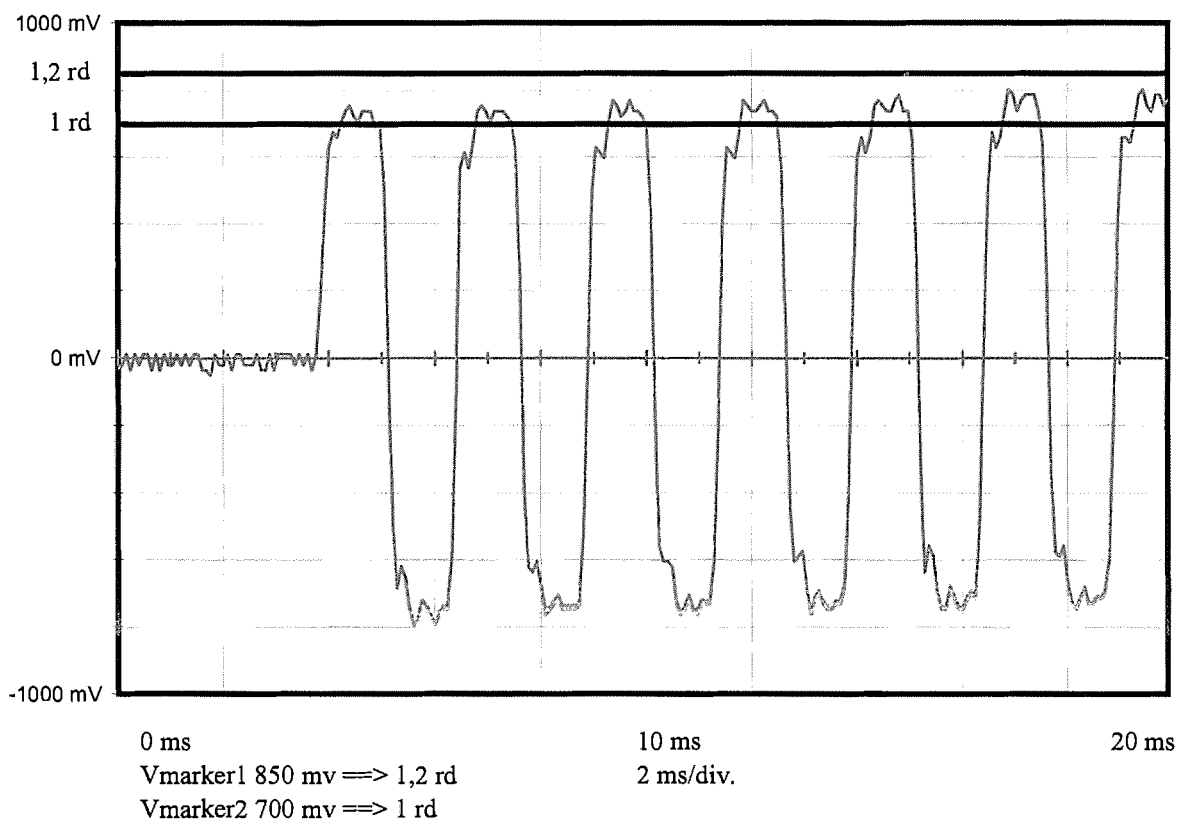
Message

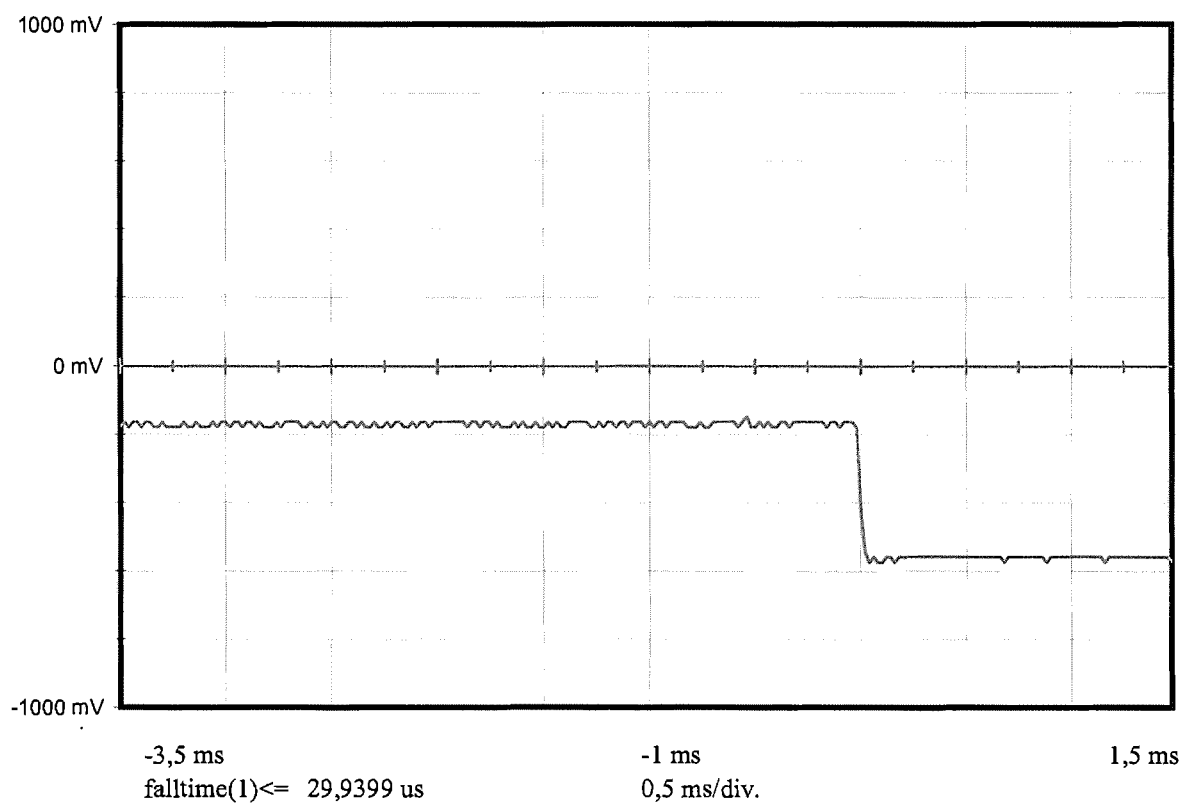
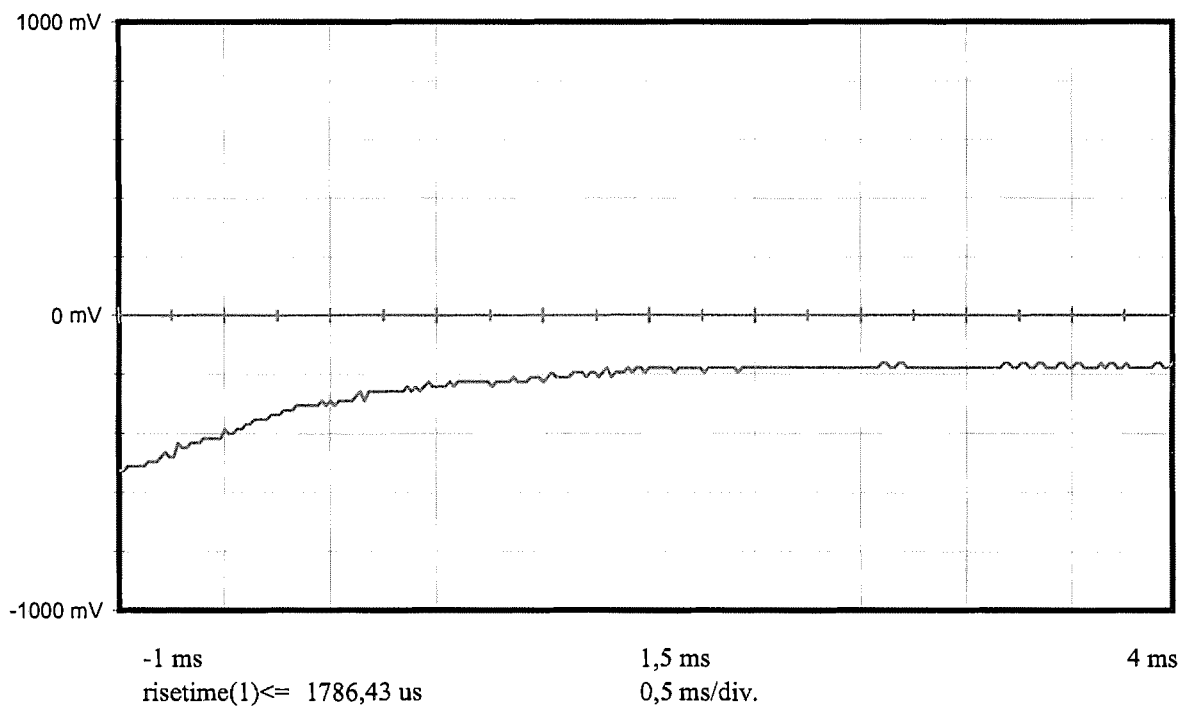
Message received		FFFE2F5F7F03C480000009C00400
Format Flag	25	0
Protocol flag	26	1
Ident./Position code	27-85	BEFE07890000001
Country Code/Country	27-36	503 /
Protocol Code : U/Std-Nat	37-39/37-40	111
Protocol Code Used	37-39/37-40	Test
Identification Data	40-85/41-64/41-58	1E
Identification Used		
Calculated 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

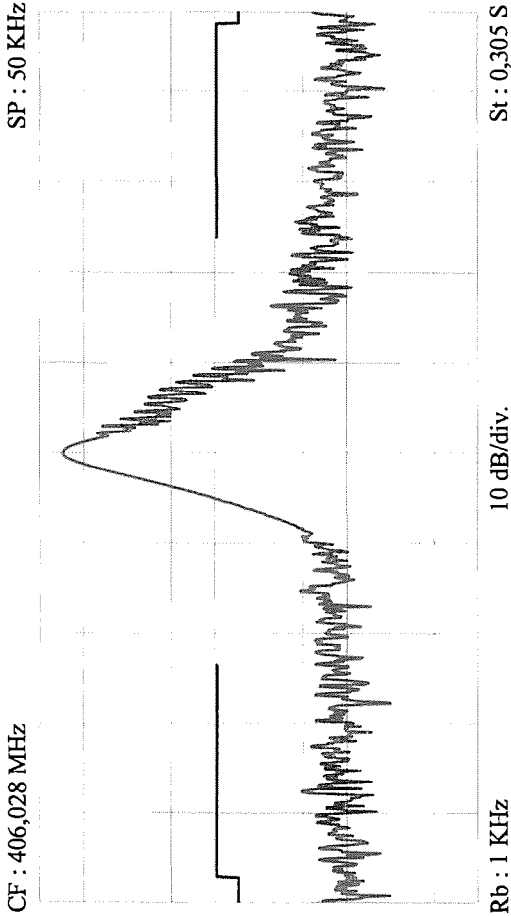
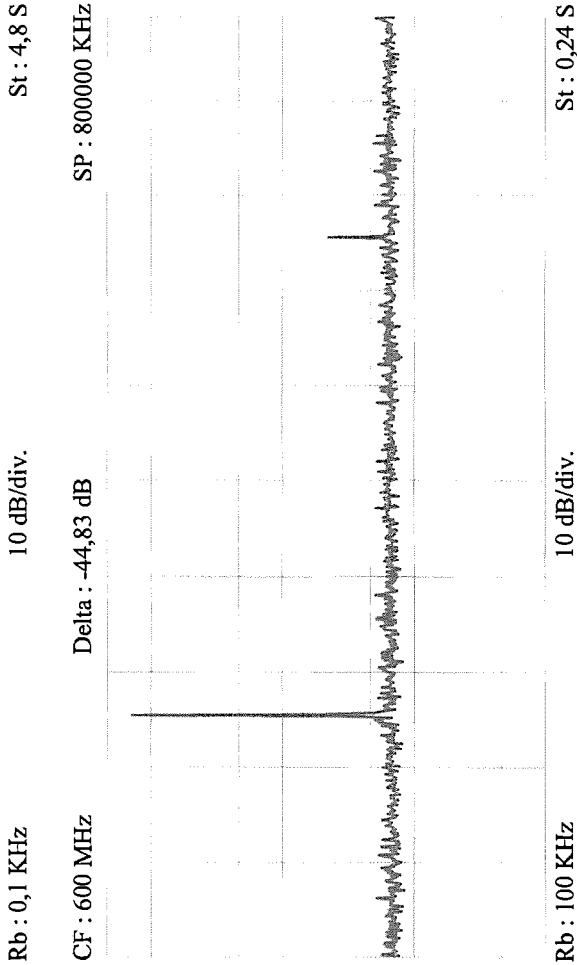
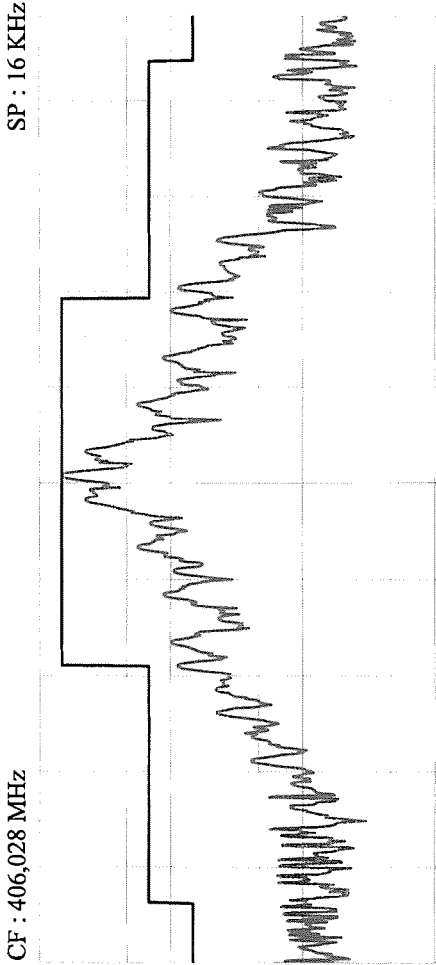






SPURIOUS EMISSIONS RESULTS
MT400 STANDARD COMMUNICATIONS PTY. LTD. EPIRB
N° C204
at -20° C, 22° C and 55° C

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



STANDARD COMMUNICATIONS PTY. LTD.

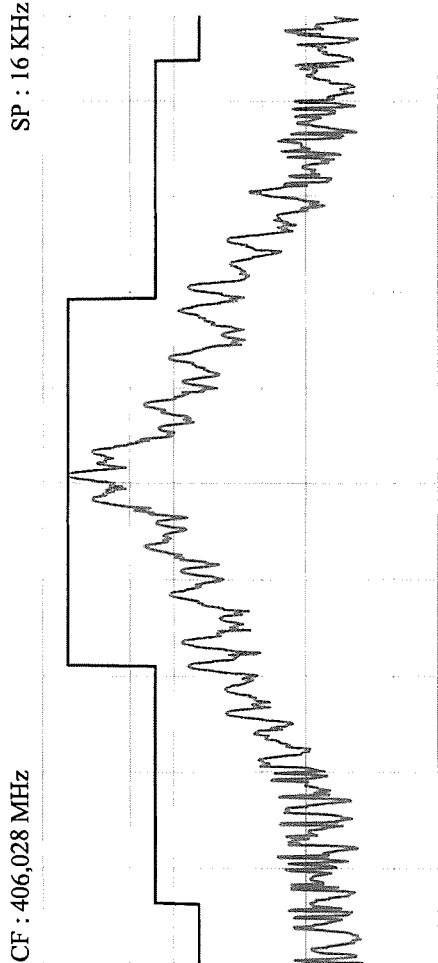
MT400

C204

Certification nominale

406 MHz

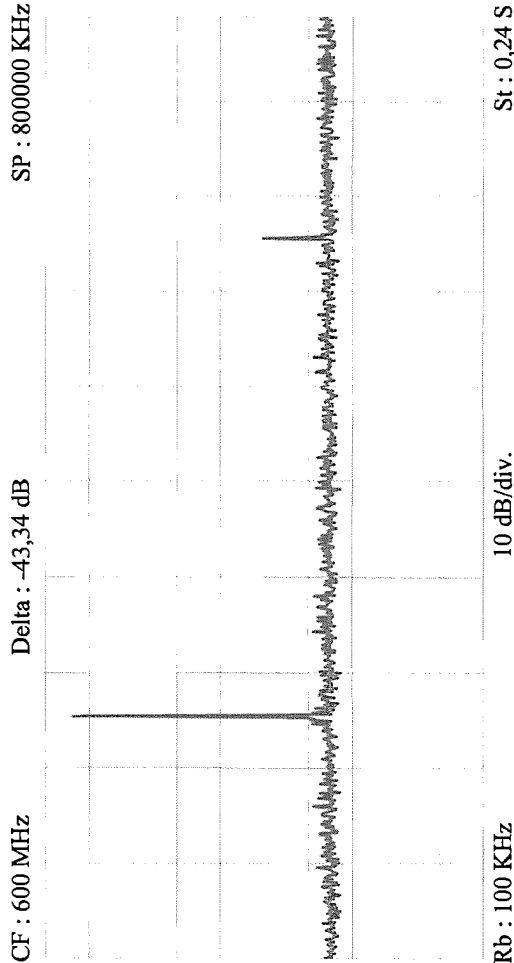
22 °C



Rb : 0,1 KHz

10 dB/div.

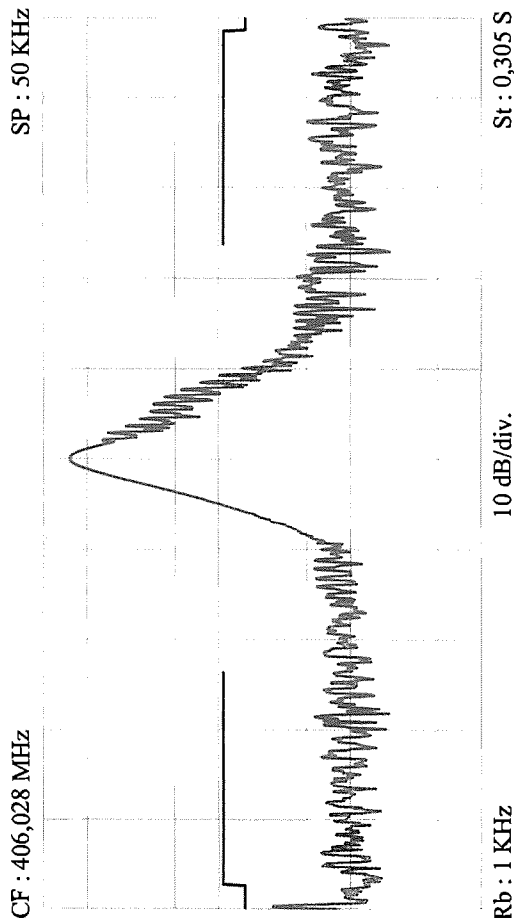
St : 4,8 S



Rb : 100 KHz

10 dB/div.

St : 0,24 S



Rb : 1 KHz

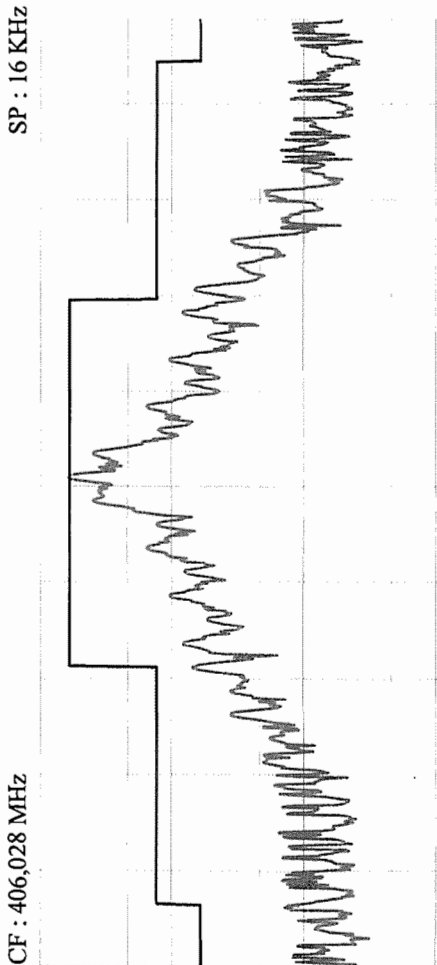
10 dB/div.

St : 0,305 S

STANDARD COMMUNICATIONS PTY. LTD.

MT400
 C204

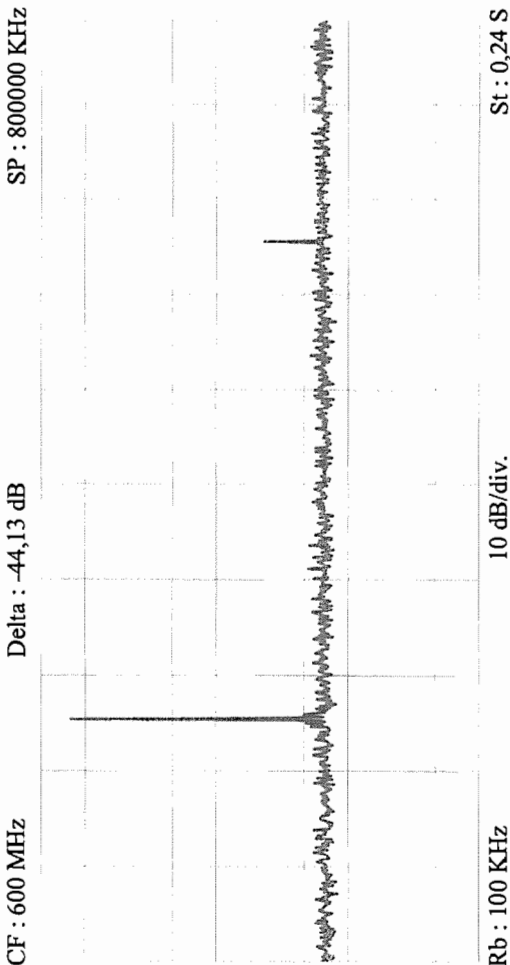
Certification nominale
 406 MHz
 55 °C



Rb : 0,1 KHz

10 dB/div.

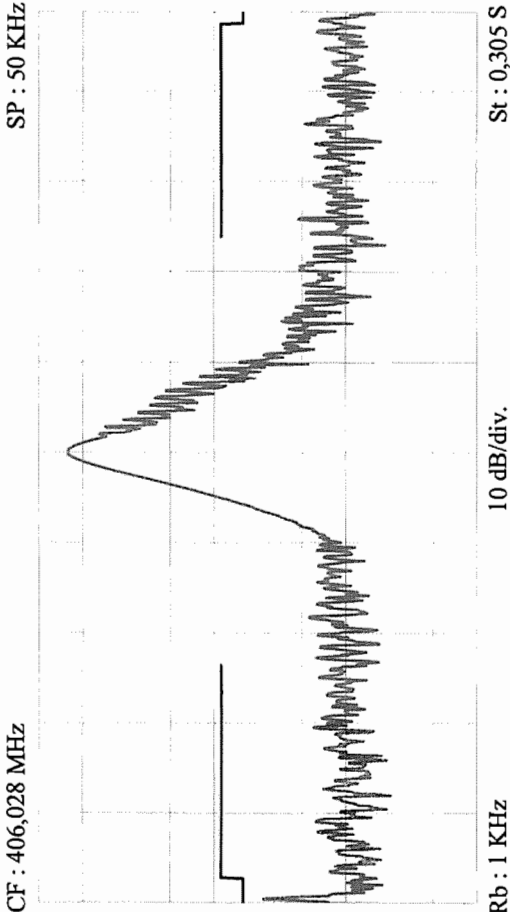
 St : 4,8 S



Rb : 100 KHz

10 dB/div.

 St : 0,24 S



Rb : 1 KHz

10 dB/div.

 St : 0,305 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

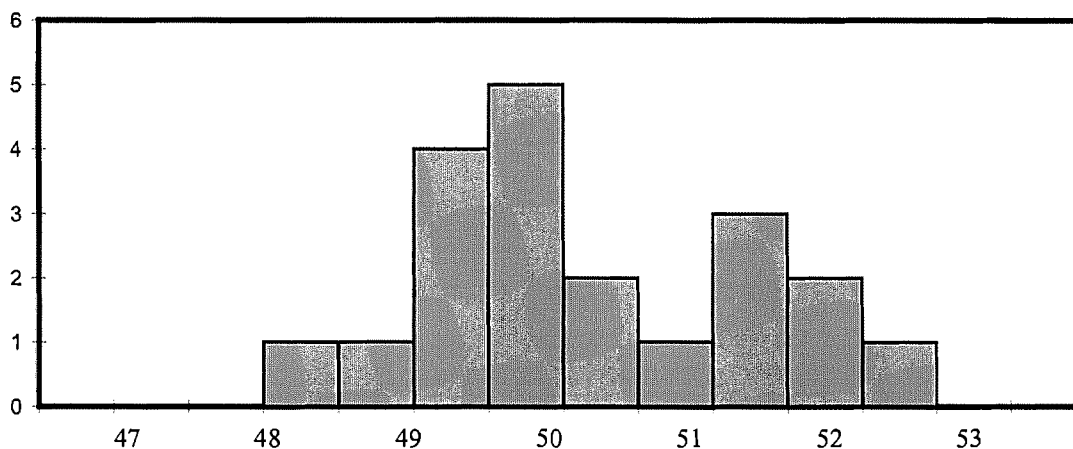
Number : C204

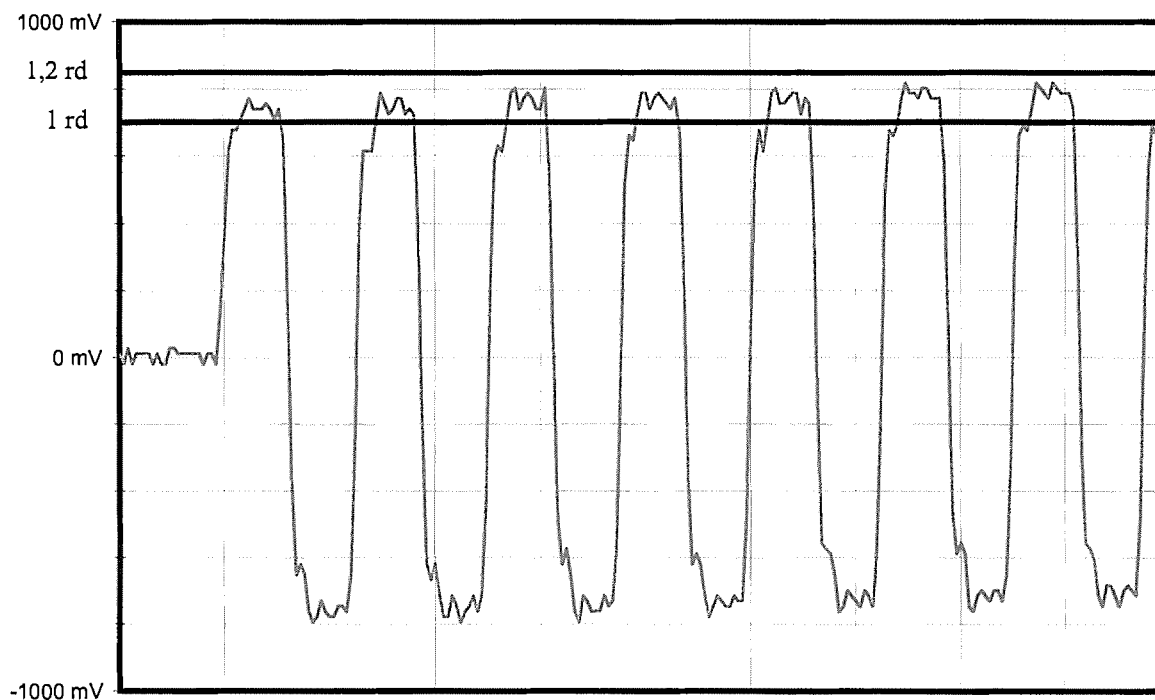
Message

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

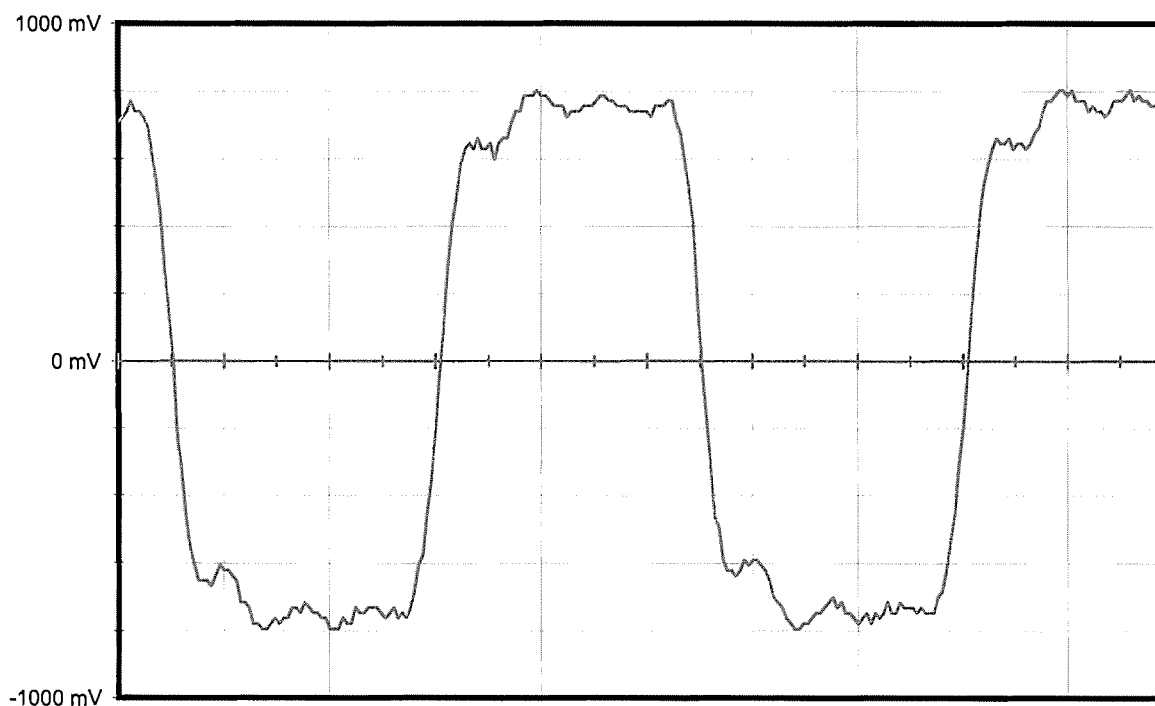




Vmarker1 850 mV ==> 1,2 rd

2 ms/div.

Vmarker2 700 mV ==> 1 rd



Duty Cycle : 0,01204412

0,5 ms/div.

falltime(1) <= 199,601 us

risetime(1) <= 219,561 us

+width(1) 1,22755 ms

-width(1) 1,25748 ms

Certification Test VSWR at 22°C

Date of test : 31 mars 2003

Manufacturer : Standard-Communications

Beacon Type : MT400

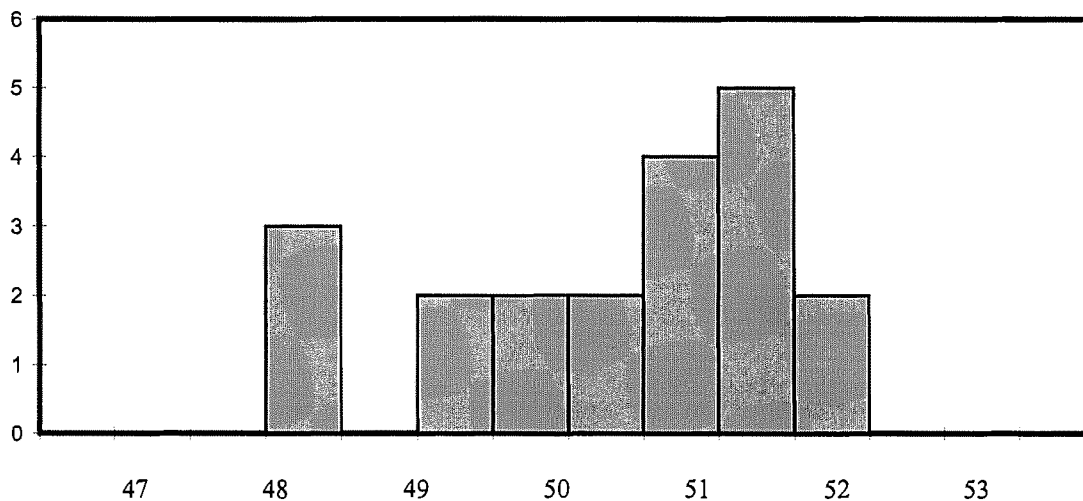
Number : C204

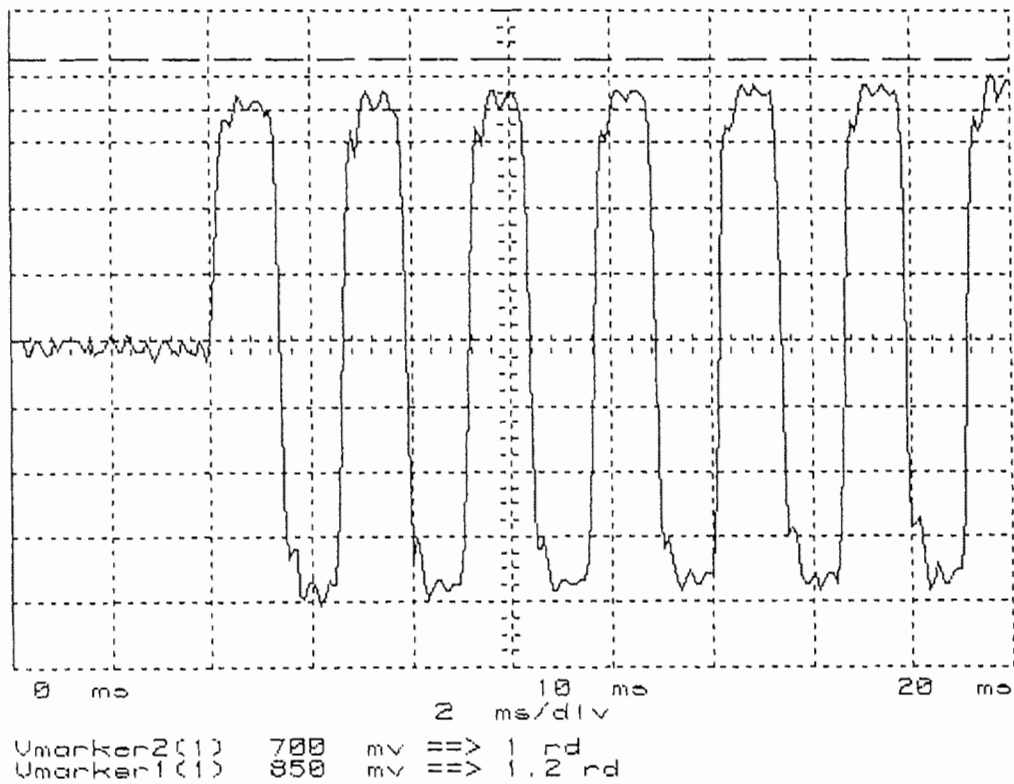
Message

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		

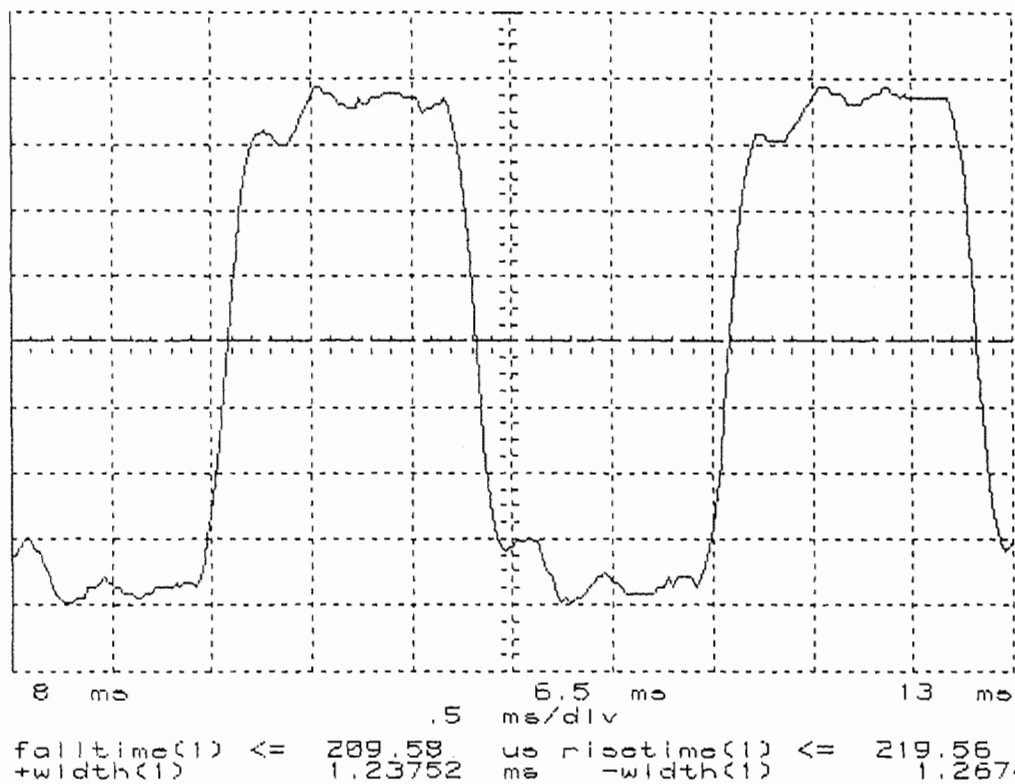
Electrical and other parameters

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





DUTY CYCLE : .011952191235.



Certification Test VSWR at 55°C

Date of test : 11 Apr 2003

Manufacturer : Standard-Communications

Beacon Type : MT400

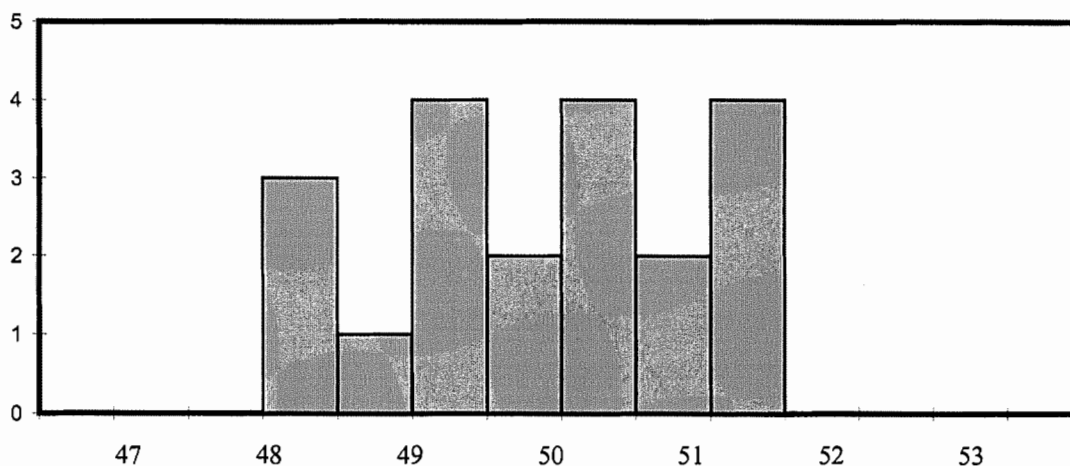
Number : C204

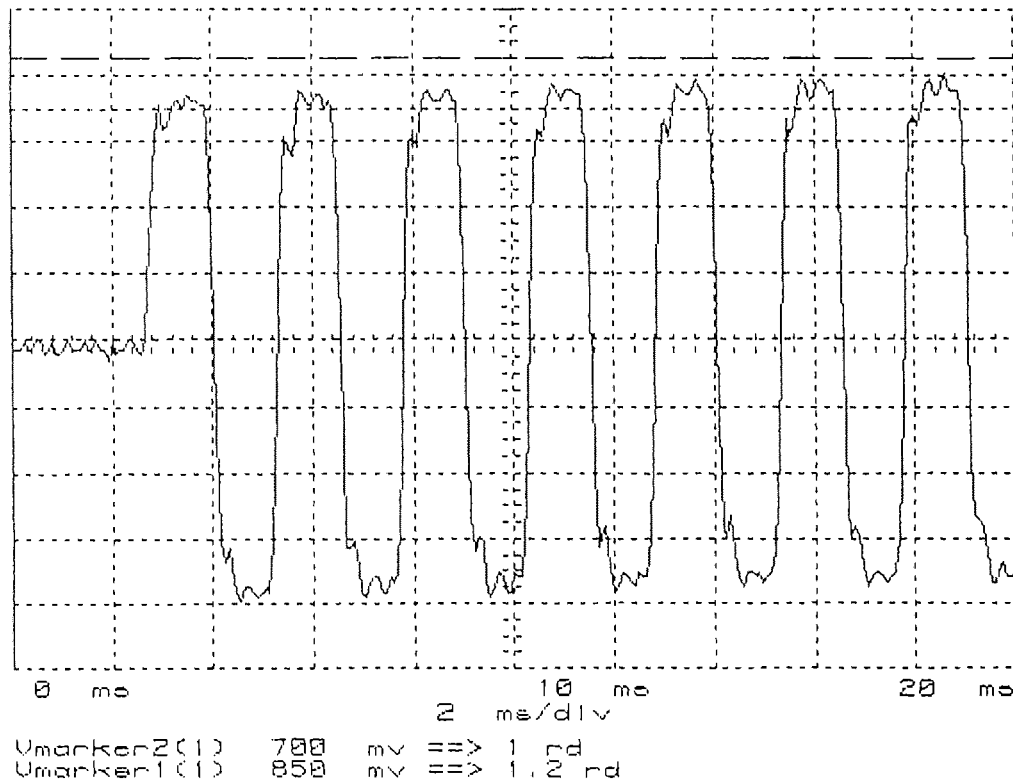
Message

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		

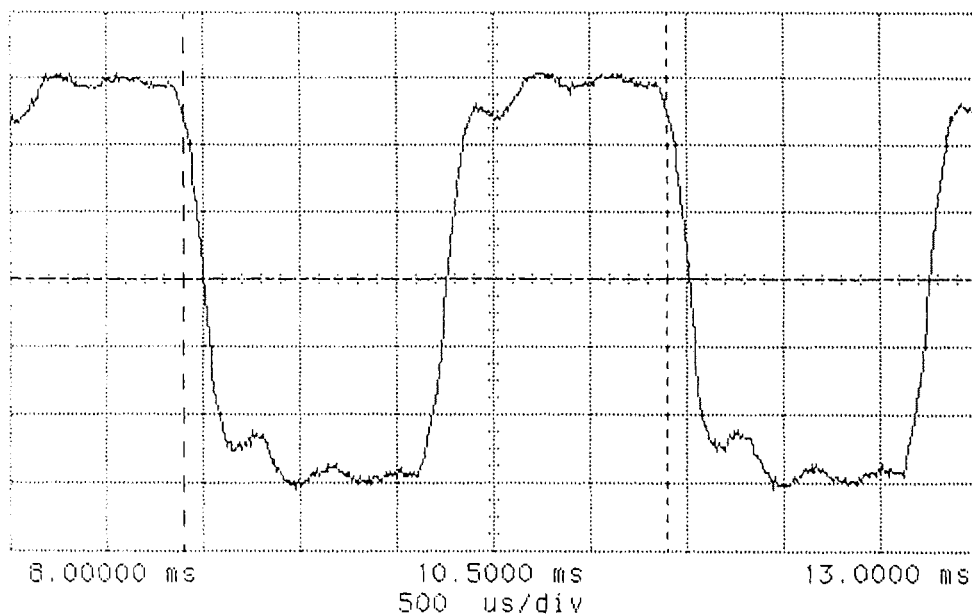
Electrical and other parameters

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





hp awaiting trigger



TIMEBASE

500 us/div

delay

8.0000 ms

reference

left cntr right

window

off on

falltime(1) ≤ 229.541us risetime(1) ≤ 199.601us
+width(1) 1.23752ms -width(1) 1.25748ms
duty cycle(1) 49.402% duty cycle(1) 49.402%

SELF-TEST MODE CONTROL ON
MT400 STANDARD COMMUNICATIONS PTY. LTD. EPIRB
N° C204
at 22° C

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)

1. Does beacon have a self-test mode ?

Yes ☒ No ☐

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 activated ☐ | ☒
 - 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

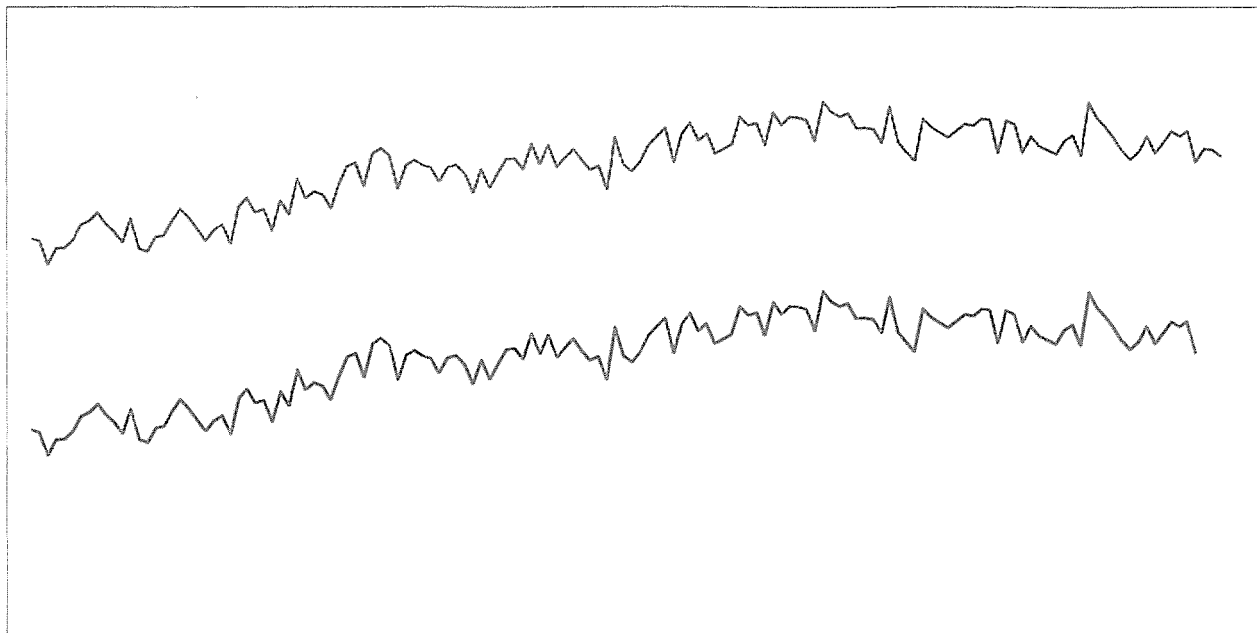
No	Δ Frequency (Hz)	Temp. (°C)	P406 (dBm)	P121.5 (dBm)
1	49945,48	-8,9	36,3	18,5
2	49944,90	22,8	36,3	18,5
3	49945,58	22,9	36,2	18,5
4	49945,61	22,9	36,3	18,4
5	49945,79	22,9	36,2	18,5
6	49946,40	22,9	36,2	18,5
7	49946,00	22,9	36,2	18,4
8	49946,29	22,9	36,1	18,4
9	49947,18	23,0	36,2	18,3
10	49947,55	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
-------------------	--------------------

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

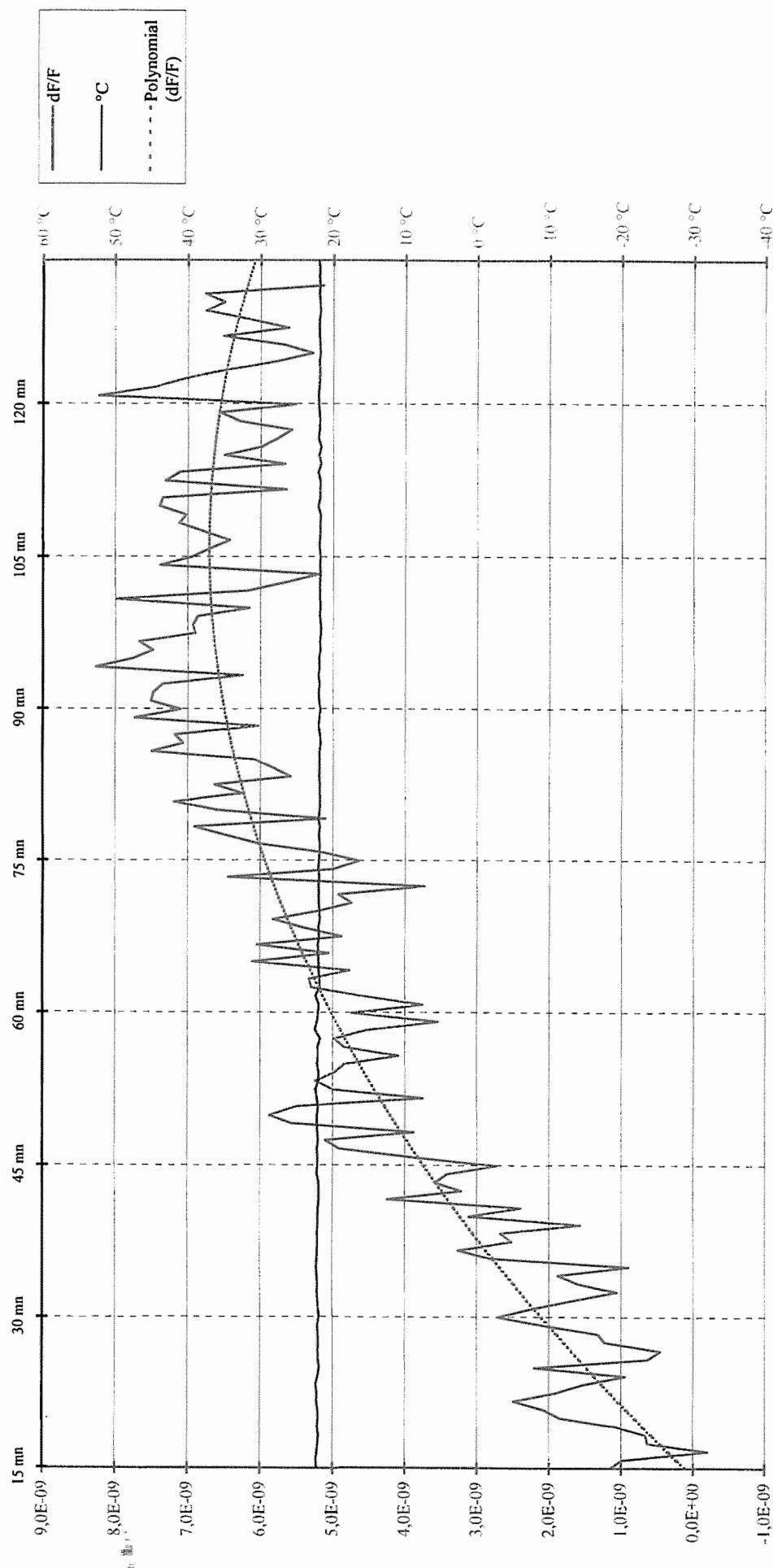
THERMAL SHOCK TEST / 30 °C change (22 °C to -8 °C)

Manufacturer : STANDARD COMMUNICATIONS PTY. LTD.

Model : MT400

Number : C204

FREQUENCY VARIATION



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

Manufacturer : STANDARD COMMUNICATIONS PTY. LTD.

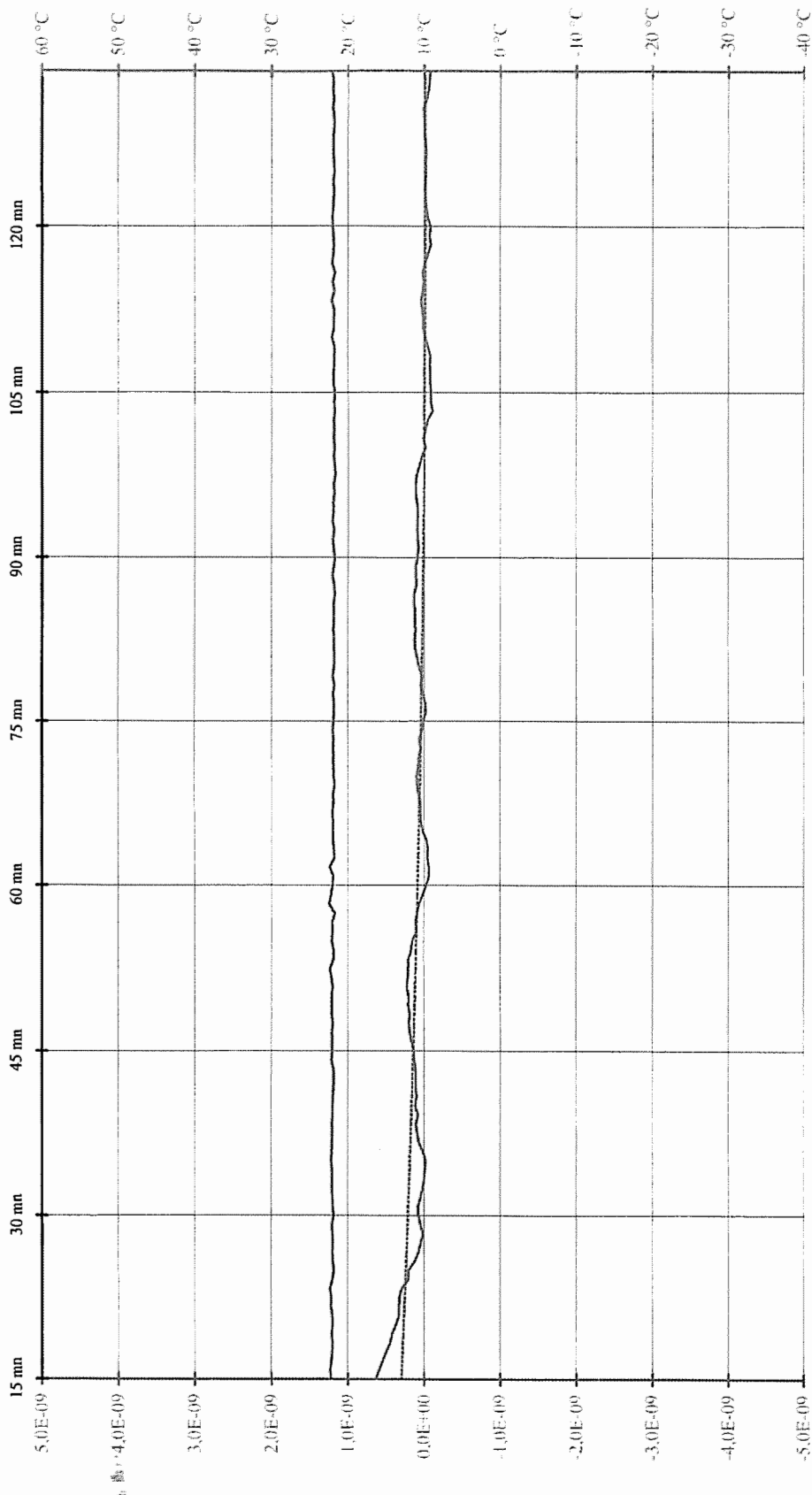
Model : MT400

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.

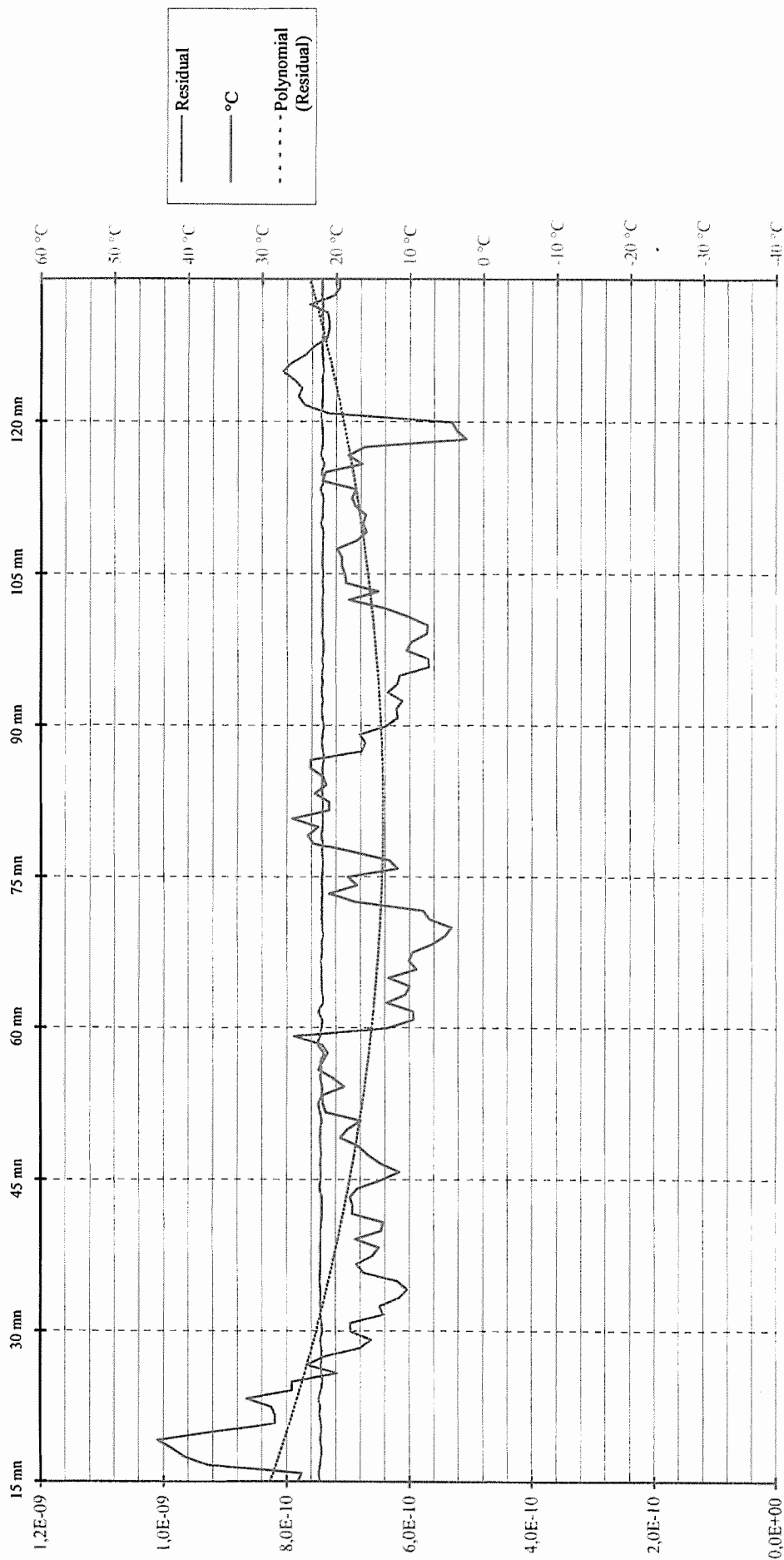
Model : MT400

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.

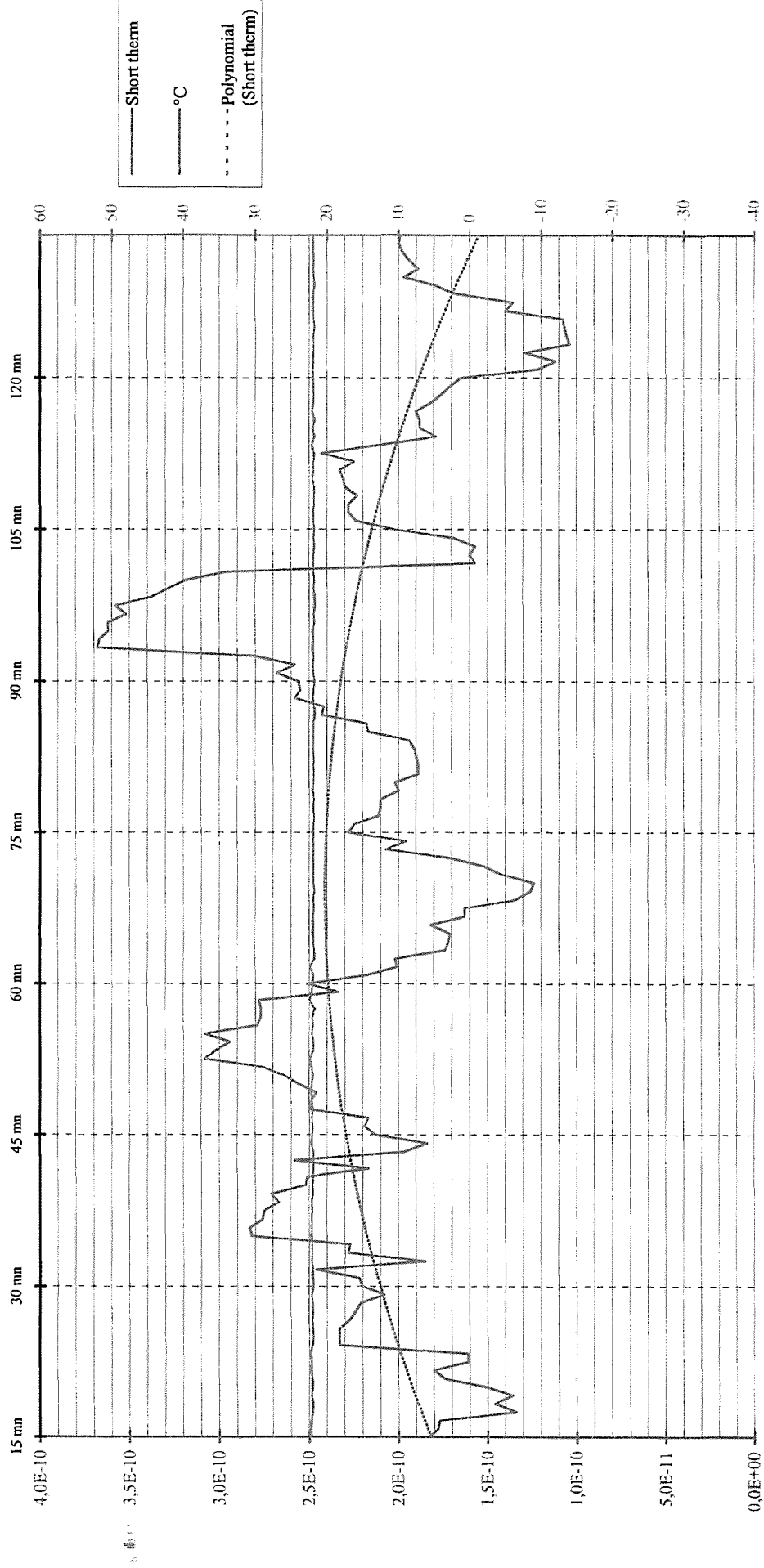
Model : MT400

Number : C204

Date : 8 Apr 2003

Time : 11:02:36

SHORT TERM STABILITY / 100 mS ($\leq 2,0E-9$)



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

Date : 8 Apr 2003

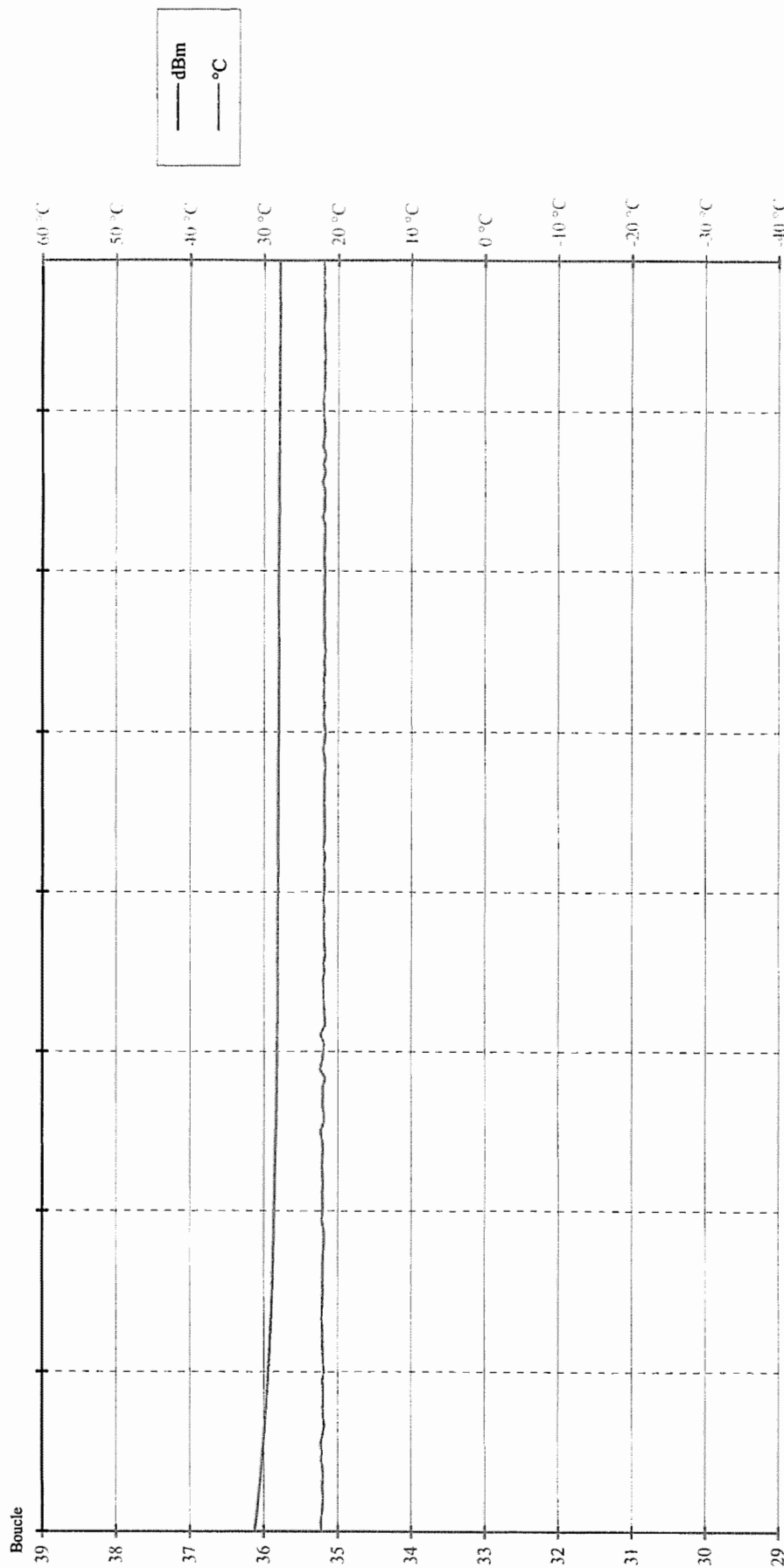
Time : 11:02:36

Manufacturer : STANDARD COMMUNICATIONS PTY. LTD.

Model : MT400

Number : C204

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