

CHAPTER 10

A10.0 - SPURIOUS EMISSIONS TEST

10.1 TEST SPECIFICATIONS AND PROGRAMME

Following Section A9.0 of RTCM Recommended Standards for 406 MHz Satellite EPIRBs (Version 2.0 Feb 5, 1997) :

- Perform the spurious and harmonic emissions measurements for the 406 MHz and 121.5 MHz signals at the minimum, maximum, and ambient temperatures .
- Control, respectively, that measurements not exceed the limits given in Figure 2-1(406 MHz Spectrum Mask) and Figure 2-5 (121.5 MHz Spectrum Mask)

Note : These tests are performed during the COSPAS-SARSAT Type Approval tests (chapter 12)

10.2 EQUIPMENT UNDER TEST

Beacon Unit : 1/2
Name : ACR
Type : R1H35
Number : 07

10.3 TEST SITE

Toulouse Space Center (CS1) - INTESPACE Laboratory.

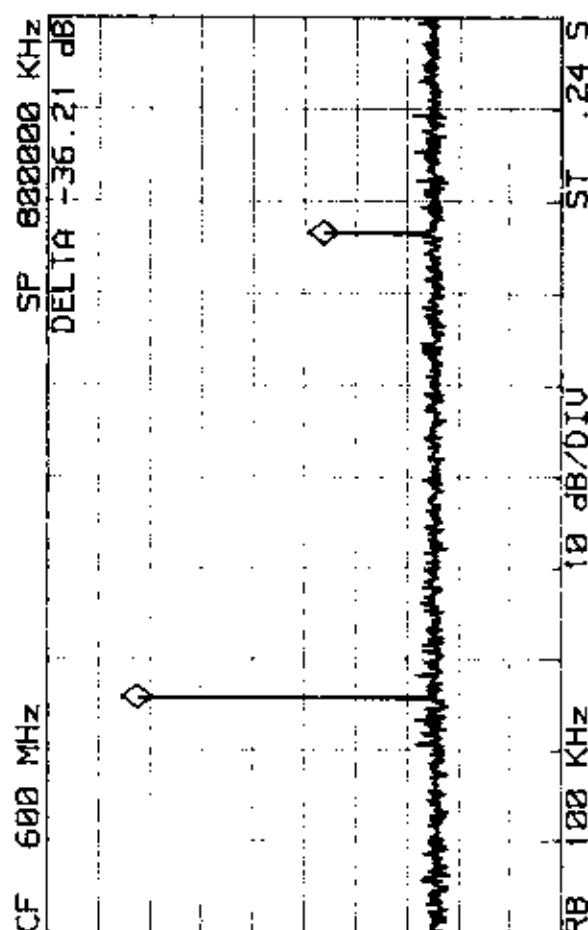
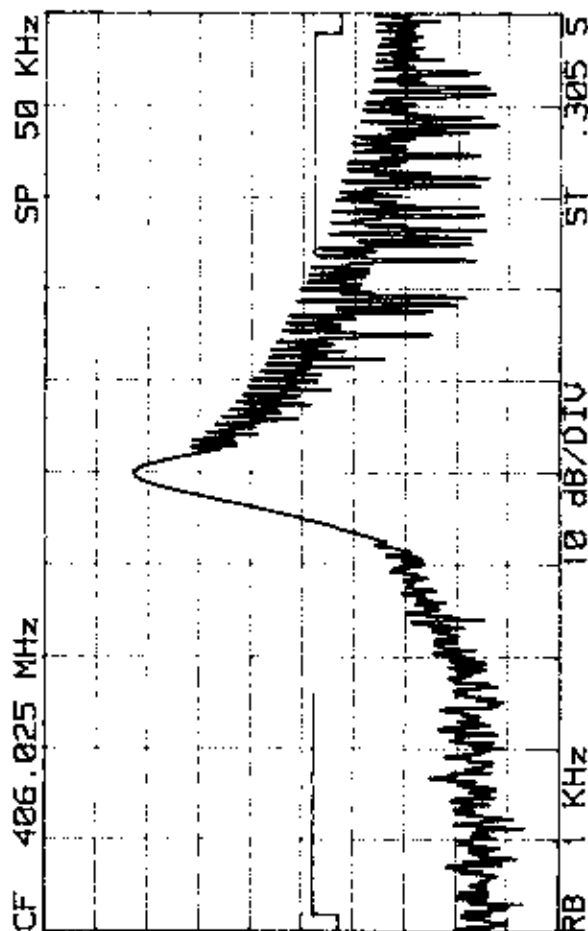
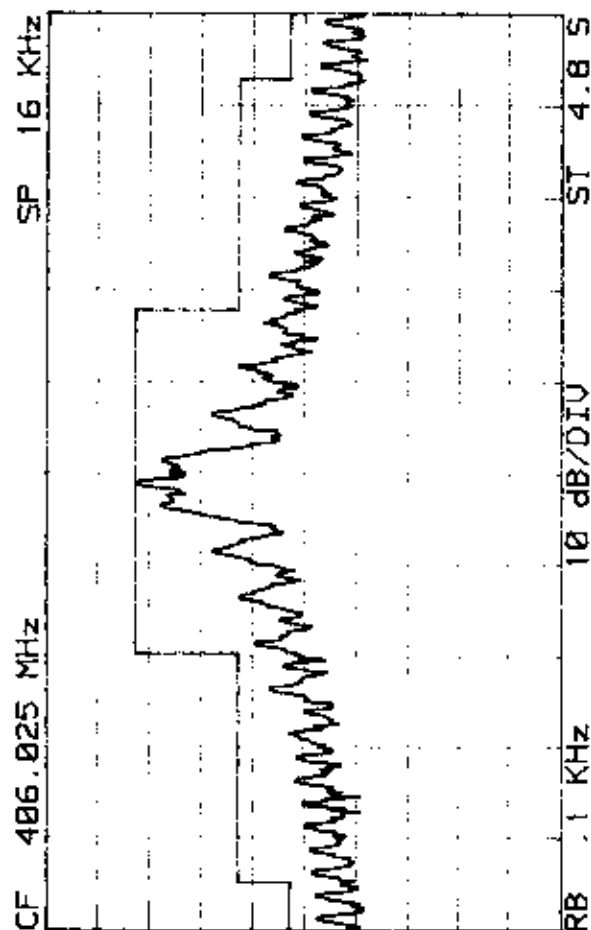
10.4 TEST EQUIPMENT

- Climatic chamber : CLIMATIS F CELL - Type: Austral 137H60/1,5E - S/N: 54880.
- Argos - Cospas/Sarsat Test Bench

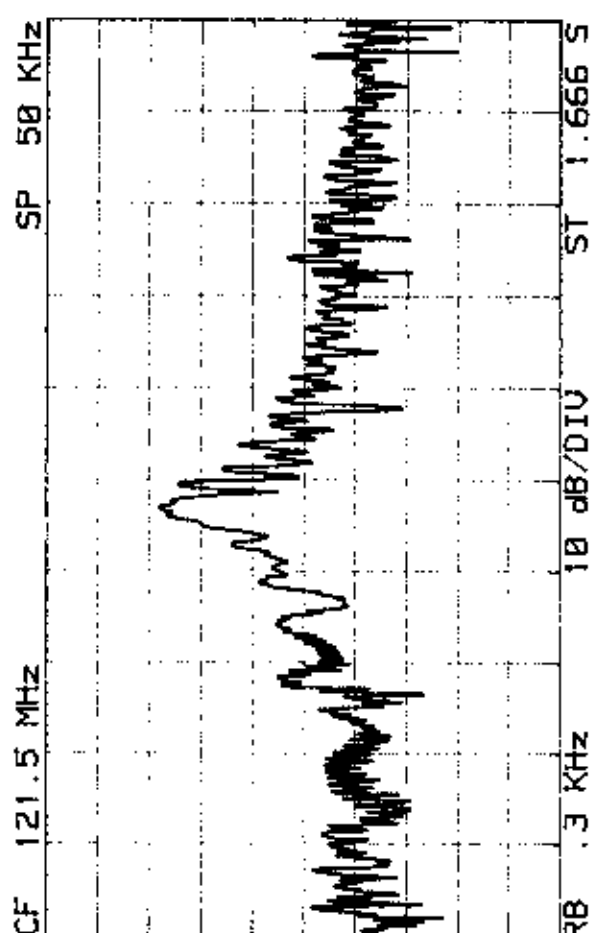
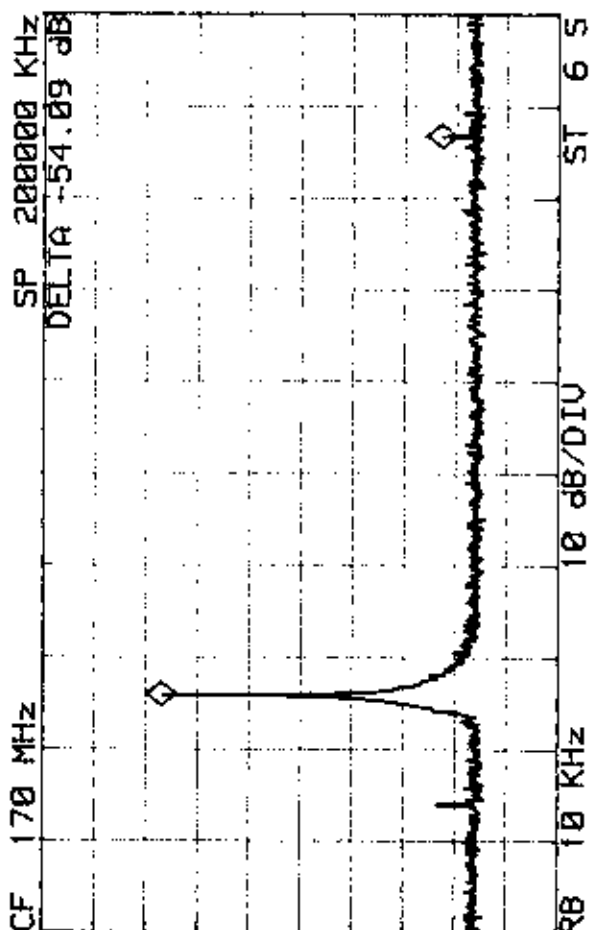
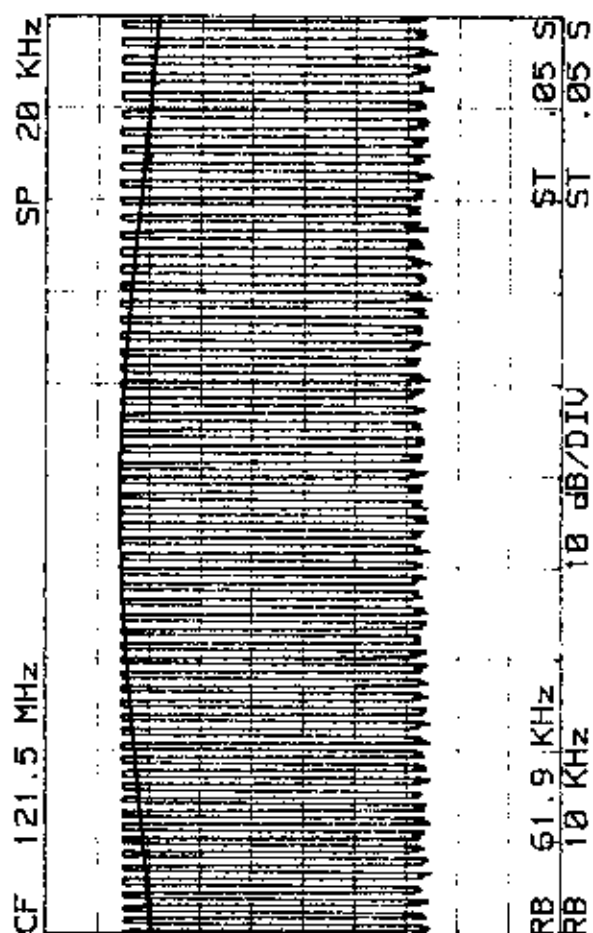
10.5. RESULTS

The graphs of spurious and harmonic measurements for the 406 MHz and 121.5 MHz signals are reported next pages :

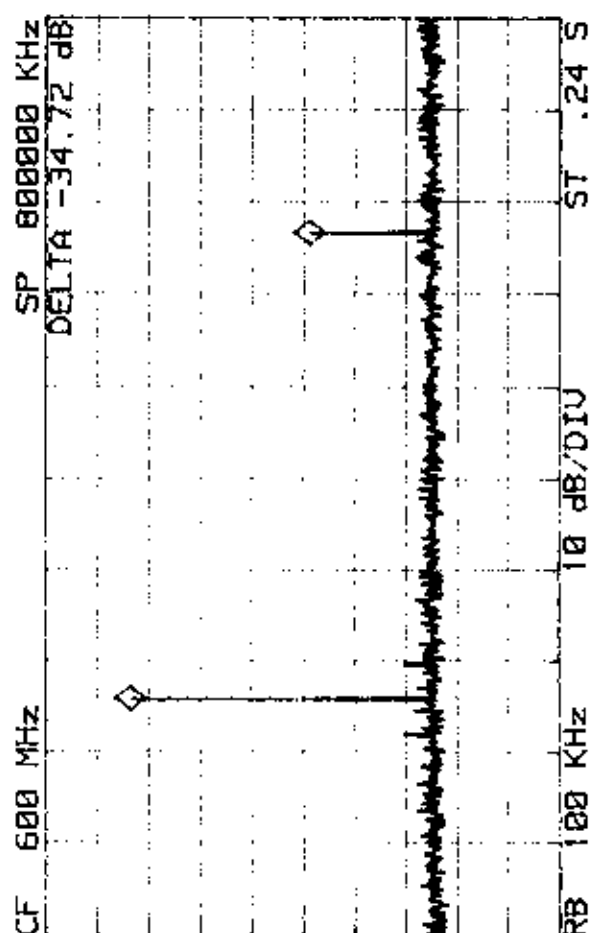
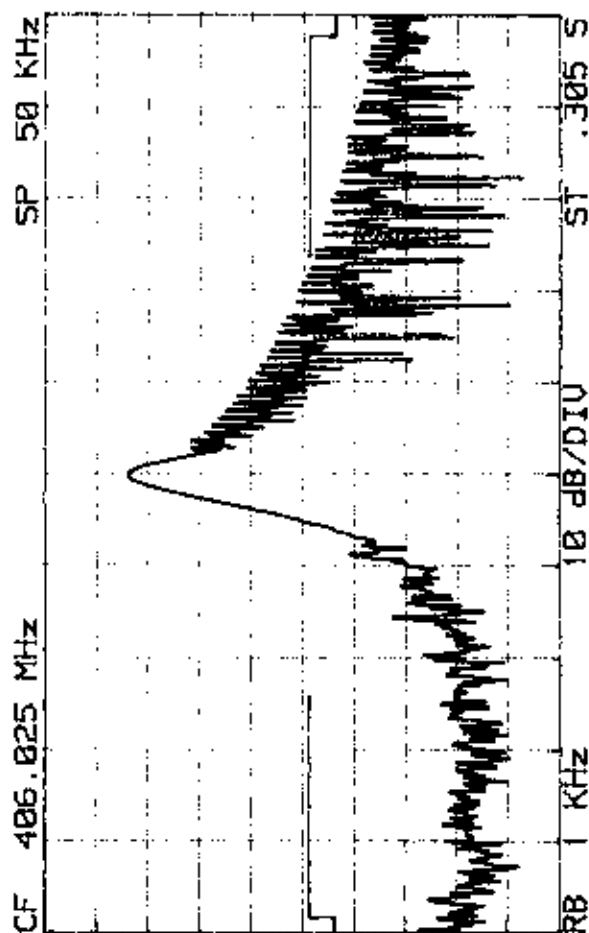
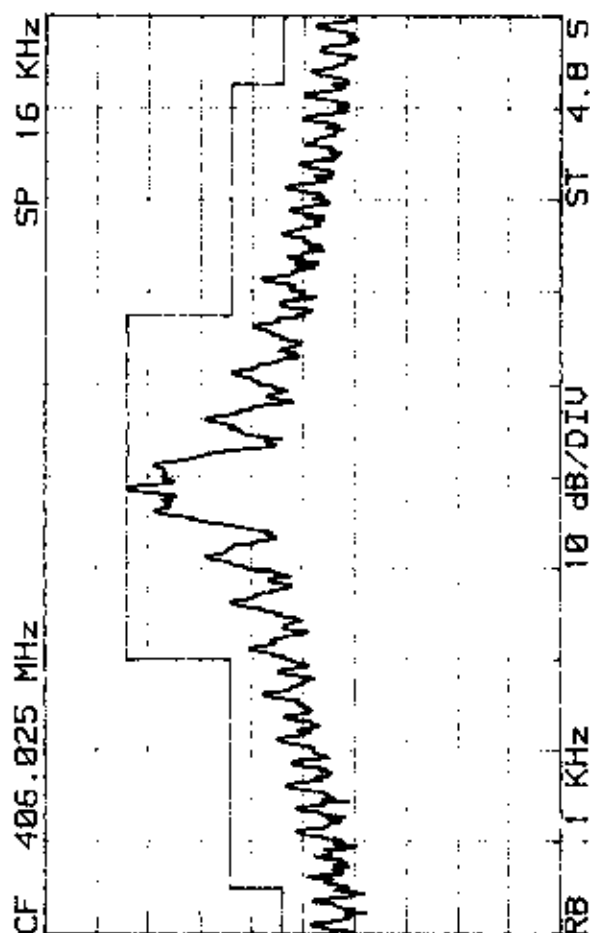
ACR
RLB35
07
25 Apr 2001
406 MHz
TEMP : -48°C



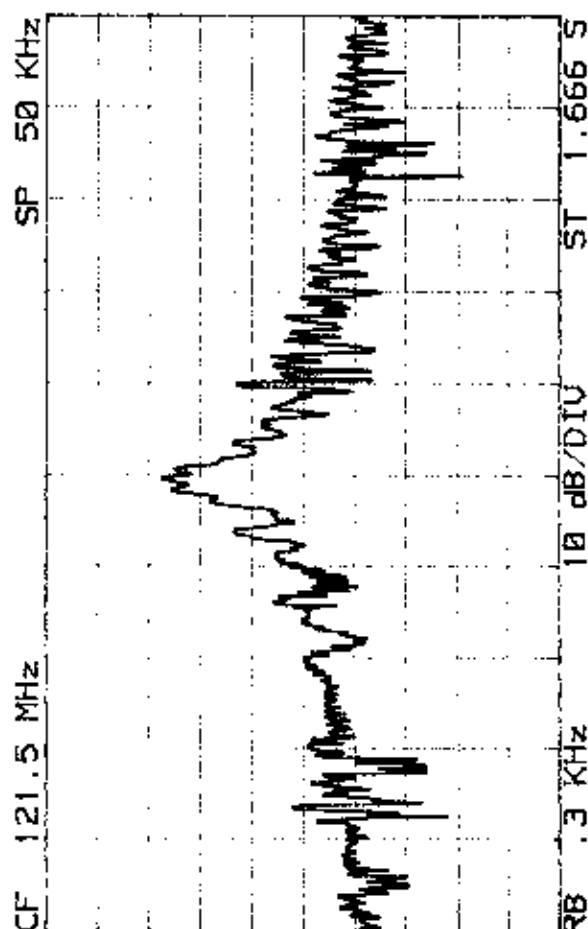
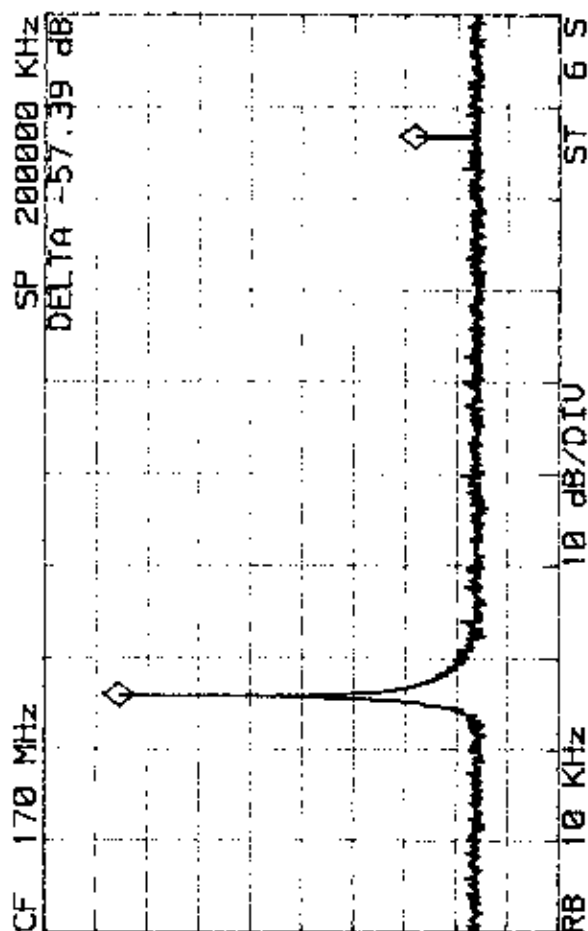
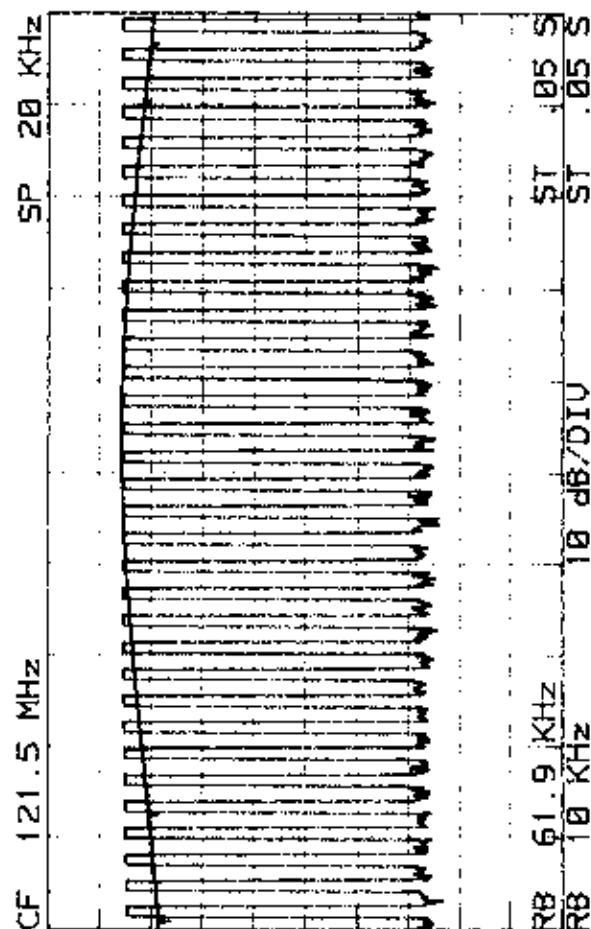
ACR
 RLB35
 07
 25 Apr 2001
 121.5 MHz
 TEMP : -40°C



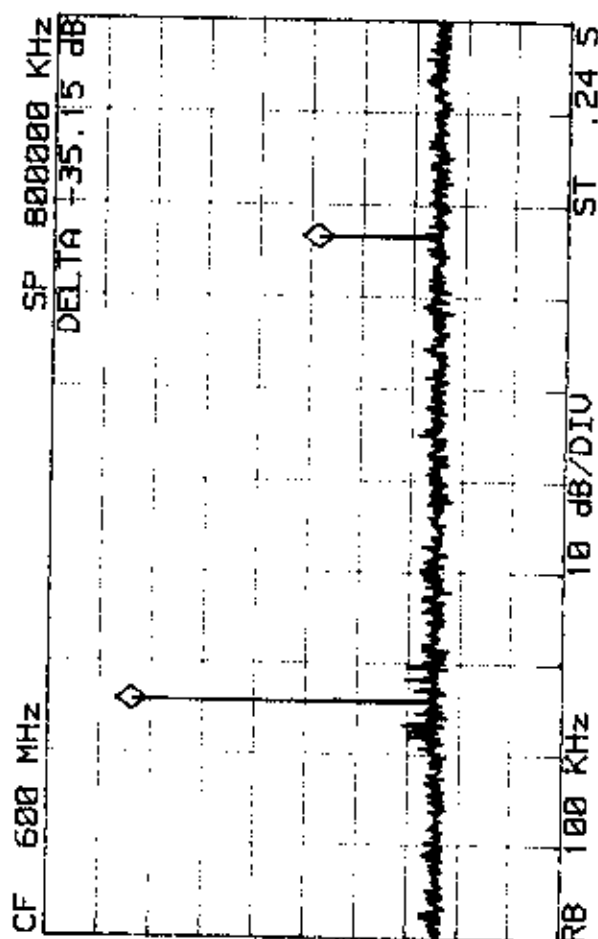
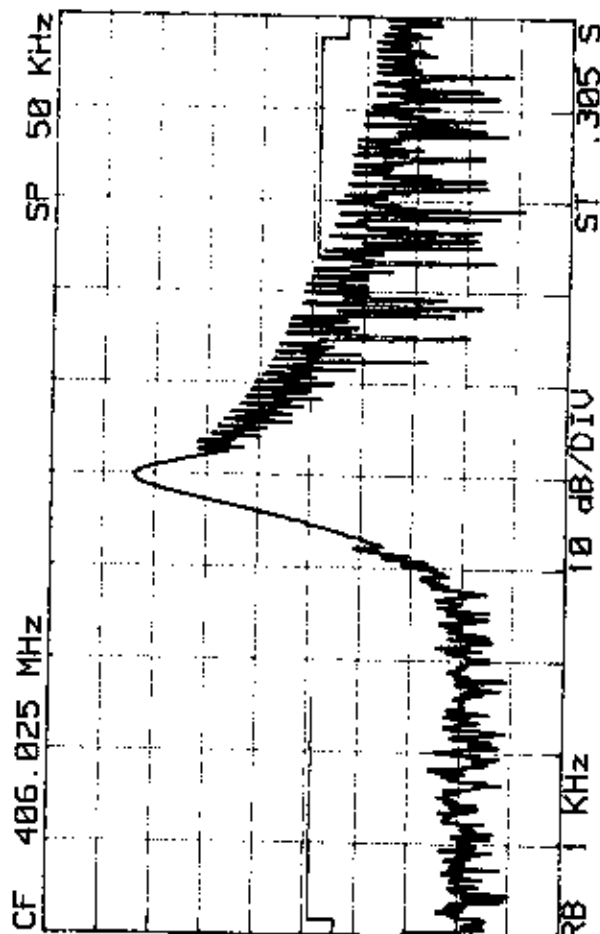
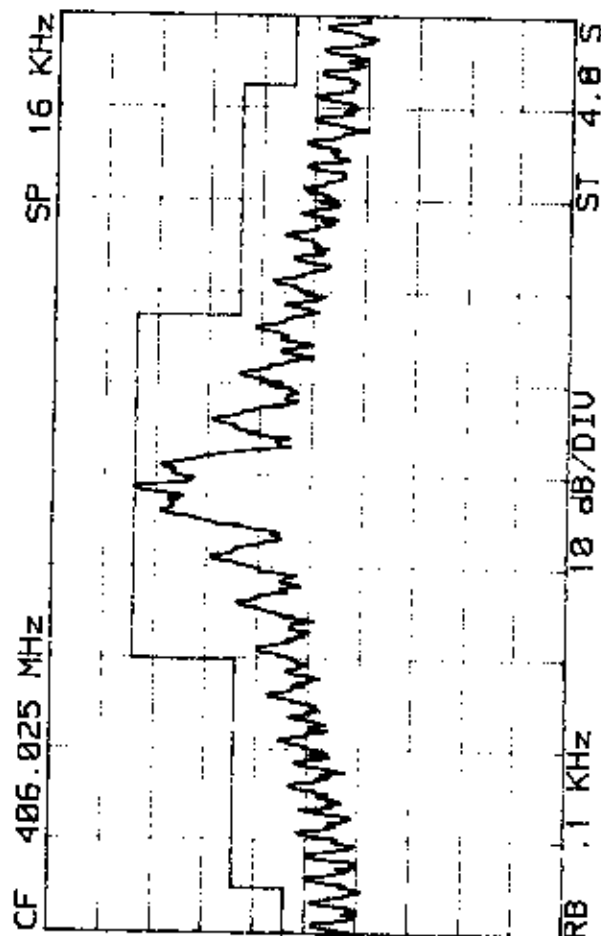
ACR
RLB35
07
18 Apr 2001
406 MHz
TEMP : 22°C



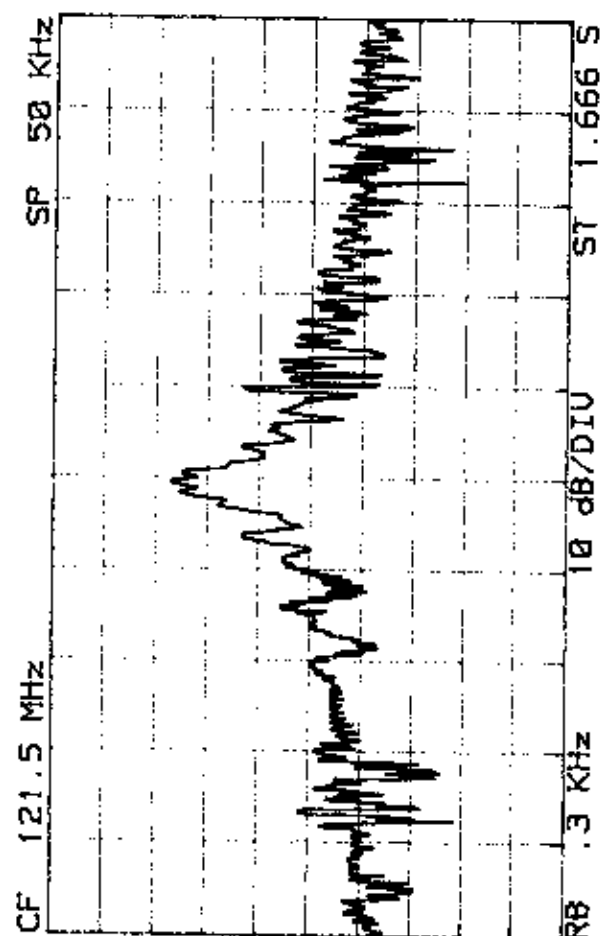
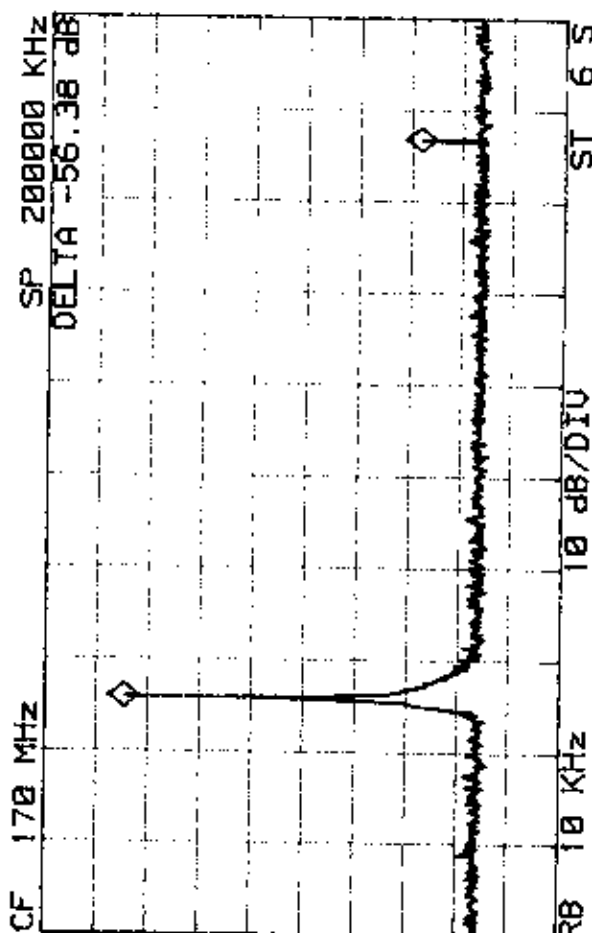
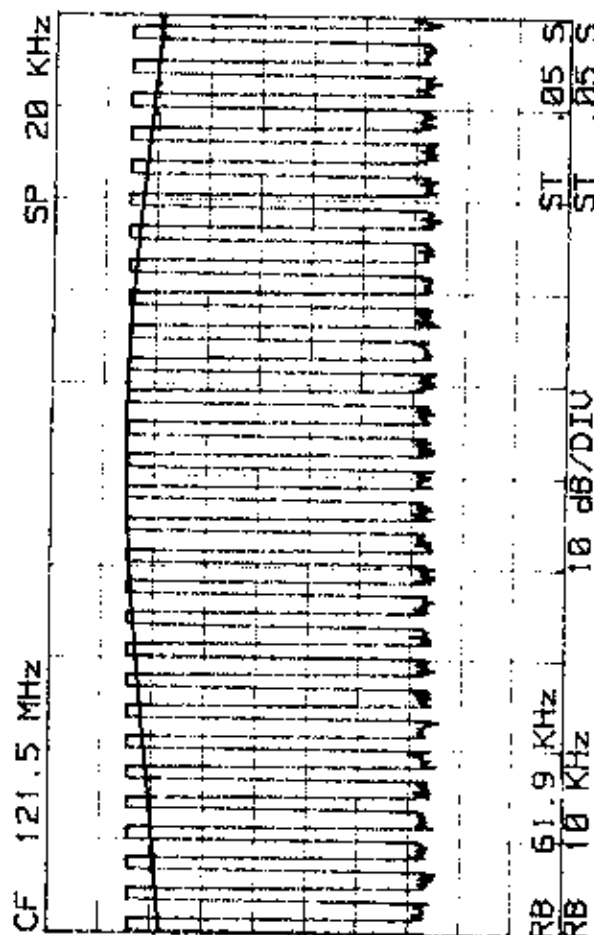
ACR
RLB35
07
18 Apr 2001
121.5 MHz
TEMP : 22°C



ACR
RLB35
07
19 Apr 2001
406 MHz
TEMP : 55°C



ACR
RL835
07
19 Apr 2001
121.5 MHz
TEMP : 55°C



CHAPTER 11

A11.0 - THERMAL SHOCK TESTS

11.1 TEST SPECIFICATIONS AND PROGRAMME

11.1.1 TEST SPECIFICATIONS

- Following Section A11.0 of RTCM Recommended Standards for 406 MHz Satellite EPIRBs (Version 2.0 Feb 5,1997) :

11.1.2 TEST SEQUENCE

LOW -TEMPERATURE THERMAL SHOCK

- With the beacon in the ready condition , place it in a temperature-controlled oven at - 30° C for a minimum of three hours.
- Remove the beacon from the oven and immerse it in fresh water at a temperature of 0° C to + 5° C. for 5- 10 seconds .
- Then control if the EUT is normally self activate within 5 minutes floating in water at that temperature .
- Remove the EUT from the water , deactivate it, set it to the ready position and place it in a temperature-controlled oven at - 30° C for a minimum of three hours.
- Immerse the beacon in salt water (5 % NaCl) at a temperature of - 2° C to + 5° C for 10 seconds .
- Then control if the EUT is normally self activate within 5 minutes floating in water at that temperature .
- After 15 minutes floating, the electrical measurements should be nominal.

HIGH-TEMPERATURE THERMAL SHOCK

- Proceed as described in § 11.1.2. but with oven temperature at + 70° C (stowage temperature) and the water maintained between 25° C and 35° C.

11.2. EQUIPMENT UNDER TEST

Beacon Unit : 1/2
Name : ACR
Type : RLB35
Number : 07

11.3. TEST SITE

Toulouse Space Center (C.S.T./ ITS) - Beacon certification laboratory .

11.4. TEST EQUIPMENT

- Climatic chamber : CLIMATS F.C.H. – Type: Austral I37H60/1,5E - S/N: S4880.
- Fresh or salt water container .
- KEITHLEY thermometer/multimeter ,Type : 2000, S/N 0678112 with CU-CT thermocoupler.
- Argos - Cospas/Sarsat Test Bench

11.5. TEST RESULTS OF LOW-TEMPERATURE THERMAL SHOCK

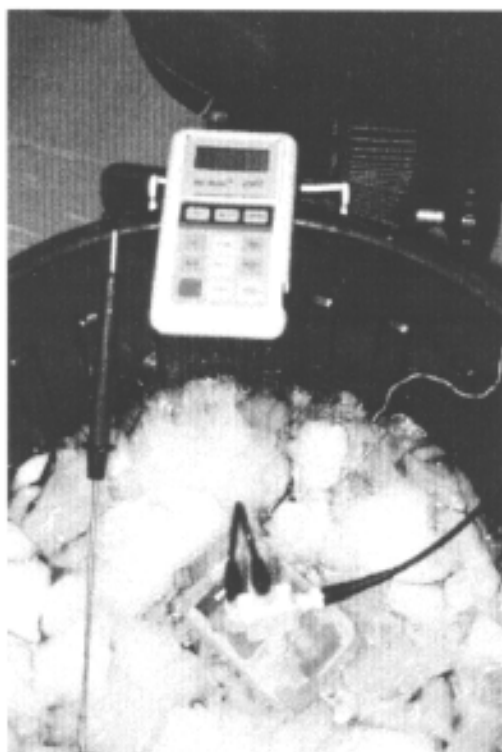
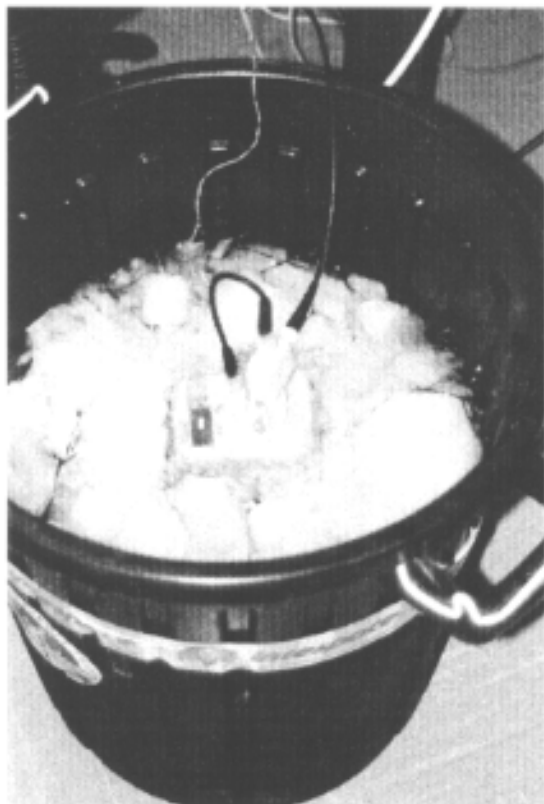
11.5.1 Test Implementation

Date	Hour	Operations	Results
June 12 th ,2001	17:00	The beacon, in the ready condition, is thermally soaked at - 40° C in the temperature-controlled oven .	
June 13 th ,2001	9:00	The beacon is immersed in fresh water at 0° C within 10 seconds then floated for 5 minutes .	Self activation : OK
June 13 th ,2001	9:30	The beacon, in the ready condition, is thermally soaked at - 40° C in the temperature-controlled oven .	
	15:00	The beacon is immersed in salt water at 0.1 ° C within 10 seconds then floated for 5 minutes .	Self activation : OK
	15:05	Then, the beacon, in float free position and in salt water at 0° C is connected to the test bench and an electrical test are conducted during 2 hours .	The results are nominal after 30 minutes.

11.5.2 Electrical results of Low-Temperature Thermal Shock Test

June 13 th ,2001 Low-temperature thermal shock test : - 40° to 0.1° C See photo, data and graphs next pages	PARAMETERS	RESULTS AFTER 20 MIN.
	Nominal carrier frequency (406.025 MHz $\pm$ 0.002 MHz)	406.0244951 MHz
	RF output power (5 W or 37 dBm $\pm$ 2)	36.7 dBm
	Short term frequency stability ($< 2 \times 10^{-9}$ /100 ms)	$\leq 2 \times 10^{-10}$ /100 ms
	Mean slope ($< \pm 1 \times 10^{-9}$ /mn)	$< 1 \times 10^{-9}$ /mn
	Residual frequency variation ($< 3 \times 10^{-9}$)	$\leq 2 \times 10^{-9}$

LOW-TEMPERATURE THERMAL SHOCK PHOTO



Low. thermal shock

Pente et Sigma (Mesures)

Mesures du 13 Jun 2001 15:02:11

Constructeur : ACR
 Type : RLB35
 Numero : 07
 Reference INTESPACE : M3223-1
 Type : SARSAT

	Freq	Temp.	P406	P121.5
1	49556.25	-1.21	36.21	8.81
2	49554.67	-1.20	36.30	5.80
3	49552.32	-1.23	36.37	0.00
4	49548.67	-1.97	36.43	7.05
5	49544.28	-1.19	36.45	9.48
6	49540.09	-1.20	36.50	4.04
7	49536.87	-1.19	36.58	9.48
8	49535.07	-1.16	36.60	8.02
9	49534.35	-1.17	36.61	7.05
10	49533.90	-1.18	36.63	4.04
11	49533.40	-1.17	36.64	10.06
12	49532.56	-1.16	36.66	7.05
13	49531.46	-1.18	36.67	4.04
14	49530.06	-1.17	36.68	5.80
15	49528.41	-1.16	36.69	4.04
16	49526.57	-1.19	36.70	8.02
17	49524.82	-1.19	36.71	1.03
18	49523.03	-1.15	36.69	8.81

No	Temp	Slope	Sigma	P406	Short term	P121.5
1	-1.1	-5.2E-09	+6.2E-09	36.6	+1.2E-10	8.8
18	-1.1	-3.6E-09	+1.7E-09	36.7	+1.3E-10	4.0
31	-1.2	-1.3E-09	+1.8E-09	36.8	+1.2E-10	5.8
61	-1.0	-3.0E-10	+7.8E-10	37.0	+1.6E-10	5.8
91	-.8	-1.1E-10	+1.5E-10	37.1	+1.5E-10	9.5
121	-.5	-6.2E-11	+1.2E-10	37.2	+1.3E-10	7.1

Nbre d'erreurs de mesure recuperees : 0

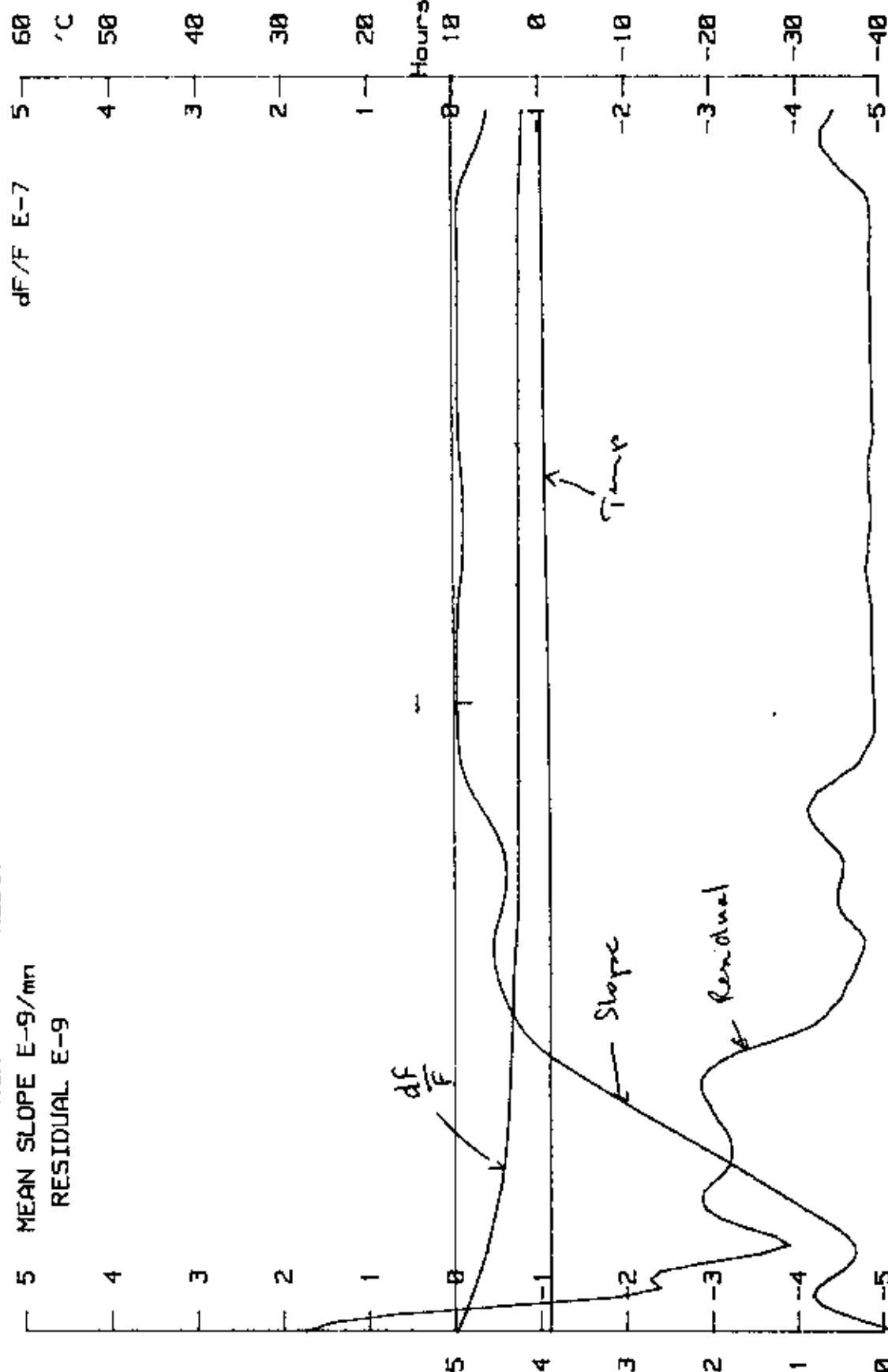
49563

49487

MEDIUM TERM STABILITY

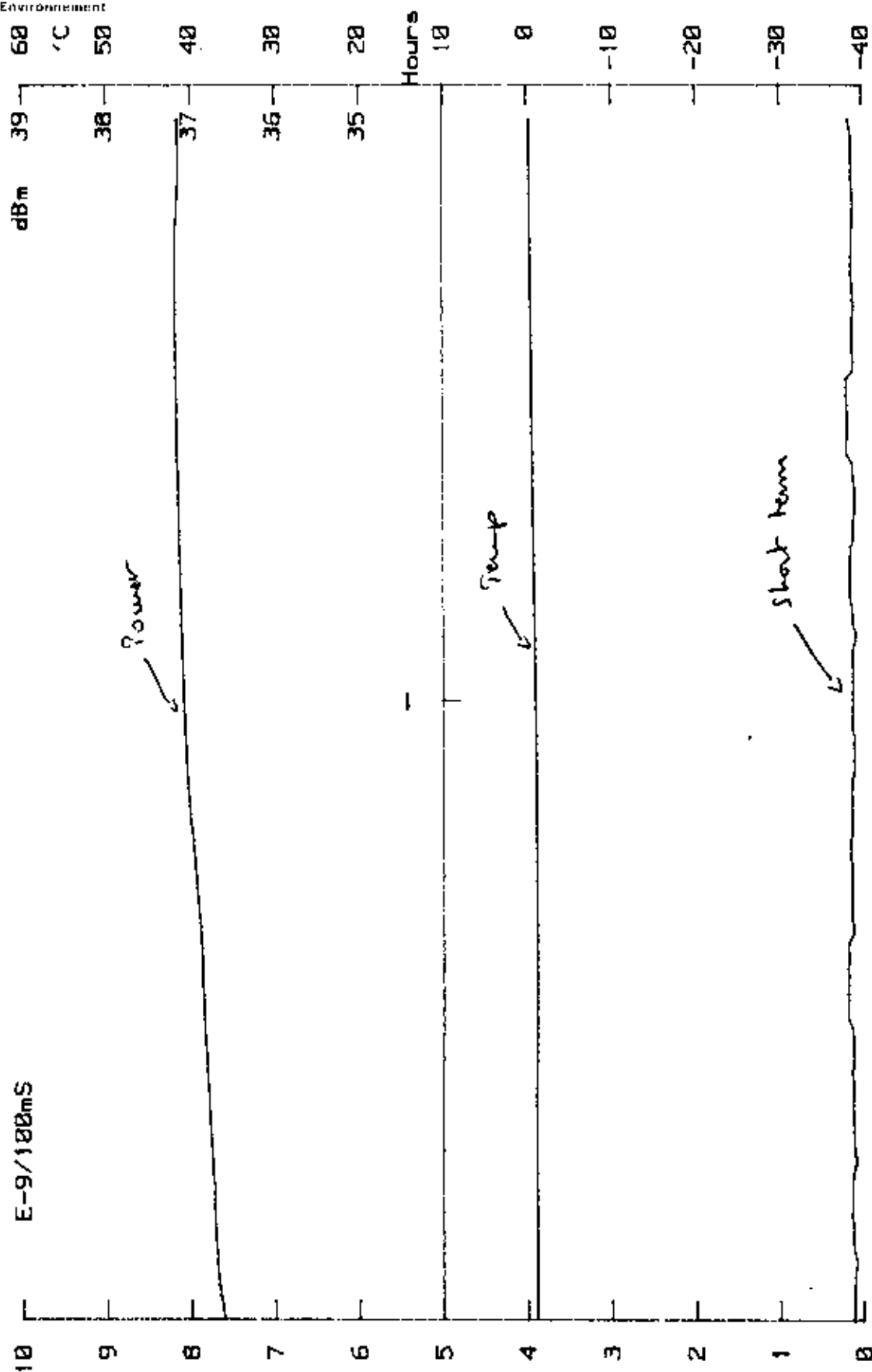
BEACON 5 MANUFACTURER ACR MODEL RL835 SERIAL Nr 07 DATE 13 Jun 2001 TIME 0 15:02:06

MEAN SLOPE E-9/min
RESIDUAL E-9



OUTPUT POWER and SHORT TERM STABILITY

BEACON MANUFACTURER MODEL SERIAL Nr DATE TIME B
ACR RLB35 07 13 Jun 2001 15:02:06
E-9/100ms



11.6. TEST RESULTS OF HIGHT-TEMPERATURE THERMAL SHOCK

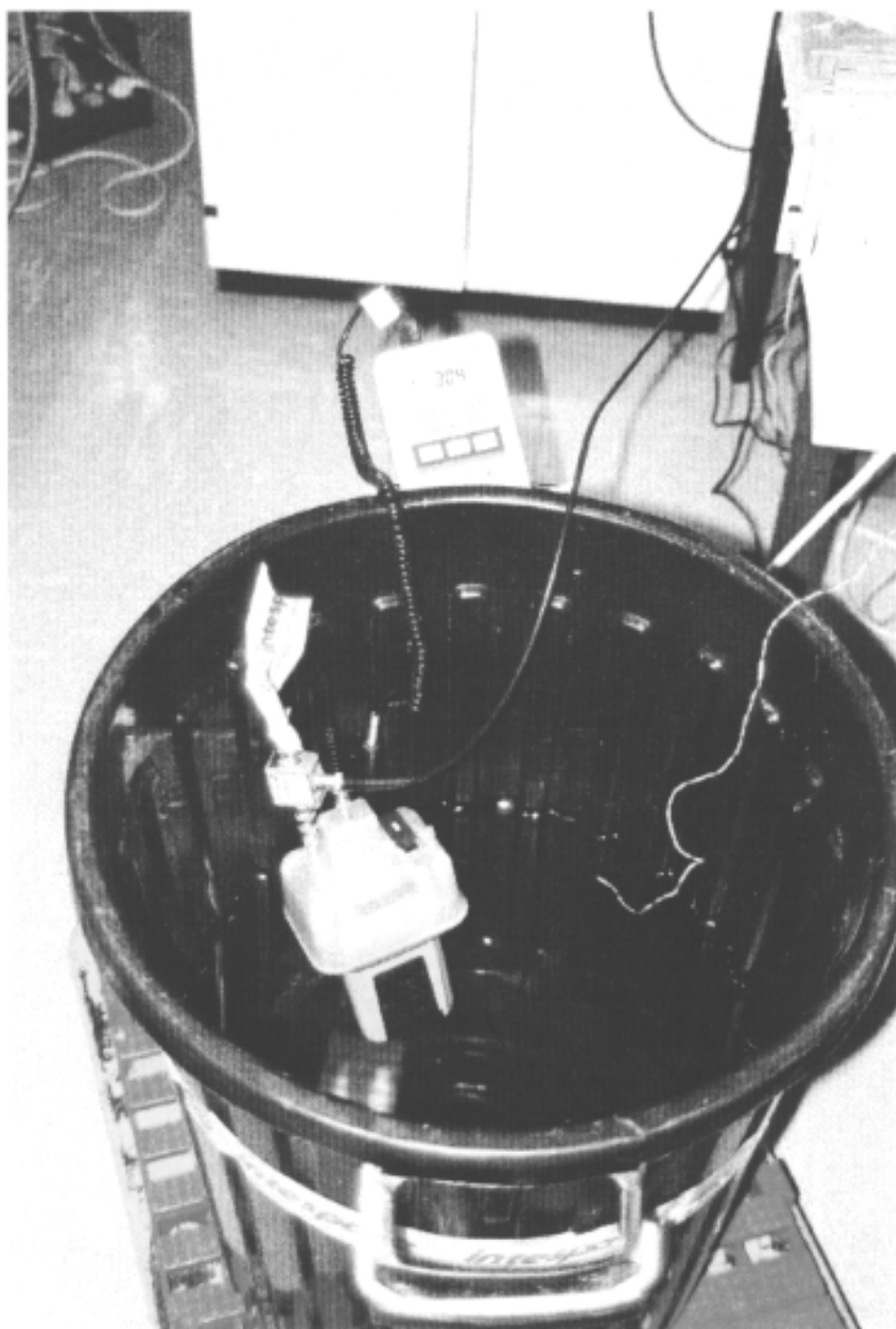
11.6.1 Test implementation

Date	Hour	Operations	Results
June 13 th ,2001	18:00	The beacon, in the ready condition, is thermally soaked at + 70° C in the temperature-controlled oven .	
June 14 th ,2001	9:30	The beacon is immersed in fresh water at 33° C within 10 seconds then floated for 5 minutes .	Self activation : OK
June 14 th ,2001	10:00	The beacon, in the ready condition, is thermally soaked at + 70° C in the temperature-controlled oven .	
	17:45	The beacon is immersed in salt water at 31 ° C within 10 seconds then floated for 5 minutes .	Self activation : OK
	17:50	Then, the beacon, in float free position and in salt water at 31° C is connected to the test bench and an electrical test are conducted during 2 hours .	The results are nominal after 20 minutes.

11.6.2 Electrical results of Hight-Temperature Thermal Shock Test

June 14 th ,2001 Hight -temperature thermal shock test : +70 ° to + 31° C See photo, data and graphs next pages	PARAMETERS	RESULTS AFTER 20 MIN.
	Nominal carrier frequency (406.025 MHz $\pm$ 0.002 MHz)	406.0244723 MHz
	RF output power (5 W or 37 dBm $\pm$ 2)	37.5 dBm
	Short term frequency stability ($< 2 \times 10^{-9}$ /100 ms)	$\leq 2 \times 10^{-10}$ /100 ms
	Mean slope ($< \pm 1 \times 10^{-9}$ /mn)	$< 1 \times 10^{-9}$ /mn
	Residual frequency variation ($< 3 \times 10^{-9}$)	$\leq 2 \times 10^{-9}$

HIGH-TEMPERATURE THERMAL SHOCK PHOTO



Choe Chant

Pente et Sigma (Mesures)

Mesures du 14 Jun 2001 17:47:36

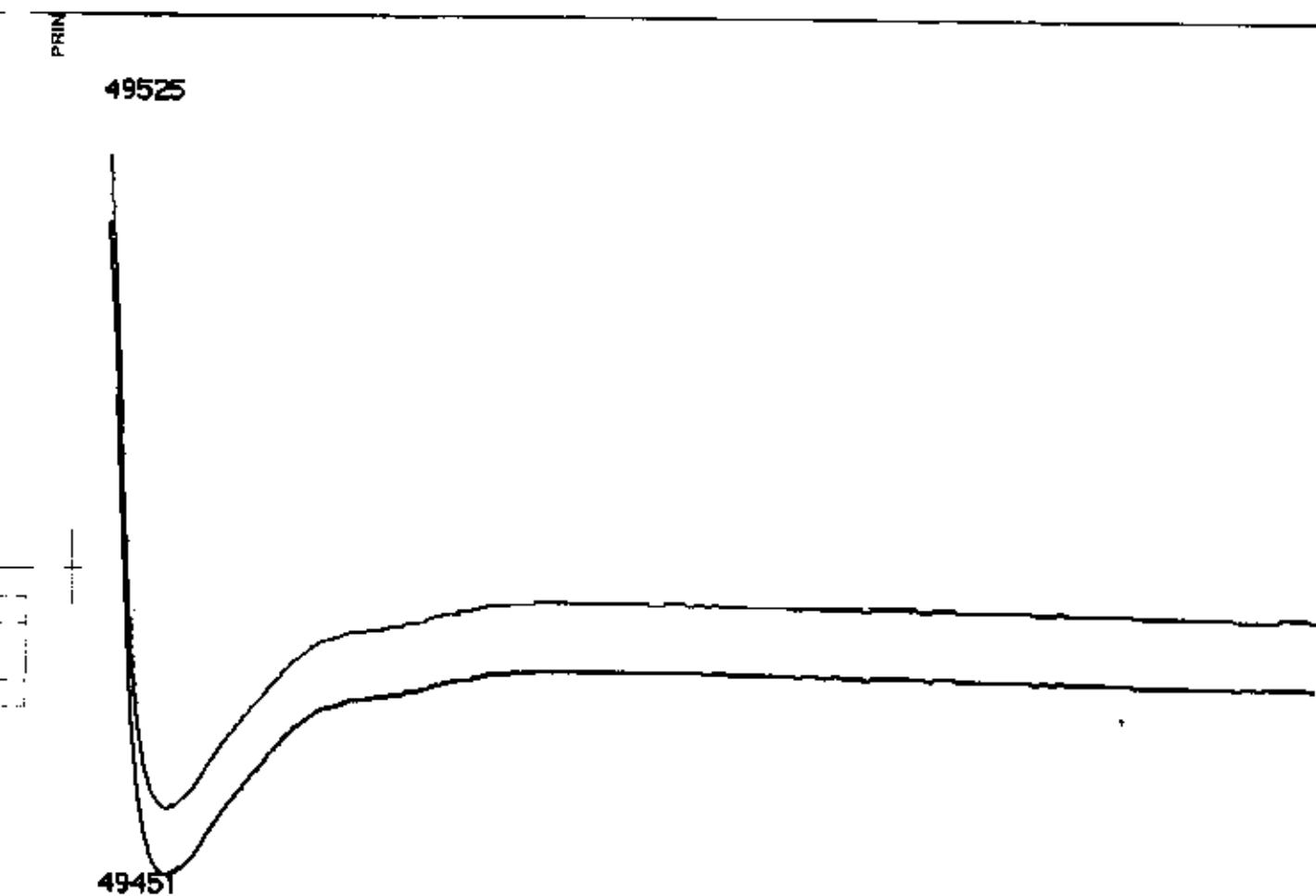
Constructeur : ACR
 Type : RLB35
 Numero : 07
 Reference INTESPACE : M3223-3
 Type : SARSAT

	Freq	Temp.	P406	P121.5
1	49518.80	31.23	37.28	8.02
2	49512.12	31.20	37.38	4.04
3	49501.16	31.24	37.39	4.04
4	49483.72	31.21	37.40	8.02
5	49468.27	31.19	37.41	9.48
6	49461.06	31.17	37.42	9.48
7	49457.22	31.13	37.42	5.80
8	49455.04	31.07	37.44	8.02
9	49454.08	31.05	37.46	4.04
10	49453.79	31.03	37.46	7.05
11	49454.10	31.05	37.46	4.04
12	49454.74	31.04	37.50	1.03
13	49455.48	31.00	37.50	10.57
14	49456.46	31.01	37.49	5.80
15	49457.74	31.04	37.48	12.79
16	49458.75	31.00	37.49	11.44
17	49459.70	31.02	37.48	8.81
18	49460.51	30.98	37.48	8.02

No	Temp	Slope	Sigma	P406	Short term	P121.5
1	31.0	-5.9E-09	+3.2E-08	37.5	+1.4E-10	8.8
18	30.9	+1.5E-09	+1.8E-09	37.5	+1.5E-10	9.5
31	30.6	+4.4E-10	+2.2E-10	37.4	+1.2E-10	5.8
61	30.0	-1.4E-11	+7.3E-11	37.4	+1.2E-10	9.5
91	29.4	-3.1E-11	+1.1E-10	37.3	+1.2E-10	0.0
121	29.0	-4.3E-11	+9.2E-11	37.3	+1.0E-10	0.0

Nbre d'erreurs de mesure recuperees : 0

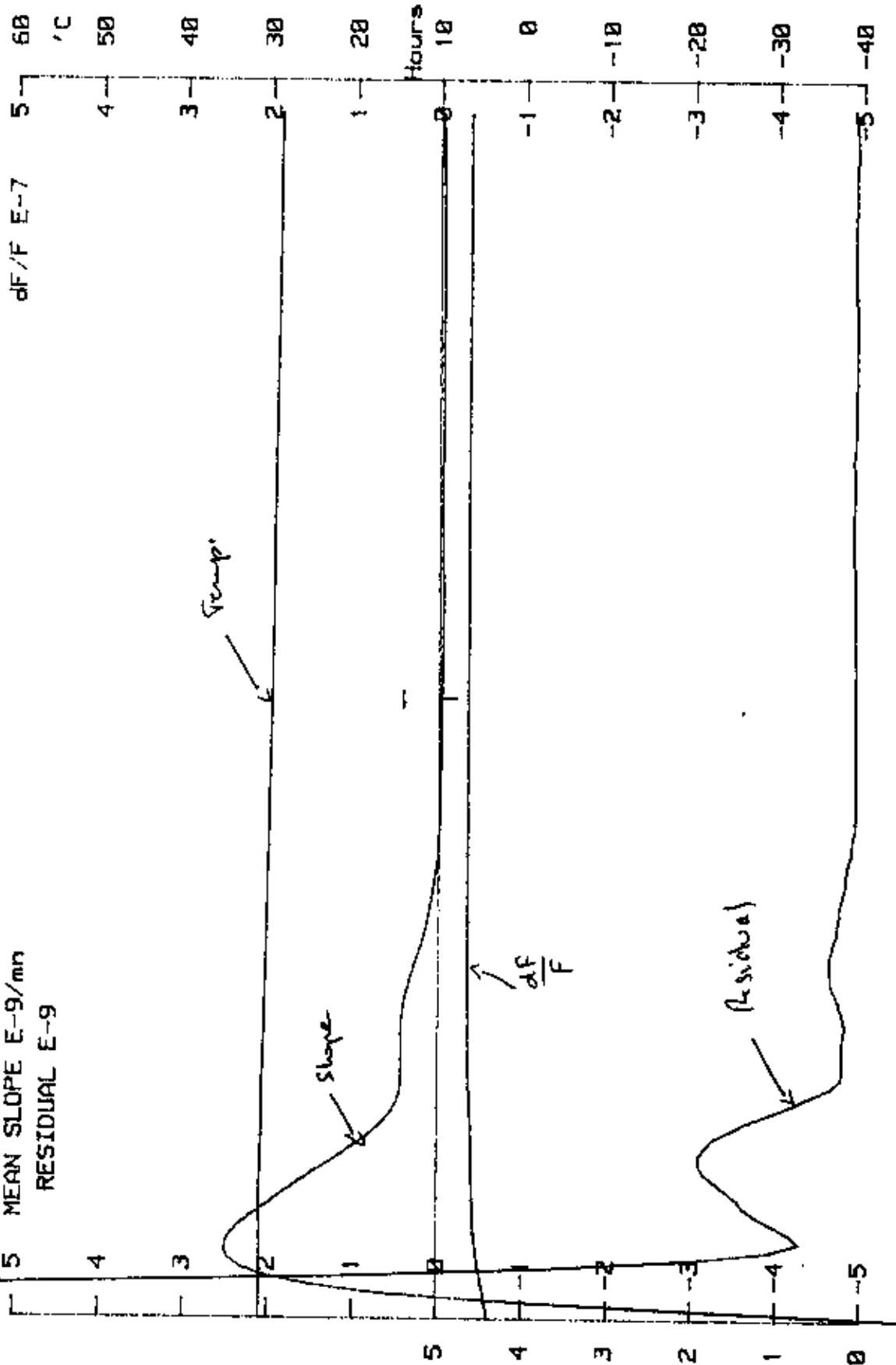
 TON THIS SIDE ONLY
 HEWLETT-PACKARD JETPAPER
 REORDER NO. 92261 K AUKO 06.96



MEDIUM TERM STABILITY

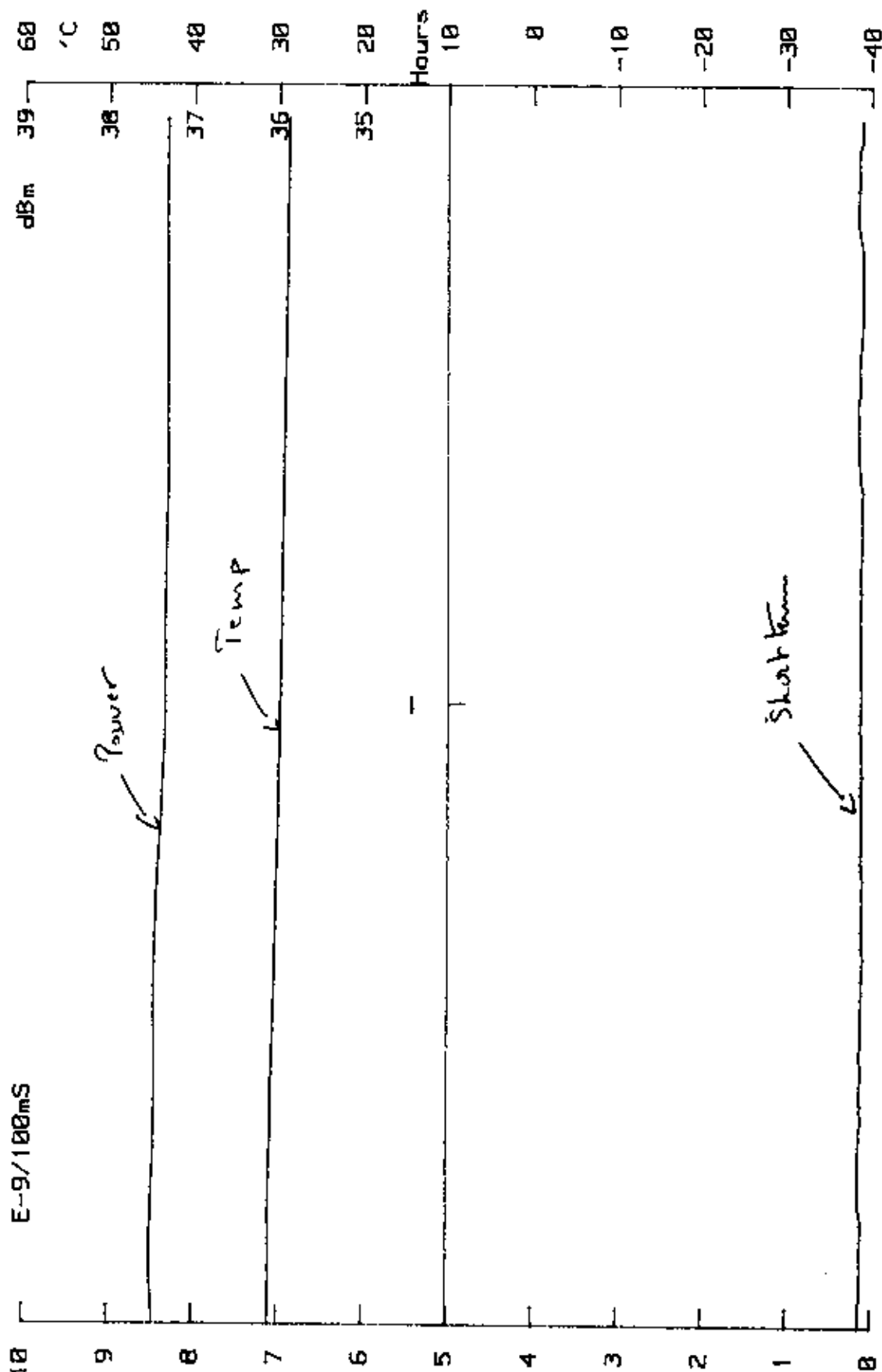
BEACON 5 MANUFACTURER ACR MODEL RL835 SERIAL Nr 07 DATE 14 Jun 2001 TIME 0 17:47:32

MEAN SLOPE E-9/mn
RESIDUAL E-9



OUTPUT POWER and SHORT TERM STABILITY

BEACON MANUFACTURER MODEL SERIAL Nr DATE TIME Ø
ACR E-9/100ms RLB35 07 14 Jun 2001 17:47:32



CHAPTER 13

A13.0 - OPERATIONAL LIFE, STROBE LIGHT, AND SELF TESTS

14.1 TEST SPECIFICATIONS AND PROGRAMME

Following Section A13.0 of RTCM Recommended Standards
for 406 MHz Satellite EPIRBs (Version 2.0 Feb 5,1997) :

- Using a fresh battery pack, turn ON the EUT (at the ambient temperature) for a period of time equal to the extension interval given by the constructor .
- Place the EUT turned OFF inside climatic chamber stabilized at - 40° C (class I) for a period of 10 hours
- At the conclusion of this period the EUT is turned ON and continually monitor the following parameters until the end of the battery life :
 - Frequency (nominal carrier, short and medium term stability),
 - RF output power,
 - Homing transmitter peak envelope output power.
 - Strobe light flash rate every 12 hours.

14.2. EQUIPMENT UNDER TEST

Beacon

Beacon Unit : 1/2
Name : ACR
Type : RLB35
Number : 07
Class : I

Beacon Battery Type

Chemistry : Li-SO₂
Manufacturer & model n° : SAFT LO26SX
Size & number of cells : Dx3

14.3. TEST SITE

Toulouse Space Center (C.S.T./ ITS) - Beacon certification laboratory .

14.4. TEST EQUIPMENT

- Climatic chamber: CLIMATS F.C.H. – Type: Austral 137H60/1,5E - S/N: S4880.
- Argos - Cospas/Sarsat Test Bench

14.5. RESULTS

These tests have been performed during the COSPAS-SARSAT Type Approval tests (chapter 12)
 The strobe light test and the self test have been, also, performed with Cospas Sarsat Type Approval tests (chapter 12) at three temperature (-40°C , 22°C and 55°C)

Before these tests we have verified the manufacturer calculation of the loss in battery capacity due to self-testing as well as battery pack self-discharge during the useful lifetime of battery pack (see chapter 12 : C/S Type Approval Test Report § "OPERATING LIFE TEST RESULTS ON RLB35 N° 07 ")

Total AMP-HOUR burn off battery for -40°C life test : 0.139062 AMP-HOURS

14.5.1 Test implementation

Date	Hour	Operations	Results
June 17 th , 2001	17:00	The beacon, in the ready condition, is thermally soaked at -40°C in the temperature-controlled oven .	
June 18 th , 2001	08:00	The beacon in the oven at -40°C and connected into 50 Ohm load Argos Cospas Sarsat Test Bench is manually activated . Simultaneously an Automatic Operational Life Test begin.	OK
June 20 th , 2001	10:00	End of Automatic Operational Life Test.	
June 20 th , 2001	10:30	Analysis of Operating Life Test Results :	Correct during ≈ 50 hours

14.5.2 Electrical results of Operating Life, StrobeLight and Self Tests

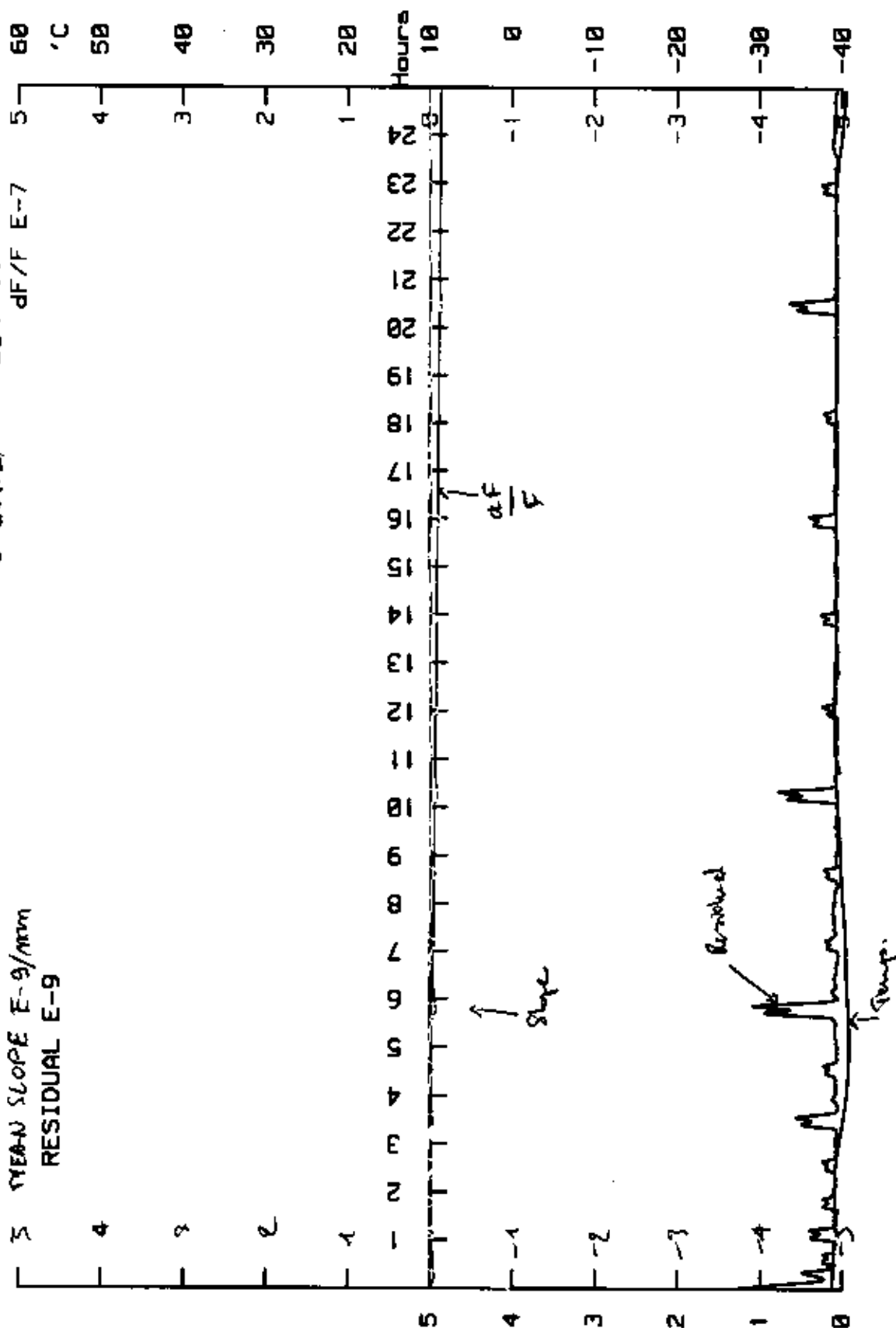
Measurement Temperature : -40 °C

SPECIFICATIONS	12 h	24 h	36 h	48 h	50 h
1 - FREQUENCY (MHz)					
Nominal Carrier 406.025 ± 0.002	406.024546	406.024544	406.024541	406.024539	406.024539
Short term stab. $< 2 \times 10^{-9}/100$ ms	$< 2 \times 10^{-10}$	$< 2 \times 10^{-10}$	$< 2 \times 10^{-10}$	$< 3 \times 10^{-10}$	$< 3 \times 10^{-10}$
Slope $< 1 \times 10^{-9}/\text{mn}$	$< 1 \times 10^{-10}$	$< 1 \times 10^{-10}$	$< 1 \times 10^{-10}$	$< 1 \times 10^{-10}$	$< 1 \times 10^{-10}$
Sigma $< 3 \times 10^{-9}$	$< 8 \times 10^{-10}$	$< 6 \times 10^{-10}$	$< 6 \times 10^{-10}$	$< 2 \times 10^{-10}$	$< 2 \times 10^{-10}$
2 - RF OUTPUT					
+ 2.9					
5 W (37 dBm $\pm$ 2 dBm)	36.8	36.9	36.8	36.0	35.4
- 1.8					
3 - STROBE LIGHTS					
20 to 30 flashes/min	21	20	21	21	21
Intensity ≥ 0.75 cand.	-	0.90	-	0.85	-
4 - HOMING					
Transmitter :	18.5	18.5	18.5	18.3	18.1
- peak envelope output power					
(14 dBm + 6 dB - 0 dBm)					
5 - DIGITAL MESSAGE					
Correct Satellite EPIRB coding	OK	OK	OK	OK	OK

See data and graphs of results on chapter 12 "Cospas-Sarsat Type Approval Tests Report." and graphs next pages.

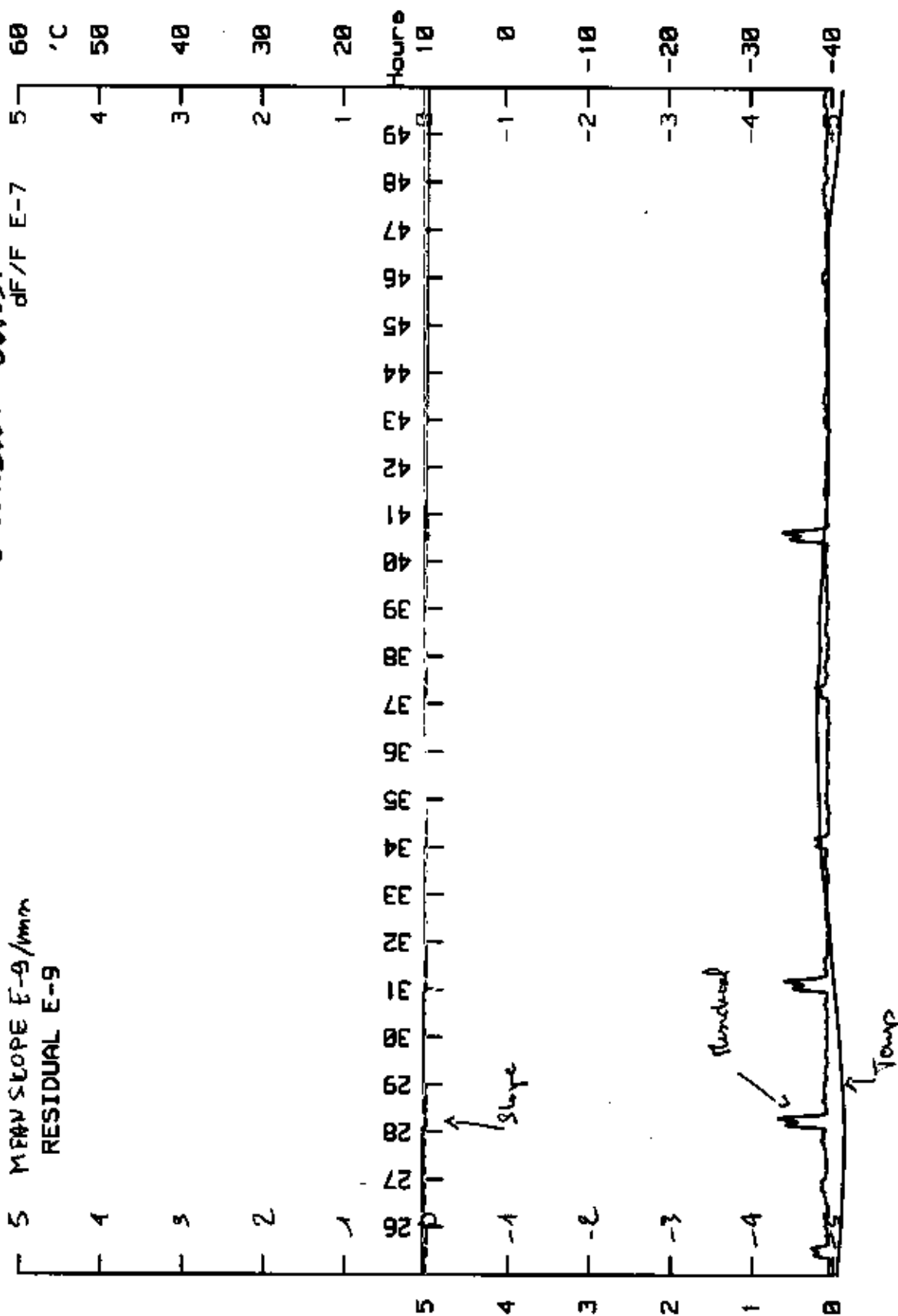
MEDIUM TERM STABILITY

BEACON MANUFACTURER MODEL SERIAL Nr DATE TIME Ø
ACR RLB35 07 18 Jun 2001 08:03:11
MEAN SLOPE E-9/mm dF/F E-7
RESIDUAL E-9



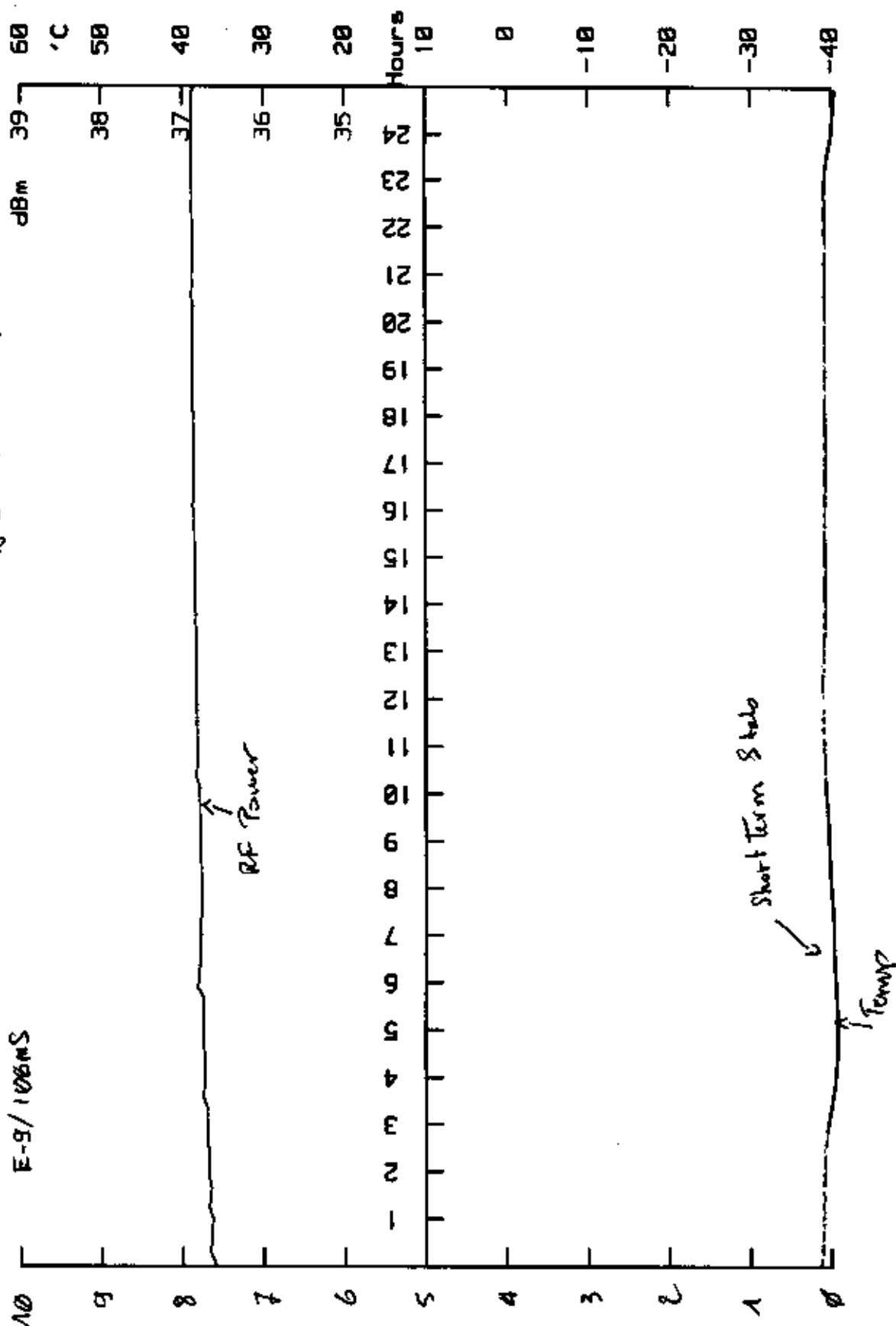
MEDIUM TERM STABILITY

BEACON 5 MANUFACTURER ACR MODEL RLB35 SERIAL N° 07 DATE 18 Jun 2001 TIME 08:03:44
 ACR E-9/1mm
 RESIDUAL E-9
 dF/F E-7



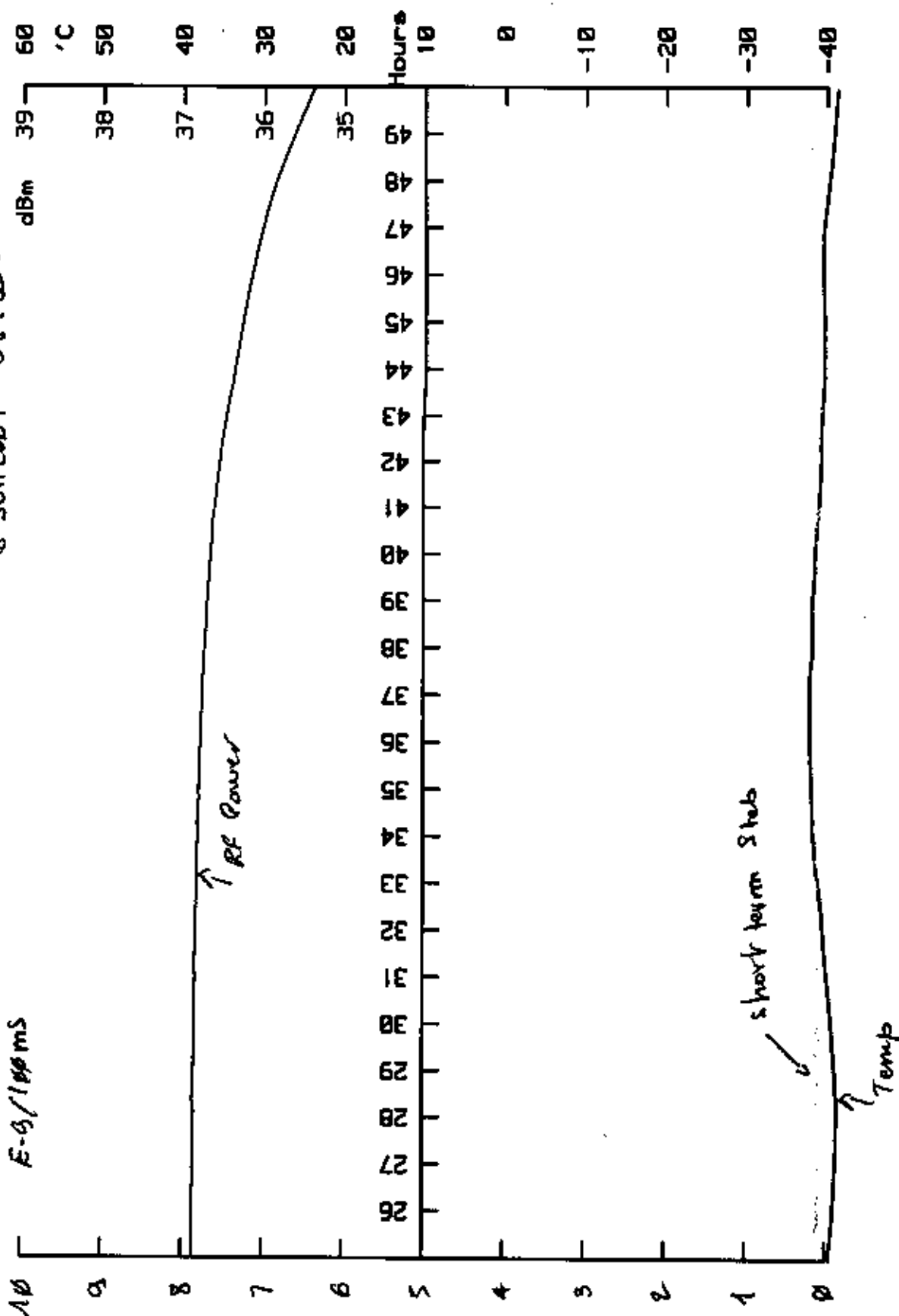
OUTPUT POWER and SHORT TERM STABILITY

BEACON E-9/106mS
MANUFACTURER ACR
MODEL RLB35
SERIAL Nr 07
DATE 18 Jun 2001
TIME 08:03:11



OUTPUT POWER and SHORT TERM STABILITY

BEACON MANUFACTURER MODEL SERIAL Nr DATE TIME B
ACR E-3/100ms RLB35 07 08 Jan 2001 08:03:11



CHAPTER 14

A14.0	AUTOMATIC RELEASE MECHANISM AND AUTOMATIC ACTIVATION TESTS
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14-1 TEST SPECIFICATIONS AND PROGRAMME

The automatic release mechanism and the assembly is mounted on a fixture simulating a deck or a bulkhead as per manufacturer's instructions.

The fixture is then submerged in water as specified in RTCM document " Recommended Standards for 406 MHz Satellite EPIRBs, Version 2.0 Feb 5,1997", appendix A, section A14.0.

The EUT must float free before reaching a depth of 4 meters and must automatically active .

14.2. EQUIPMENT UNDER TEST

Beacon Unit : 1/2
Name : ACR
Type : RLB35
Number : 07

Bracket : ACR Universal Sea Shelter Id 18560

14.3. TEST SITE

Toulouse Fire Station VION - Beacon certification laboratory .

14.4. TEST EQUIPMENT

- Climatic chamber : CLIMATS F.C.H. – Type: Austral 137H60/1,5E - S/N: S4880.
- Dive well .
- Cospas/Sarsat Receiver : SERPE-IESM RMD01 S/N 004996
- Argos - Cospas/Sarsat Test Bench

14.5 TEST IMPLEMENTATION AND RESULTS

TOULOUSE :Dive well of Fire Station VION

June 7th, 2001 from 8:00 to 13:30 EPIRB RLB35 S/N 01with its bracket into oven at stowage temperature -50° C

June 8th, 2001 from 8:00 to 15:00 EPIRB RLB35 S/N 01 with its bracket into oven at stowage temperature 70° C

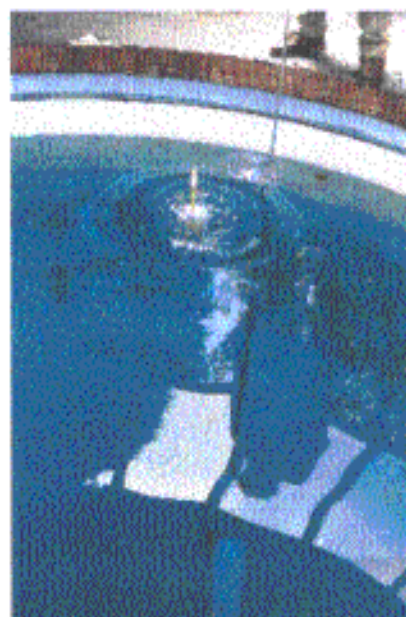
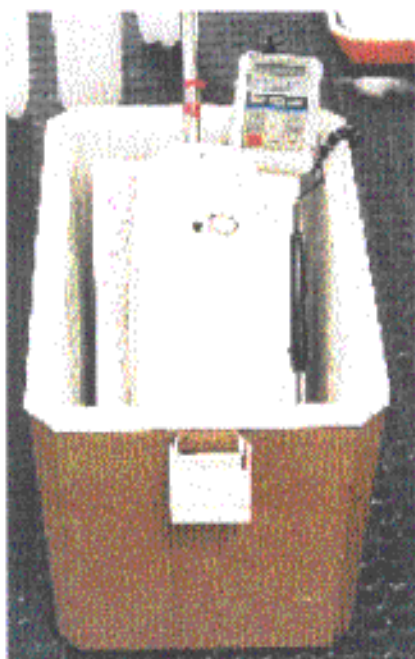
Fresh Water temperature : 20 °C ± 2 °C

	Stowage temp.	Date/Hours	Deep releasing	Mechanical control	Electrical control
CONFIGURATION 1  Normal mounted orientation	1a - 50° C	June 7 th ,2001 13:45	4,50 m	OK	OK
	1b + 70° C	June 8 th ,2001 14:00	2.50 m	OK	OK
	1c + 22° C	June 7 th ,2001 14:00	2.90 m	OK	OK
CONFIGURATION 2  Rolling 90° starboard	+ 22° C	June 7 th ,2001 14:15	2.80 m	OK	OK
CONFIGURATION 3  Rolling 90° port	+ 22° C	June 7 th ,2001 14:25	3.10 m	OK	OK
CONFIGURATION 4  Pitching 90° bow down	+ 22° C	June 7 th ,2001 14:35	3.20 m	OK	OK
CONFIGURATION 5  Pitching 90° stern down	+ 22° C	June 7 th ,2001 14:45	3.20 m	OK	OK
CONFIGURATION 6  Upside-down	+ 22° C	June 7 th ,2001 15:00	2.90 m	OK	OK

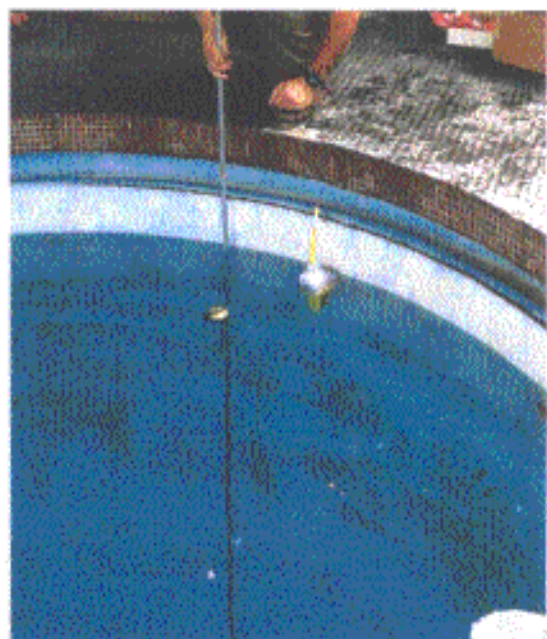
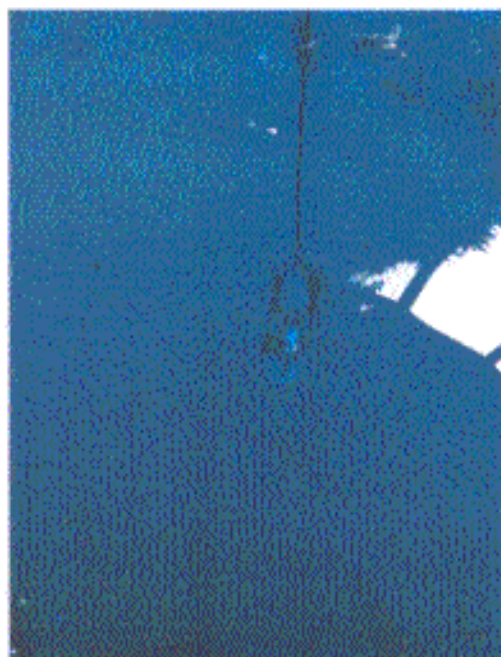
Note : At low stowage temperature the deep of the automatic release is just acceptable . We think that the Hammar device is on its working limits .

See photo next pages

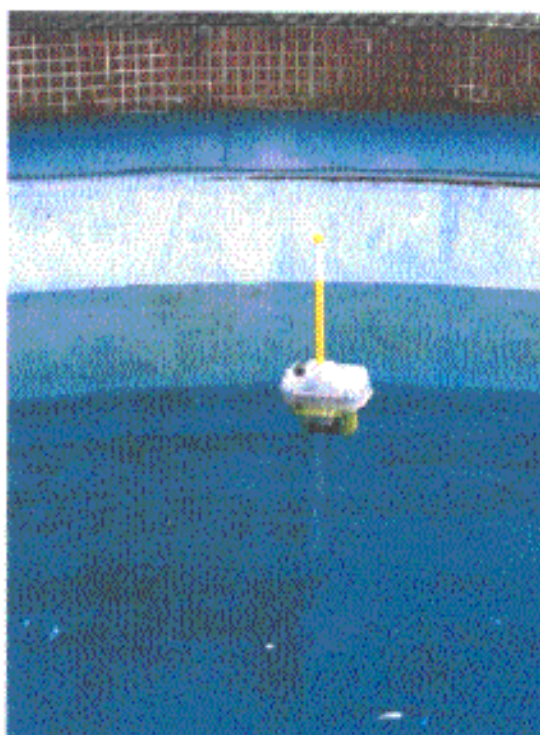
CONFIGURATION 1 a
Normal mounted orientation at - 50° C



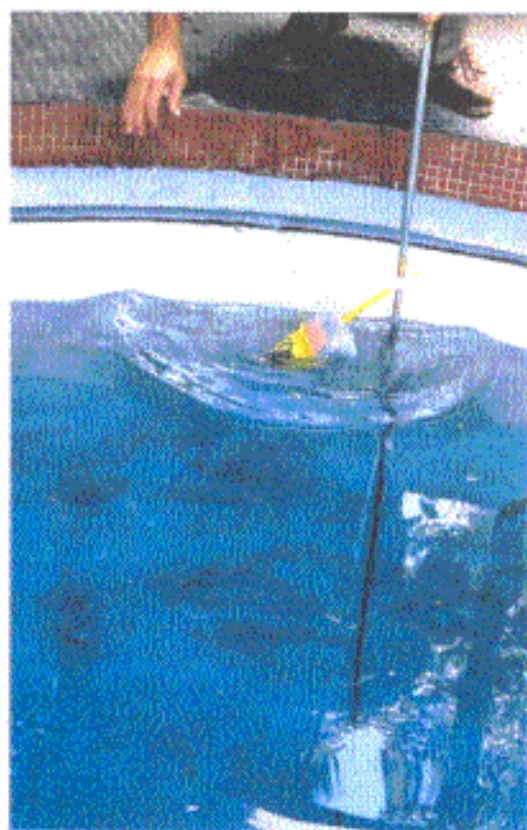
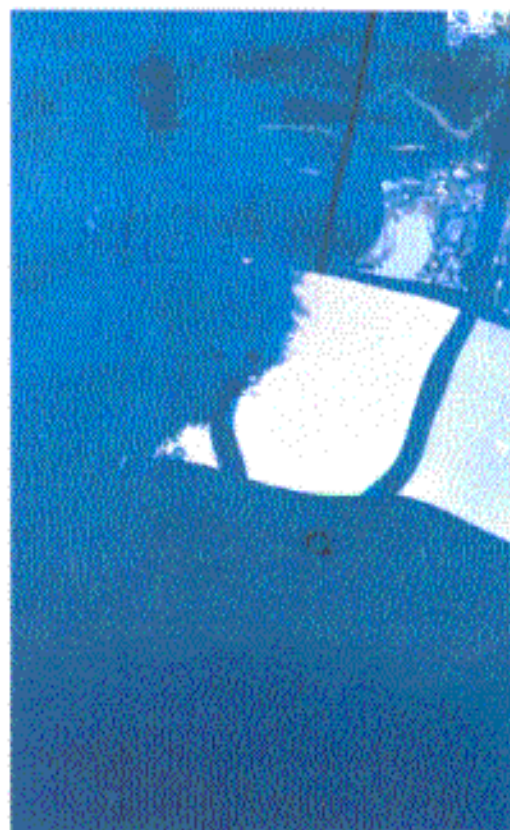
CONFIGURATION 1 b
Normal mounted orientation at + 70° C



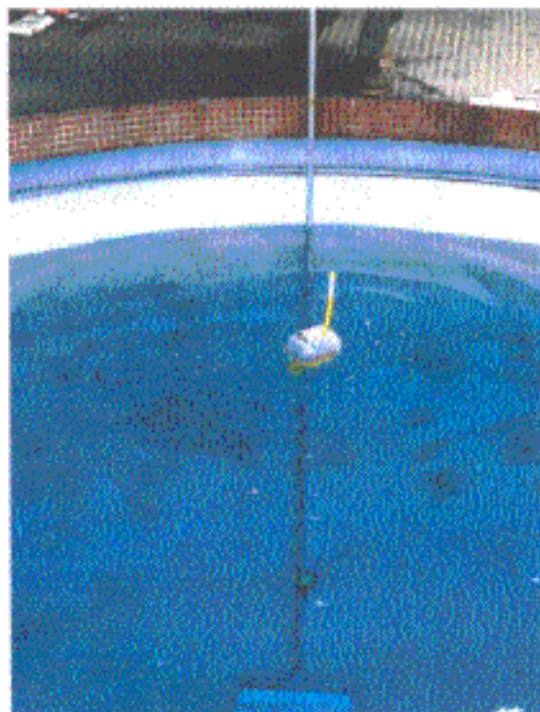
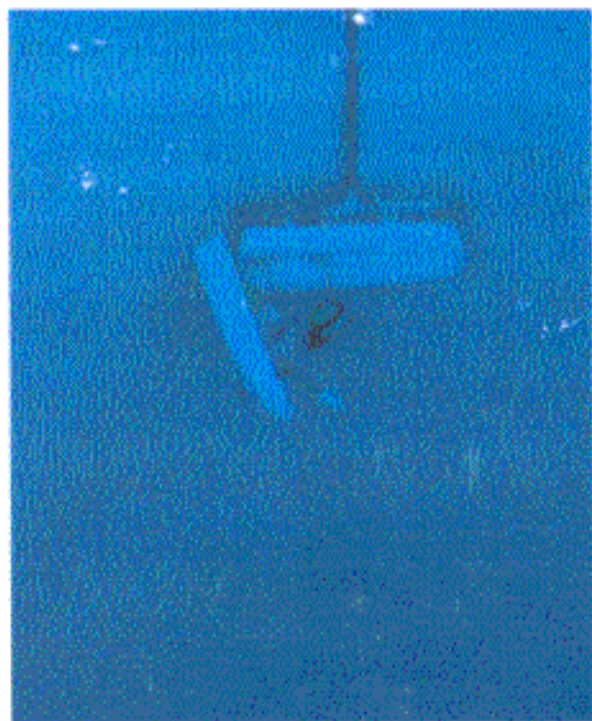
CONFIGURATION 1 c
Normal mounted orientation at + 25° C



CONFIGURATION 2
Rolling 90° starboard at + 22° C



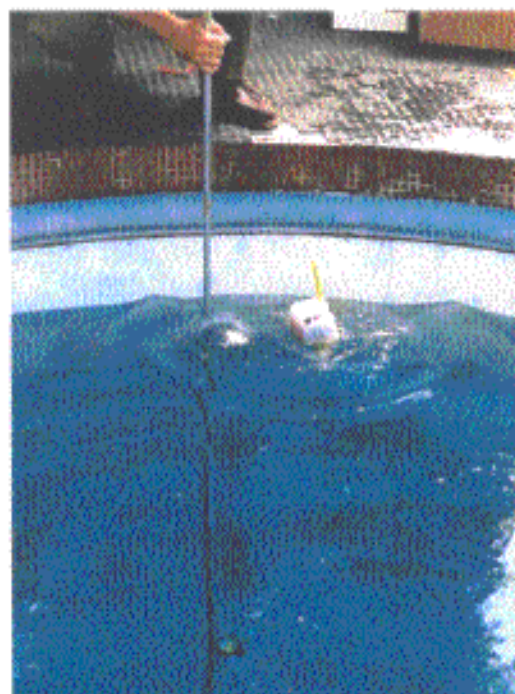
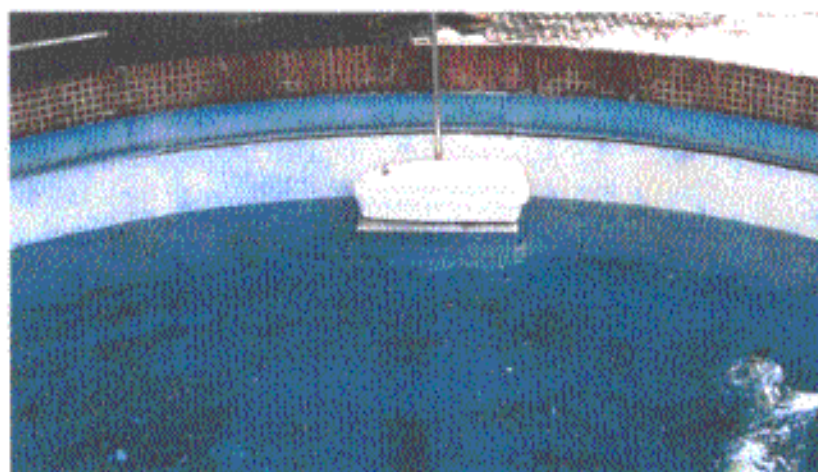
CONFIGURATION 3
Rolling 90° port at + 22° C



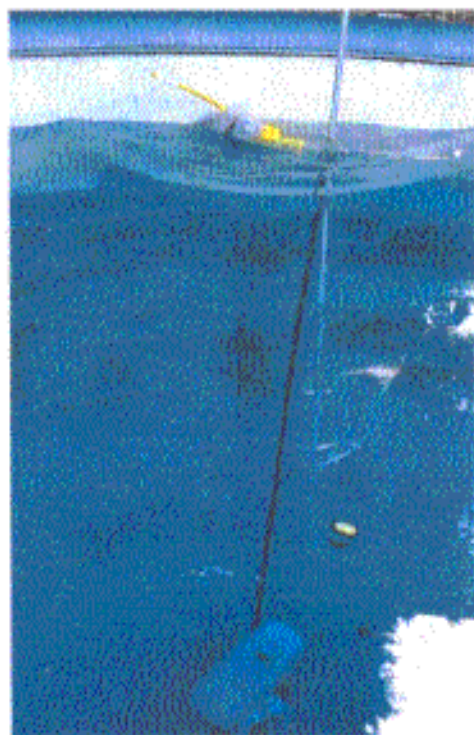
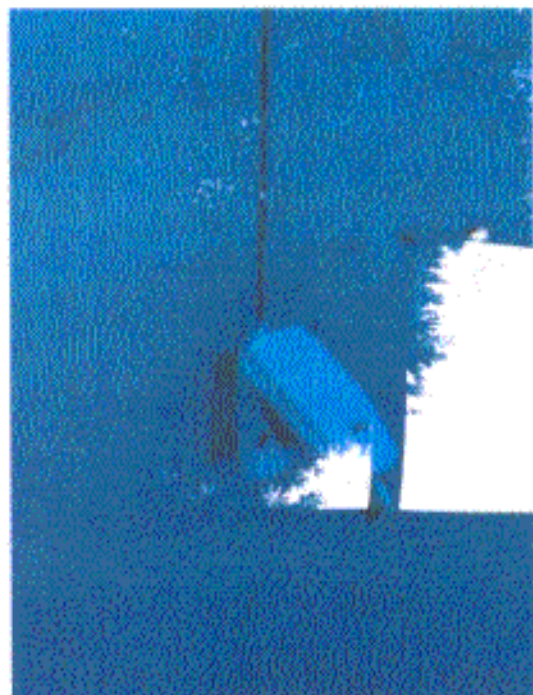
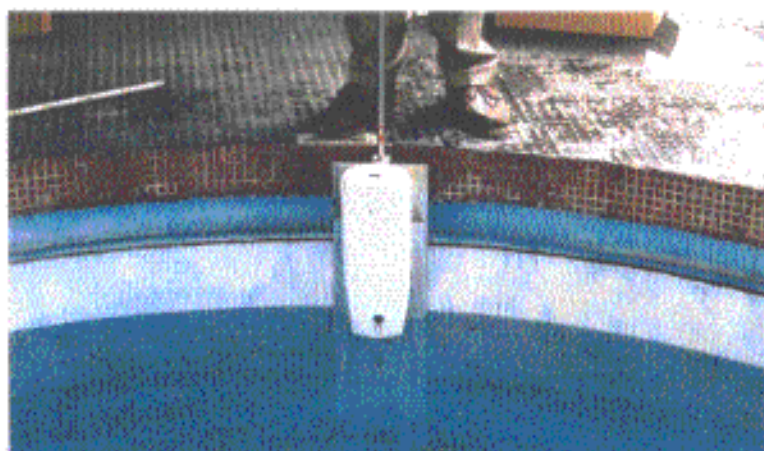
CONFIGURATION 4
Pitching 90° bow down + 22° C



CONFIGURATION 5
Pitching 90° stern down + 22° C



CONFIGURATION 6
Upside down + 22° C



CHAPTER 15

A15.0 - STABILITY AND BUOYANCY TESTS

15.1. TEST SPECIFICATIONS AND SEQUENCE

Following Section A15.0 of RTCM Recommended Standards for 406 MHz Satellite EPIRBs (Version 2.0 Feb 5,1997) :

- **Stability Test :**

The EUT should, when rotated to a horizontal position about any axis, submerged just below the surface, and released, pass through an upright position within 2 seconds .

The satellite EPIRB should float upright in calm fresh water with the base of the antenna a minimum of 40 mm above the waterline

- **Buoyancy Test :**

The reserve buoyancy of the satellite EPIRB should be at least 5% when determined by one of the following procedures :

- 1 . Submerge the complete unit and measure the buoyant force with a scale .
Divide the measured buoyant force by the weight of the unit . The result should be at least 1.05 .
- 2 . Determine the location of the waterline on the floating satellite EPIRB . Calculate the volume of the unit above the waterline and the volume below the water . Divide the volume above the water by the volume below the water . The result should be at least 1.05 .

15.2. EQUIPMENT UNDER TEST

Beacon Unit : 2/2
Name : ACR
Type : RLB35
Number : 01

15.3 TEST SITE

Toulouse Space Center (CST) - INTESPACE Metrology.Laboratory

15.4. TEST EQUIPMENT

- Fresh water container
- Balance : Sartorius type 3626 001
- Argos - Cospas/Sarsat Test Bench.

15.5 TEST IMPLEMENTATION AND RESULTS

Date: June 7th, 2001 for the stability test and June 20th, 2001 for the buoyancy test

- Stability test :

In conformance with RTCM A15.0 on four perpendicular axis.

Mean time to return to the upright position : ~1 second.

- Buoyancy test :

* Old method of control (Following Section A12.0 of RTCM Paper 166-90/SC 110-X -January 1991) :

- Nominal EPIRB weight : 1011 gr

- 5 % reserve buoyancy : 50.55 gr

- With this supplementary weight, 52 gr, the waterline of the EPIRB go up about 40 or 50 mm (see photos next page) .

Height of the base antenna above the water : ≥ 50 mm : Result OK

* Method recommended by RTCM Standards -Version 2.0 Feb 5,1997 :

1 Buoyant Force method :

- Buoyant Force (Fb) = 225 gr $\pm$ 10

- Beacon Weight (W) = 1011 gr $\pm$ 20

- Reserve of buoyancy (Fb/W) = 0.22 $\pm$ 0.02

2 Volumetric method :

- Volume of EUT above waterline (Va) = 220 cm³ $\pm$ 10

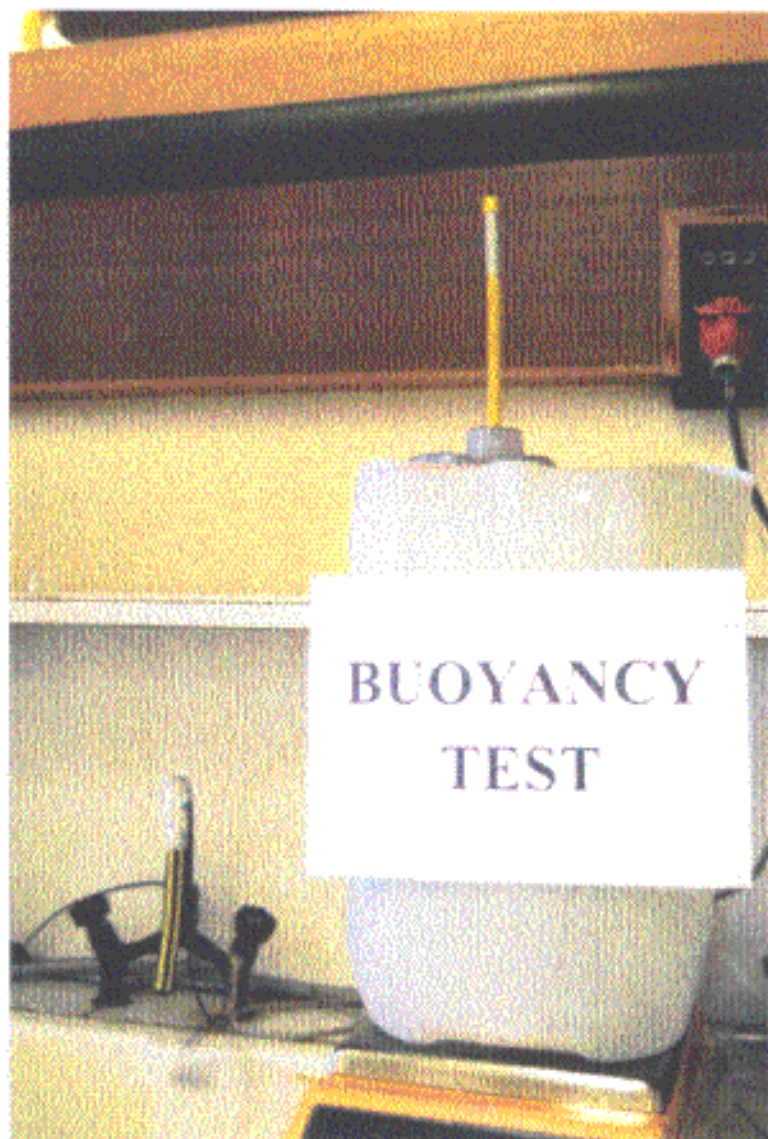
- Volume of EUT below waterline (Vb) = 1235 cm³ $\pm$ 20

- Reserve of buoyancy (Va/Vb) = 0.18 $\pm$ 0.02

Results non conform

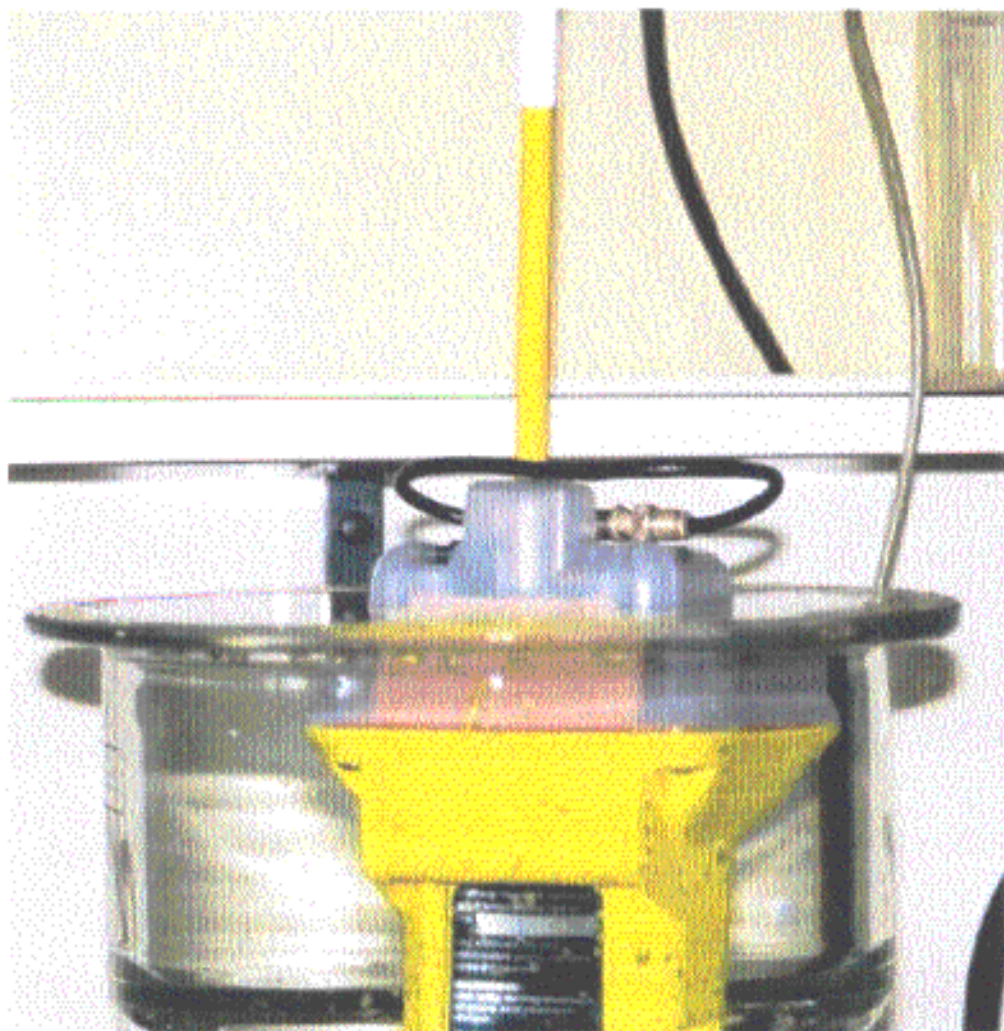
STABILITY AND BUOYANCY

(Old method, Rtcn 1991)



STABLITY AND BUOYANCY

(Rtcm V. 2.0 Feb 5,1997)



CHAPTER 16

A16.0 - INADVERTENT ACTIVATION TEST
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16.1. TEST SPECIFICATIONS AND PROGRAMME

- Following Section A16.0 of RTCM Recommended Standards for 406 MHz Satellite EPIRBs (Version 2.0 Feb 5,1997) :
 - Install the unit consisting of satellite EPIRB (on ready position) and its release mechanism in the test bracket .
 - Direct a stream from a hose at the EUT for a period of five minutes :
 - diameter of the nozzle = 63.5 mm,
 - water delivery rate $\approx$ 2300 liters per minute,
 - the end of the nozzle is 3.5 m away from the EUT and 1.5 m above the base of antenna .
 - During the test rotate the EPIRB unit so that water strikes the EUT from all directions over an arc of least 180°.
 - Verify that the EUT don't release from its bracket, nor don't it automatically activate as a result of the water from the hose stream.

16.2. EQUIPMENT UNDER TEST

Beacon Unit : 1/2
Name : ACR
Type : RLB35
Number : 07

Bracket : ACR Universal Sea Shelter Id 18560

16.3. TEST SITE

Toulouse Space Center (C.S.T./ ITS) - INTESPACE Laboratory.).

16.4. TEST EQUIPMENT

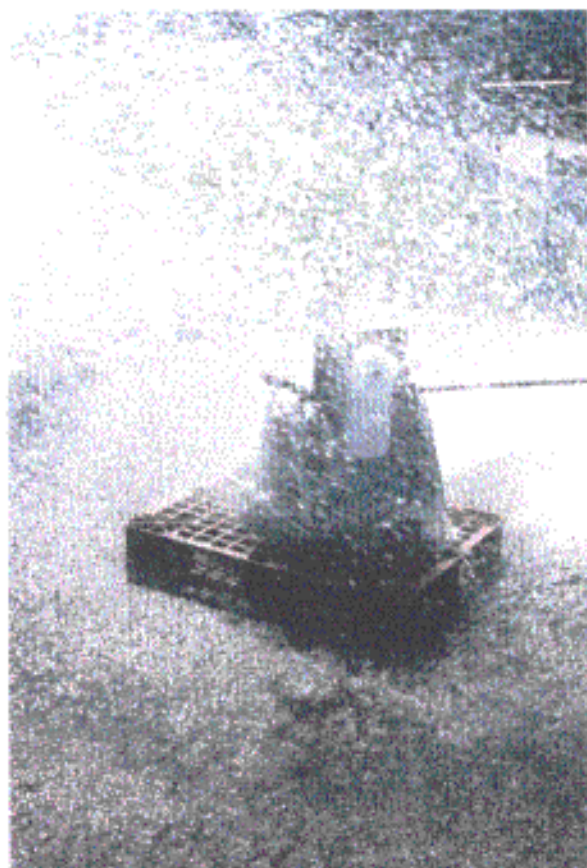
- Fire hydrant .
- Debitmeter .
- Mechanical support .
- Cospas/Sarsat Receiver : SERPE-IESM RMD01 S/N 004996
- Argos - Cospas/Sarsat Test Bench

16.5. TEST IMPLEMENTATION AND RESULTS

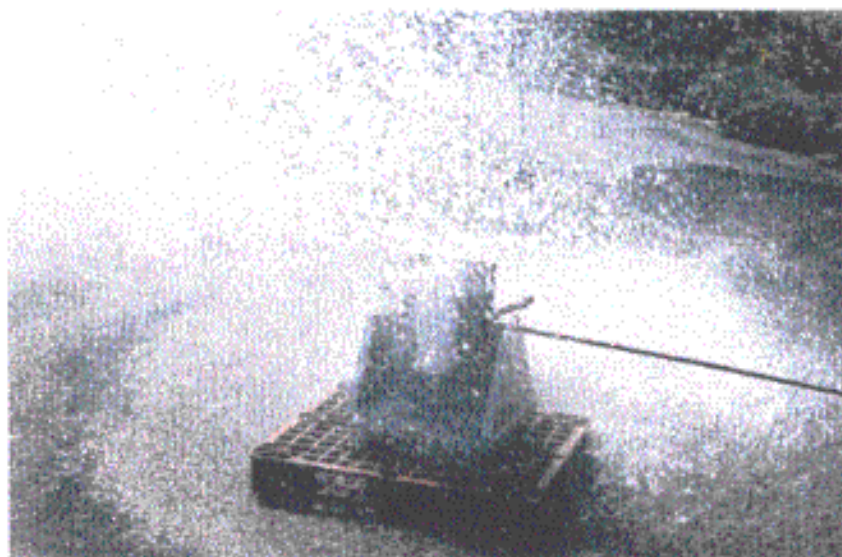
Date	Time	Operations	Comments
June 12 th , 2001	16:00	Test preparation	Nothing abnormal to note No automatic activation OK
	16:30	Start watering at about 2300 liters of water per minute.	
		Rotation of satellite EPIRB (180°)	
	16:35	End watering .	
	16:45	Beacon with release mechanism cleaned and dried.	

See photos next pages

INADVERTENT ACTIVATION TEST



INADVERTENT ACTIVATION TEST Continuation



CHAPTER 17

A17.0 - AUXILIARY RADIO-LOCATING DEVICE TRANSMITTER TEST

17.1.1 TEST SPECIFICATIONS AND PROGRAMME

Following Section 10.3 of ETS 300-066 (Second edition –September 1996) :

- Perform following measurements.
 - Carrier frequency
 - Modulation frequency
 - Transmitter duty cycle
 - Sweep repetition rate
 - Modulation duty cycle
 - Modulation factor

Note : These tests are performed during the COSPAS-SARSAT Type Approval tests (chapter 12)

17.1.2 EQUIPMENT UNDER TEST

Beacon Unit : 1/2
Name : ACR
Type : RLB35
Number : 07

17.1.3 TEST SITE

Toulouse Space Center (CST) - INTESPACE Laboratory.

17.1.4 TEST EQUIPMENT

- Climatic chamber : CLIMATS F.C.H. – Type: Austral 137H60/1,5E - S/N: S4880.
- Argos - Cospas/Sarsat Test Bench

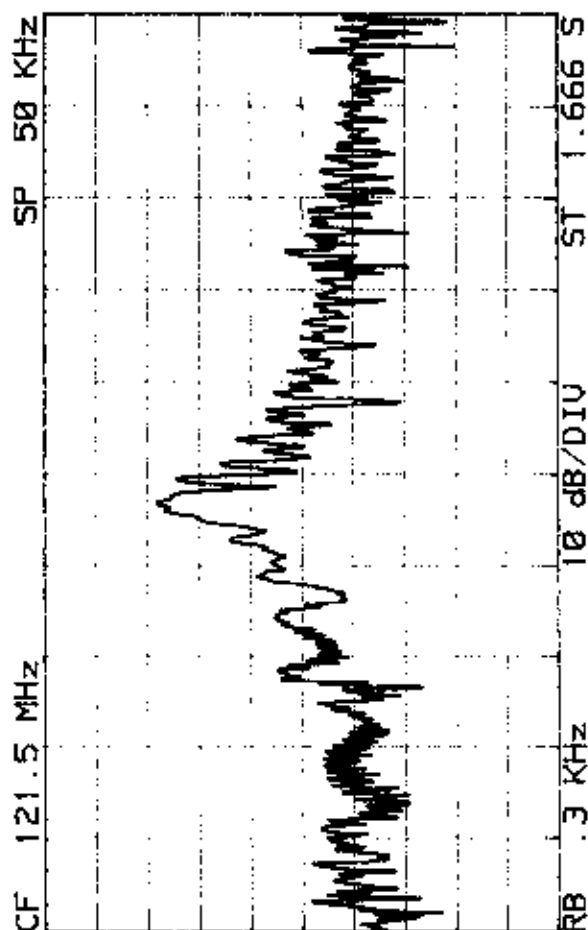
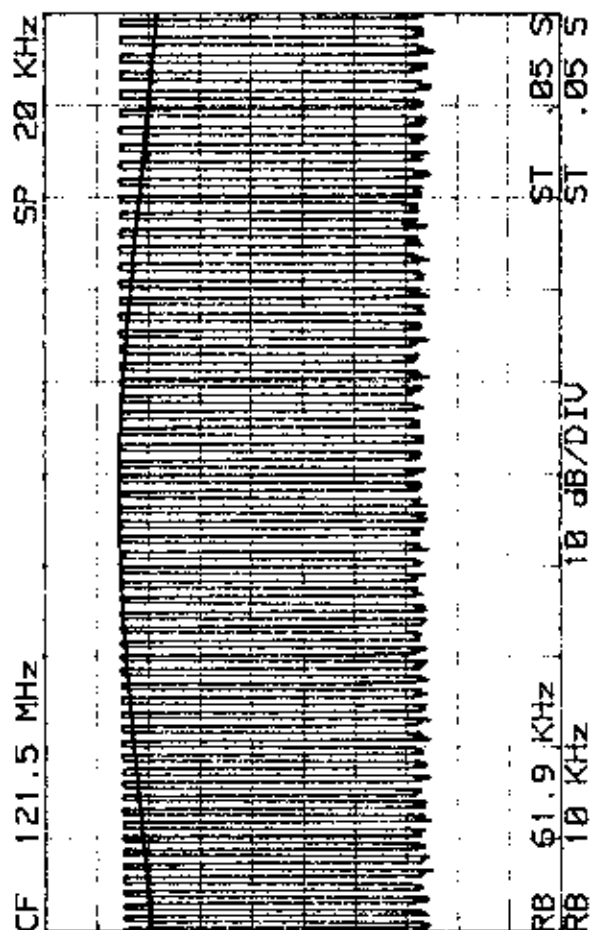
17.1.5. RESULTS OF HOMING TRANSMITTER TESTS

Beacon Unit : 1/2
 Name : ACR
 Type : RLB35
 Number : 07

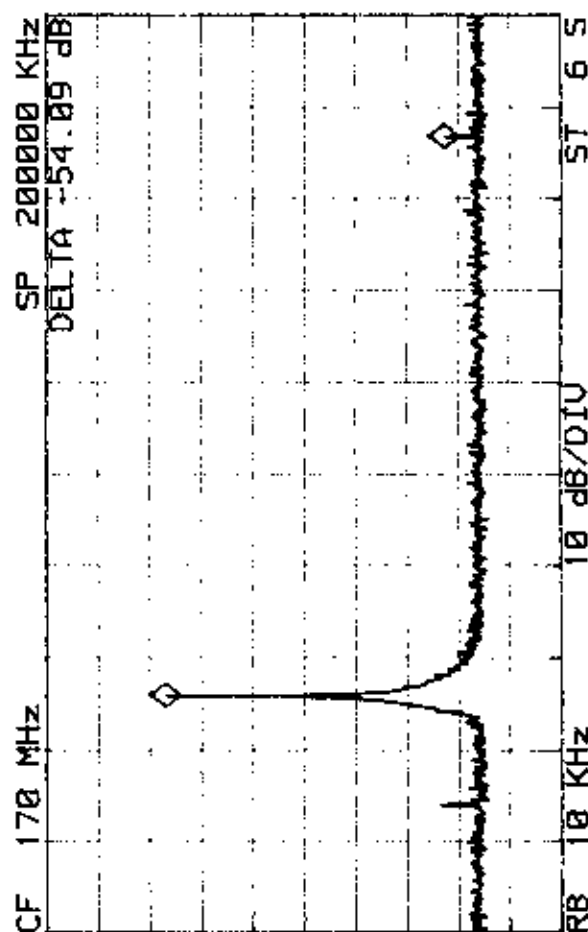
		T min. - 40° C	T amb. 22° C	T max + 55° C
1 - OPERATING LIFETIME AT MINIMUM TEMPERATURE	48H	> 50 h		
2 - CARRIER FREQUENCY *	121500 kHz± 5 kHz	121.4983	121.4996	121.4996
3 - PEAK ENVELOPE OUTPUT POWER ** (into 50 Ohms load)	14 dBm + 6/- 2 dBm	18.1 dBm	17.9 dBm	17.6 dBm
4 - TRANSMITTER DUTY CYCLE	continuous	Cont.	Cont.	Cont.
5 - MODULATION FREQUENCY	300 to 1 600 Hz	300 to 1460	290 to 1460	300 to 1460
6 - MODULATION DUTY CYCLE	33 % - 55 %	39 %	41 %	40 %
7 - MODULATION FACTOR	> 0.85	> 0.85	> 0.85	> 0.85
8 - SWEEP REPETITION RATE	2 Hz - 4 Hz	2.56 Hz	2.56 Hz	2.56 Hz
9 - HOMING TRANSMISSION CODING *	Bit 112 = 1	1	1	1

* See data and graphs of results on chapter 12 " Cospas-Sarsat Type Approval Tests Report "

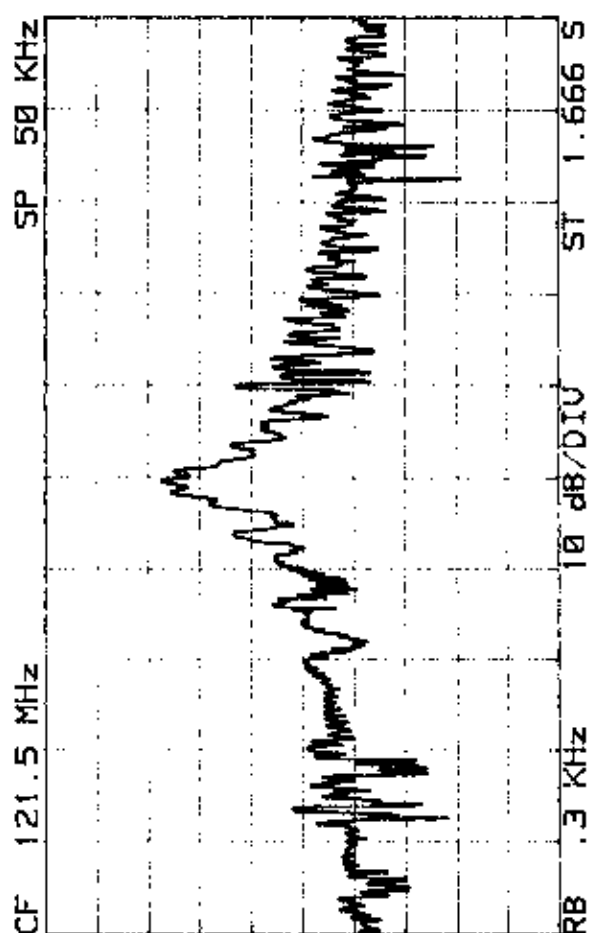
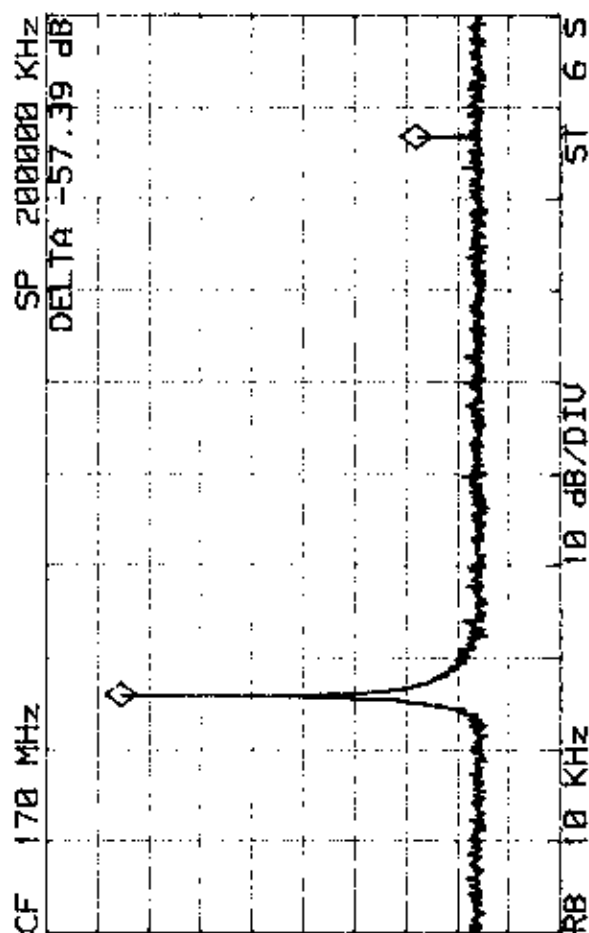
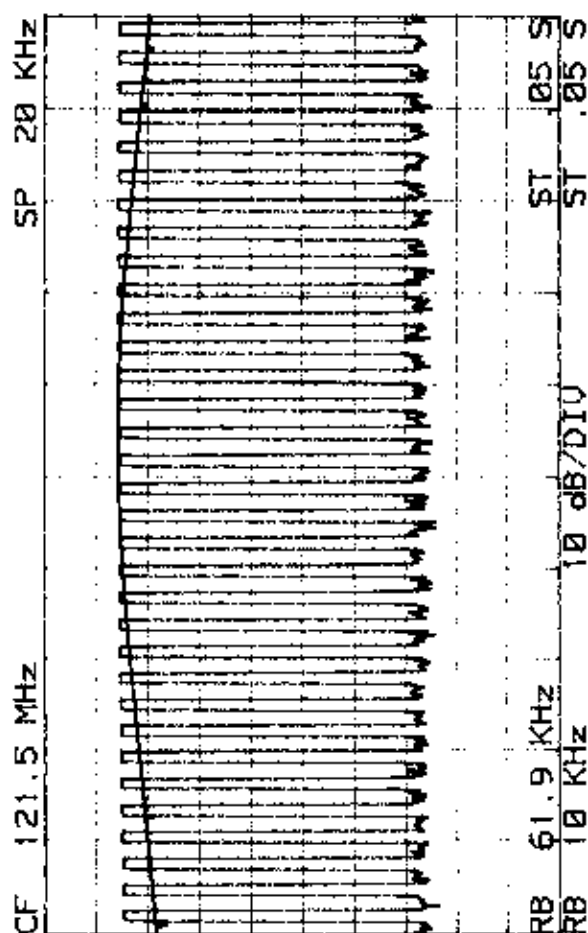
17.1.6. SPECTRUM MEASUREMENT RESULTS



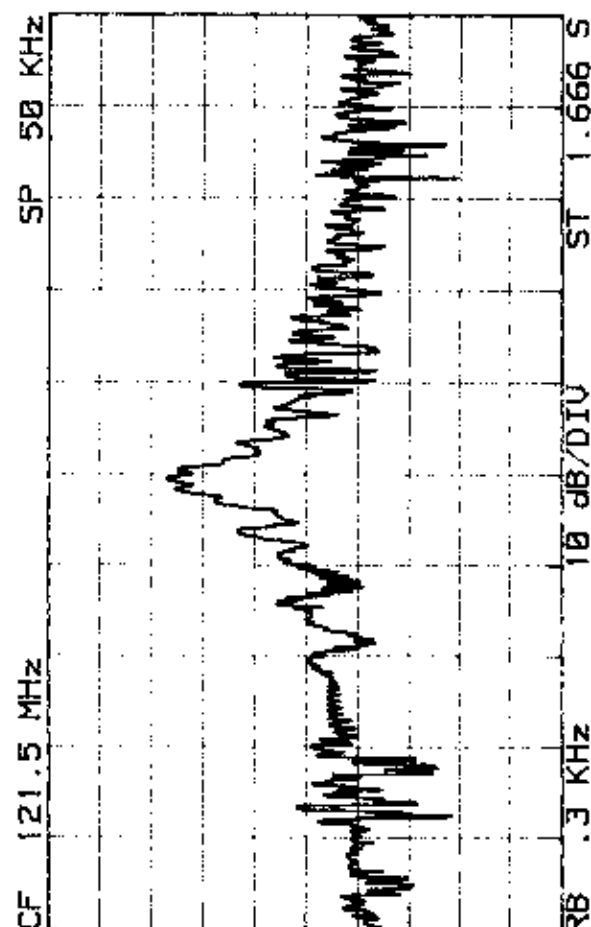
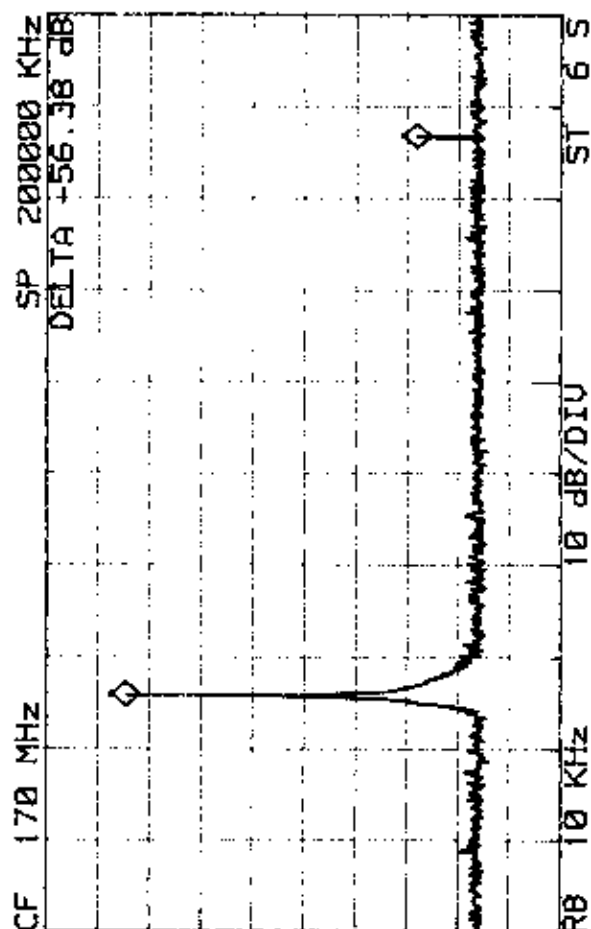
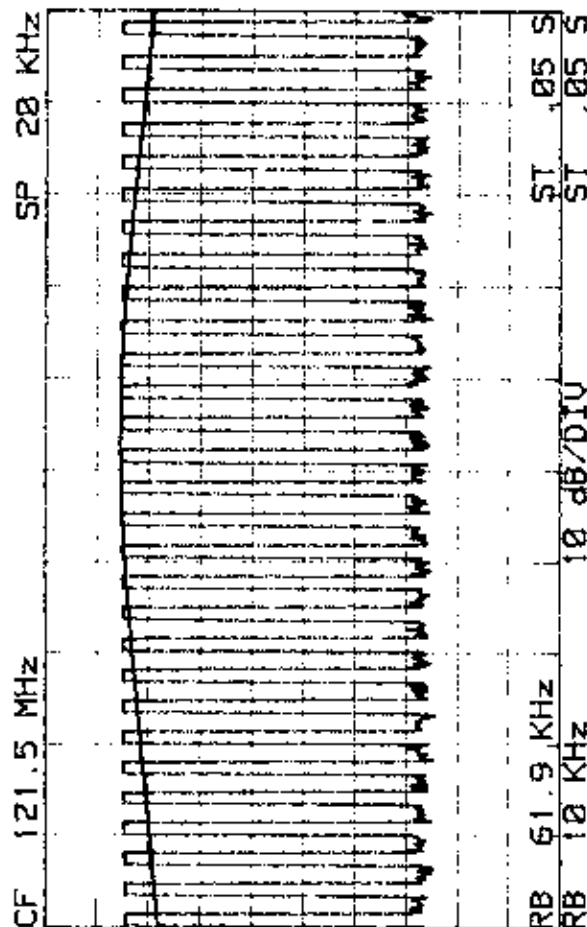
ACR
RLB35
07
25 Apr 2001
121.5 MHz
TEMP : -40°C



ACR
RLB35
07
18 Apr 2001
121.5 MHz
TEMP : 22°C



ACR
RLB35
07
19 Apr 2001
121.5 MHz
TEMP : 55°C



17.2- HOMING RADIATED OUTPUT POWER ON UUT 2/2

17.2.1 - ADMINISTRATION

17.2.1.1	WORK ORDER :	Reference: M3223-ETS/TEC	
17.2.1.2	TEST TEAM :	A. COURTINADE (INTESPACE) J. COMMENGES (INTESPACE)	
17.2.1.3	SCHEDULE :	May 15 th , and 16 th , 2001	

17.2.2 - PURPOSE

The radiation tests of the dedicated radio beacon are performed in INTESPACE EMC Laboratory in compliance with the test methods described in Section 10.3.5 of ETS 300-066 (Second edition –September 1996).

Frequency tested : 121.5 MHz.

17.2.3 - RADIO BEACON IDENTIFICATIONS

- Manufacturer : ACR
- Model N° : RLB35
- Serial N° : 01
- Antenna : ACR Antenna

17.2.4 - TEST SITE DESCRIPTION

Tests are performed in an anechoic chamber (size 16 m x 10 m x 11 m) .
Walls, ceiling and doors are lined with EMERSON CUMING foams VHP 36 and VHP 26 type.
The EPIRB is placed as shown on figures n° 1 and n° 2 next pages .

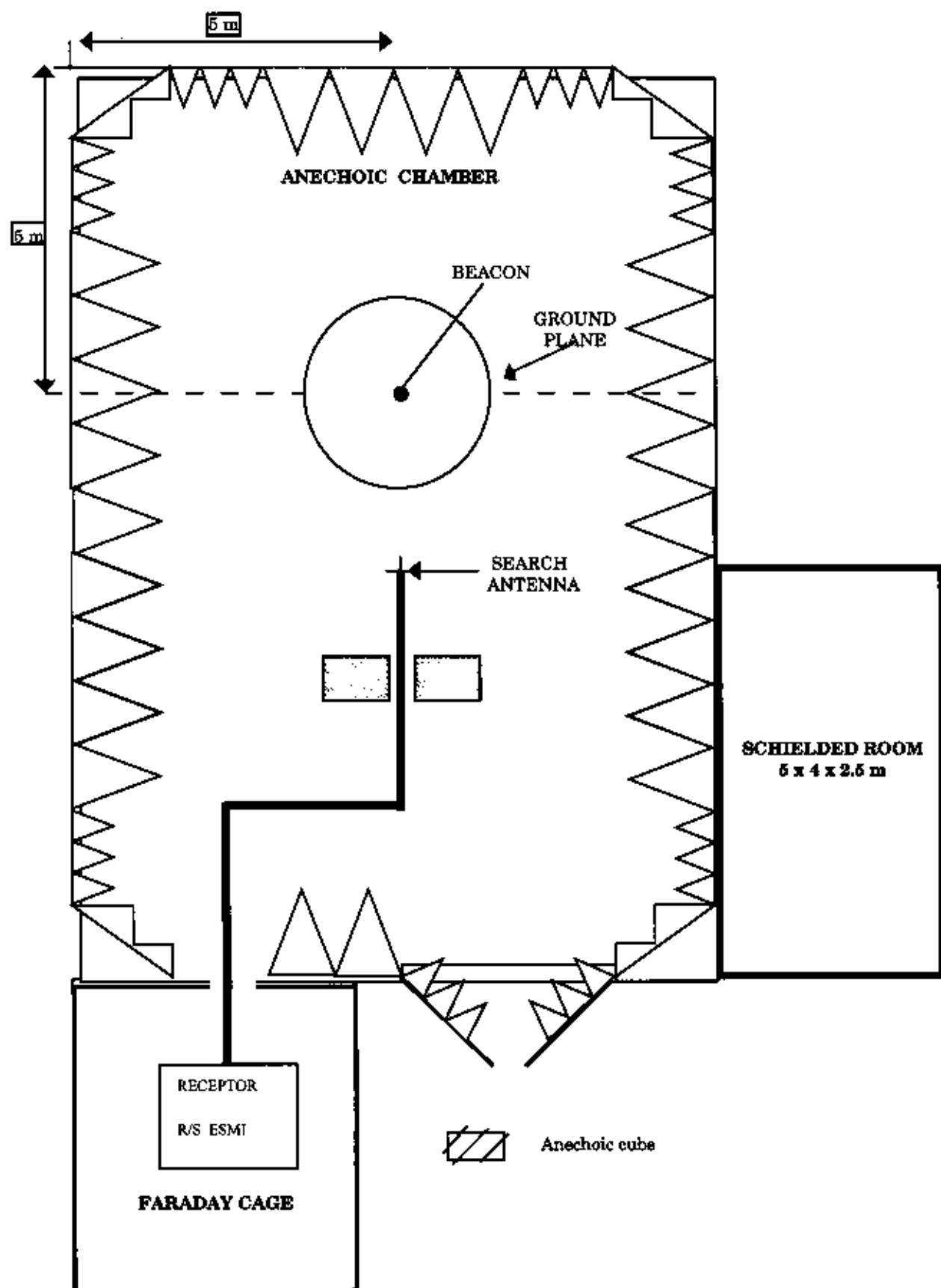


FIGURE 1

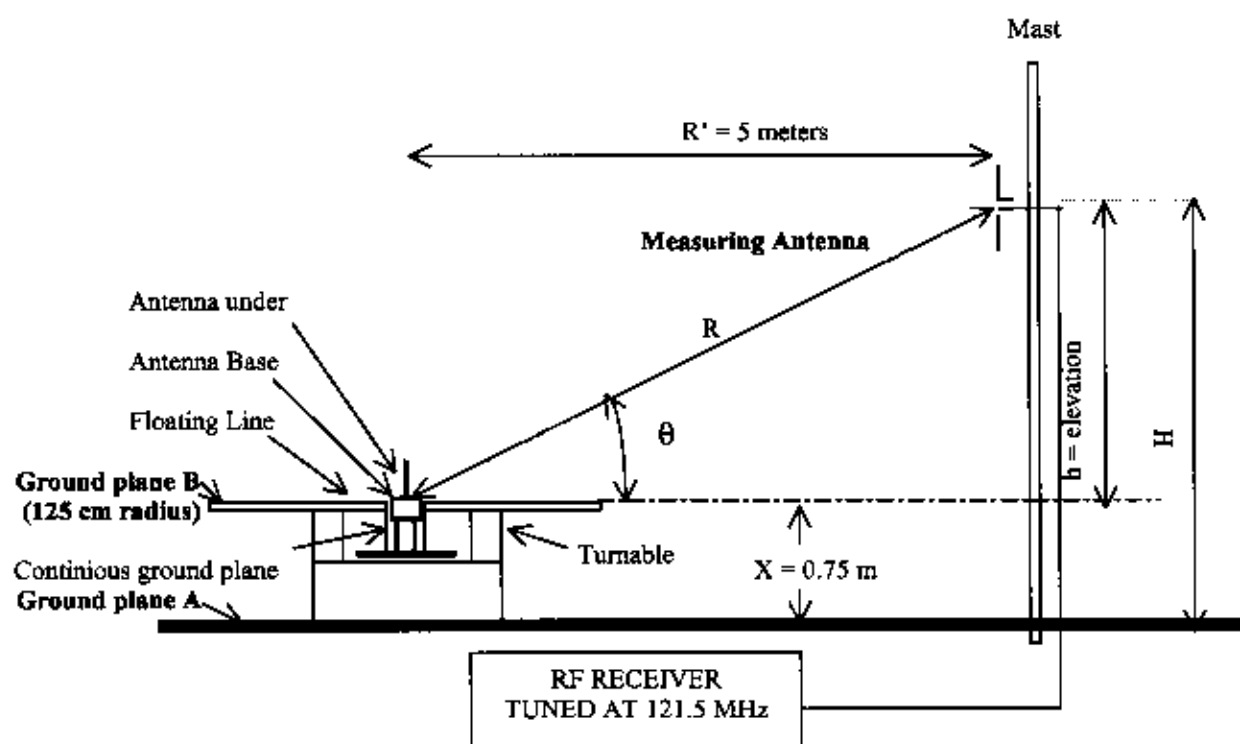


FIGURE 2 : Equipement Test Set Up For BEACON Antenna Test
(For BEACON designed for normal operation in water, ex: EPIRB)

17.2.5 - TEST METHOD

According Section 10.3.5 of ETS 300-066 (Second edition –September 1996) following measurements are performed :

- 1/ The elevation angle between 5° and 20° which produces a maximum gain is determined with the EUT at an arbitrary azimuth .
- 2/ The PERP is measured and the elevation angle is noted (between 5° to 20°) and is remain fixed for the remainder of the test .
- 3/ The remaining 12 measurements of PERP is obtained by rotating the EUT in increments of 30° ± 3°. For each measurements the EUT PERP is computed using the following equation :

$$PERP = LOG^{-1} [(P_{REC} - G_{REC} + L_c + L_p)/10] \quad (\text{Equation A})$$

Where :

- P_{rec} = Measured Power level from spectrum analyzer (dBm)
- G_{rec} = Antenna gain of search antenna (dB)
- L_c = Receive system attenuator and cable loss (dB)
- L_p = Free space propagation loss (dB)

- 4/ The median value of PERP is compared to the specified PERP to be in the range 25 mW to 100 mW (14 dBm to 20 dBm)

17.2.6 - TEST MEASUREMENT EQUIPMENTS

Search Antenna

- 121.5 MHz test : EMCO Dipole - 3121 C - DB2 - S/N 763

SPECTRUM ANALYSER

- R/S ESMI

CABLES

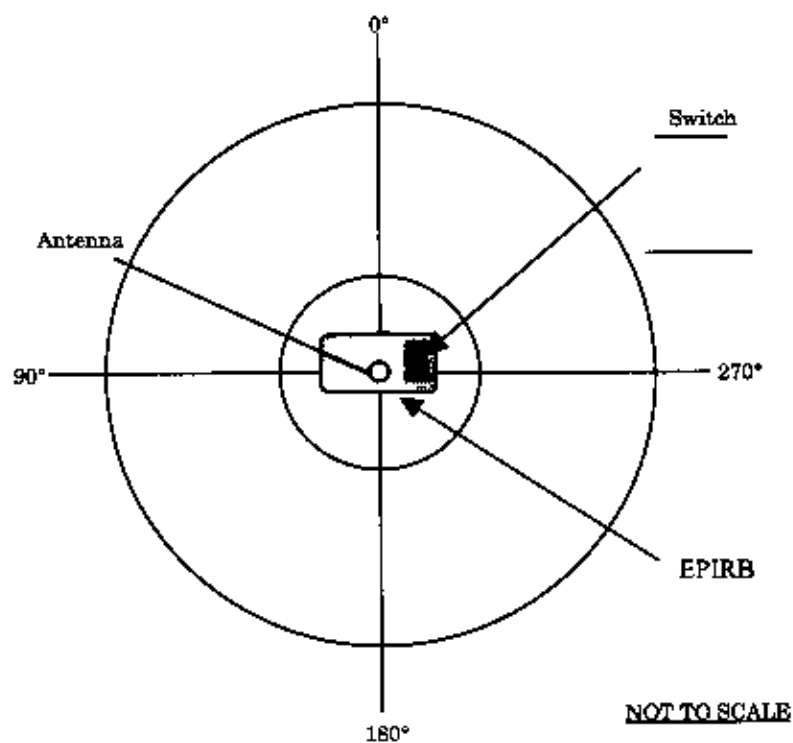
- 20 m cable SUCOFLEX type 100 - cable loss at 121.5 MHz : 1.9 dB

17.2.7 - EPIRB MECHANICAL SET UP

EPIRB 0° axisq identified by the antenna position (see figure) is the rotation center of azimuth angle.

A conductive aluminium paper is used to assure a good conductivits between beacon float level and the ground plane.

BEACON



17.2.8- TESTS OPERATIONS AND RESULTS

- 1 Determination of elevation angle θ which produces a maximum gain :

$$\theta = 5^\circ$$

- 2 Determination of Free Space Propagation Loss (L_p) :

$$L_p = 20\log(F_0) + 20\log(R) - 27.6 \text{ dB}$$

$$F_0 = 121.5 \text{ MHz}$$

$$R = 5.02 \text{ m (for an elevation angle } \theta = 5^\circ, \text{ figure 2)}$$

$$L_p = 28.1 \text{ dB}$$

- 3 Determination of Search Antenna Gain (G_{rec}) :

$$G_{rec} = 20\log(F_0) - (AF - G_m) - 29.8 \text{ dB}$$

$$F_0 = 121.5 \text{ MHz}$$

$$AF = \text{Reference Gain of Search Antenna} = 10 \text{ dB}$$

$$G_m = \text{Directivity gain of the Search Antenna}$$

$$\text{With } \theta = 5^\circ, \quad G_m = 20 \log \frac{\cos(90^\circ \times \sin \theta)}{\cos \theta} = -0.05 \text{ dB}$$

$$29.8 \text{ dB} = \text{Free Space Constant}$$

$$G_{rec} = 1.84 \text{ dB}$$

- 4 Receive System Attenuator and Cable Loss (L_c) :

$$L_c = 1.9 \text{ dB}$$

18.2.9 MEASUREMENT RESULTS

Following the Equation (A), 12 value of EUT PERP are computed at 5 ° of elevation angle

Azimuth Angle	P_{rec} Measured Power level (dBm)	PERP (dBm)
0	- 8.89	19.27
30	-8.79	19.37
60	-8.79	19.37
90	-8.89	19.27
120	-8.89	19.27
150	-8.99	19.17
180	-9.09	19.07
210	-8.99	19.17
240	-8.99	19.17
270	-8.99	19.17
300	-8.89	19.27
330	-8.89	19.27
Mean value	-8.92	19.25dBm

The PERP measured and computed are in conformance with specification required :

$$\begin{aligned}
 &14 \text{ dBm} \leq \text{PERP} \leq 20 \text{ dBm} \\
 &\text{and} \\
 &\text{PERP Azimuth Variation} < 3 \text{ dB}
 \end{aligned}$$

CHAPTER 18

A18.0 - HUMIDITY TEST

18.1. TEST SPECIFICATIONS AND PROGRAMME

Following Section A18.0 of RTCM Recommended Standards for 406 MHz Satellite EPIRBs (Version 2.0 Feb 5, 1997) :

Eject beacon, open the housing and leave inside temperature-controlled RH chamber for 8 hours minimum.

Settings :

- Dry temperature : 40° C
- Damp temperature : 39° C
- Relative humidity (RH) : 95 %

(See photo next page)

At the end of test :

- Within five minutes after opening chamber, at the ambient room conditions, turn on and connect the beacon to the test bench.
- Fifteen minutes after application power, conduct an aliveness test at the ambient temperature

18.2. EQUIPMENT UNDER TEST

Beacon Unit : 1/2
Name : ACR
Type : RLB35
Number : 07

18.3. TEST SITE

Toulouse Space Center (C.S.T./ ITS) - Beacon certification laboratory .

18.4. TEST EQUIPMENT

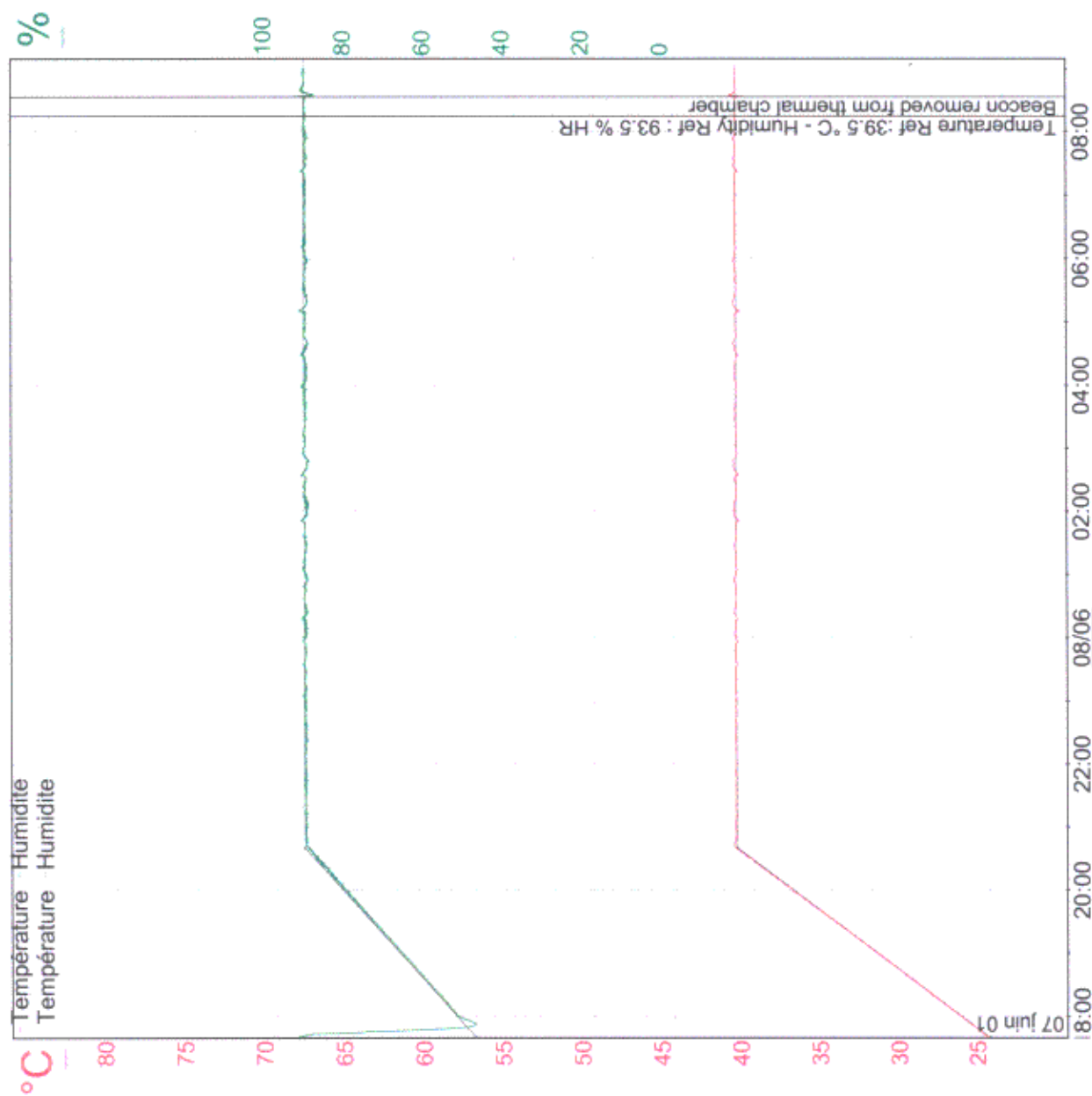
- Climatic chamber : CLIMATS F.C.H. – Type: Austral 137H60/1,5E - S/N: S4880,
- KEITHLEY thermometer/multimeter ,Type : 2000, S/N 0678112 with CU-CT thermocoupler,
- COLE PARMER thermo-hygrometer, Type : TriSense S/N : 37000-00,
- Argos - Cospas/Sarsat Test Bench .

18.5. TEST RESULTS

18.5.1 Test implementation

Date	Hour	Operations	Results
June 7 th ,2001	17:30	The beacon, housing opened and in the ready condition, is thermally soaked at + 40° C / 95% RH in the temperature-controlled oven	
June 8 th ,2001	9:30	End of Humidity Test . The EUT is removed from the oven .	
	9:35	The EUT, connected to Argos –C/S Test Bench, is turned on.	
	9:40	An aliveness test is conducted	OK See results next pages

18.5.2 Graph test report



Rapport d'essai

M3223 - ACR RLB35 07 - 7 june 01

Essai effectué du 07 juin 01 (17h39)
au 08 juin 01 (11h09)

Durée de l'essai: 17h30,00

PCH60
N° S4880

Humidity Test (RTCM 110)
Date d'impression: 27 juil. 01
1 pages(s)

Commentaires

Green : Chamber Humidity
Red : Chamber Temperature

18.5.3 Aliveness test result after Humidity Test

Date : June 8th, 2001 09:40

1 – Environmental Temperature (° C)			22 ° C
2 – POWER OUTPUT			
- Transmission power	dBm	37 ± 2	37.75
- Power risetime	ms	< 5	0.85 ms
- Power falltime	ms	< 5	-
3 – SPURIOUS OUTPUT			
- In band	*		OK
- Carrier harmonics	*		
4 –DIGITAL MESSAGE GENERATOR			
- Repetition rate	*		OK
- Bit rate	bits/S	400 ± 4	401.30
- Transmission time	ms	440 ± 4.4 / 520 ± 5.2	519.34
- CW preamble	ms	160 ± 1.6	160.37
5 – DIGITAL MESSAGE			
- Bit and frame sync	bits	1-24	FFFE2F
- Format flag	bit	25	1
- Protocol flag	bit	26	0
- Country code	bits	27-36	0366
- Protocol	bits	37-40	1110
- Encoded Position Data Source	bits	111	1
- Homing	bits	112	1
- BCH 1 code read / calculated	bits	86-106 / 25-85	087645 / 087645
- BCH 2 code read / calculated	bits	133-144 / 107-132	3E8 / 3E8
6 – FREQUENCY			
- Nominal value	KHz	406 025 ± 2	-0.53892
- Short term stability		< 2x10 ⁻⁹ /100 ms	1.1 x 10 ⁻¹⁰

* See data and graphs next pages

Laboratoire de certification
Contrôle balise ARGOS/SARSAT

Constructeur ACR
Modele RLB35
Numero de serie 07
Reference M3223-1
Type SARSAT

Date de l'essai 8 Jun 2001 09:39:56

Message balise

Message reçu (1-144): FFFE2F96EE2EC0012C00221D917769FCA3E8
Format flag (25): 1
Protocole flag (26): 0
Code pays (27-36): 0366
Pays : USA
Code protocole (37-40): 1110
Protocole utilise : Standard - Test
Identification :
Numero :
BCH 1 lu/calculé (86-106/25-85): 087645/087645
BCH 2 lu/calculé (133-144/107-132): 3E8/3E8
Pos. Data Source (111): Internal
121.5 MHz Homing (112): Yes
Position GPS de reference : N 43°33'34'' E 1°28'48
Position GPS : Yes
Position GPS par défaut : No
Latitude position : 43°33'32'' Nord
Longitude position : 1°28'40'' Est
Delta position : 0 km

Contrôle message

Durée de la porteuse pure 160.37ms +- 0.00
Durée de l'émission 519.34 ms
Fréquence de modulation 401.30Hz +- 0.00
Stabilité de fréquence
Fréquence moyenne F2 406024461.08 Hz
SIGMA2 F2-F1 1.271E-10
SIGMA3 F3-F2 1.010E-10

Mesures d'indice

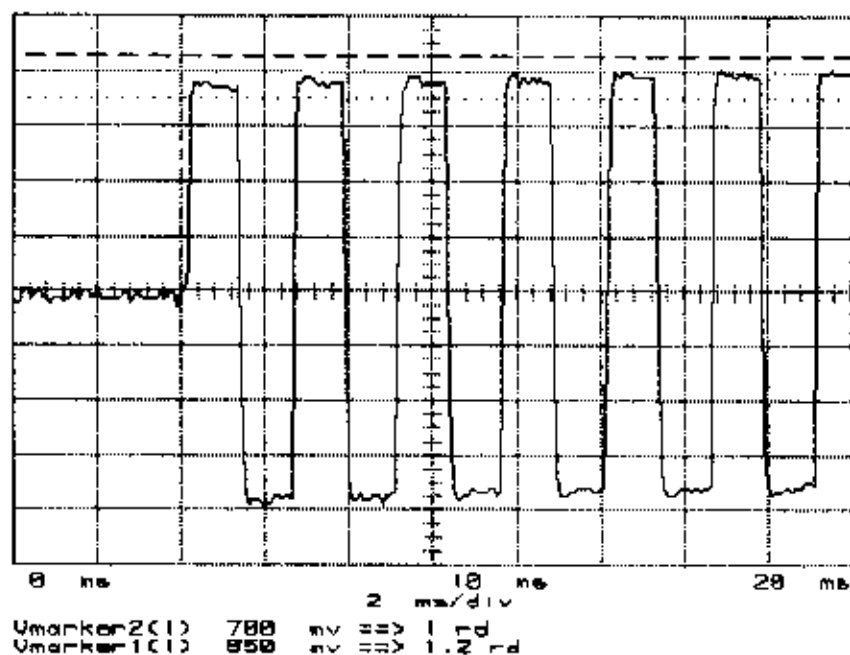
F	F1	G1
49461.2	233	59
49461.13	233	60

Excursion de phase totale	rd	<= 2.48	2.23
Excursion de phase positive	rd	0.96< <1.24	1.08
Excursion de phase negative	rd	-1.24< <-0.96	-1.14
Symétrie de l'excursion	%	<= 5	2.66

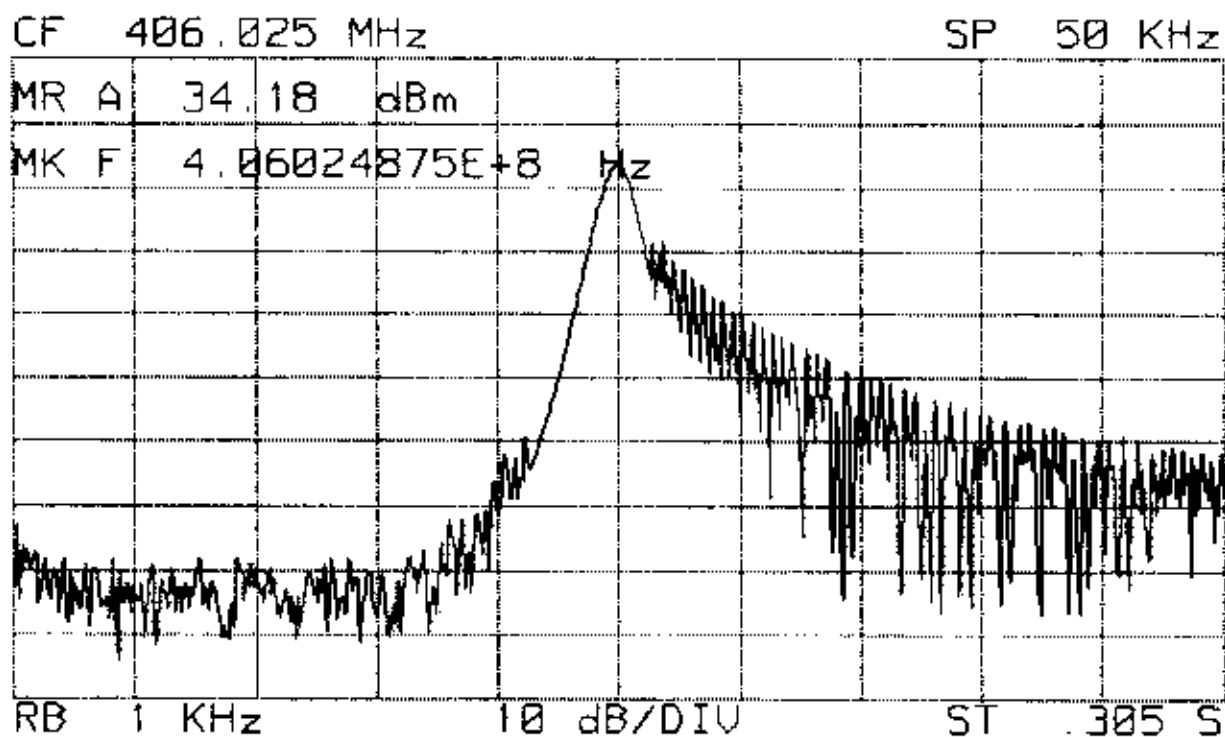
Mesures de puissance

Puissance dBm $34.30 + 3.45(\text{coupleur att.}) = 37.75$

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Spectre de fréquence



HUMIDITY TEST



CHAPTER 19

A19.0 - ORIENTATION TEST

19.1. TEST SPECIFICATIONS AND SEQUENCE

Following Section A19.0 of RTCM Recommended Standards for 406 MHz Satellite EPIRBs (Version 2.0 Feb 5,1997) :

- At the ambient temperature :

- In vertically position active the EUT and after 15 minutes perform an alivness test .
- Subsequently place the eut in horizontal position, upside down, and return upright position and perform the alivness test 2 minutes after each position .

19.2. EQUIPMENT UNDER TEST

Beacon Unit : 2/2
Name : JOTRON
Type : TRON 40GPS
Number : 7001

19.3 TEST SITE

Toulouse Space Center (CST) - INTESPACE Metrology.

19.4. TEST EQUIPMENT

- Climatic chamber : CLIMATS F.C.H. - Type: Austral 137H60/1,5E - S/N: S4880.
- Argos - Cospas/Sarsat Test Bench

19.5. RESULTS

The orientation test is performed during the COSPAS-SARSAT certification test at ambient temperature .

See next page the results .

9.5.1 ALIVENESS TEST RESULTS BEACON - VERTICAL POSITION

Beacon Unit : 1/2
 Name : ACR
 Type : RLB35
 Number : 07

Date : June 8th, 2001 09:02

406 MHZ MEASUREMENTS

1 - Environmental Temperature (° C)			+ 22 ° C
2 - POWER OUTPUT			
- Transmission power	dBm	37 ± 2	37.6
- Power risetime	ms	< 5	0.84 ms
- Power falltime	ms	< 5	-
3 - SPURIOUS OUTPUT			
- In band	*		OK
- Carrier harmonics			
4 - DIGITAL MESSAGE GENERATOR			
- Repetition rate			OK
- Bit rate	bits/S	400 ± 4	401.29
- Transmission time	ms	440 ± 4.4 / 520 ± 5.2	519.35
- CW preamble	ms	160 ± 1.6	160.36
5 - DIGITAL MESSAGE			
- Bit and frame sync	bits	1-24	FFFE2F
- Format flag	bit	25	1
- Protocol flag	bit	26	0
- Country code	bits	27-36	0366
- Protocol	bits	37-40	1110
- Encoded Position Data Source	bits	111	1
- Homing	bits	112	1
- BCH 1 code read / calculated	bits	86-106 / 25-85	1029B4 / 1029B4
- BCH 2 code read / calculated	bits	133-144 / 107-132	66C / 66C
6 - FREQUENCY			
- Nominal value	KHz	406 025 ± 2	-0.54004
- Short term stability		< 2x10 ⁻⁹ /100 ms	1.1 x 10 ⁻¹⁰

* See data and graphs next pages

Laboratoire de certification
Contrôle balise ARGOS/SARSAT

VERTICAL POSITION

Constructeur ACR
Modèle RLB35
Numéro de série 07
Référence M3223-1
Type SARSAT

Date de l'essai 8 Jun 2001 09:02:04

Message balise

Message reçu (1-144): FFFE2F96EE2EC0017FDFFC0A6D3783E0F66C
 Format flag (25): 1
 Protocole flag (26): 0
 Code pays (27-36): 0366
 Pays : USA
 Code protocole (37-40): 1110
 Protocole utilisé : Standard - Test
 Identification :
 Numéro :
 BCH 1 lu/calculé (86-106/25-85): 1029B4/1029B4
 BCH 2 lu/calculé (133-144/107-132): 66C/66C
 Pos. Data Source (111): Internal
 121.5 MHz Homing (112): Yes
 Position GPS de référence : N 43°33'34'' E 1°28'48
 Position GPS : Yes
 Position GPS par défaut : Yes

Contrôle message

Durée de la porteuse pure 160.36ms +- 0.00
 Durée de l'émission 519.35 ms

Fréquence de modulation 401.29Hz +- 0.00

Stabilité de fréquence

Fréquence moyenne F2 406024459.96 Hz
 SIGMA2 F2-F1 4.737E-10
 SIGMA3 F3-F2 1.080E-10

Mesures d'indice

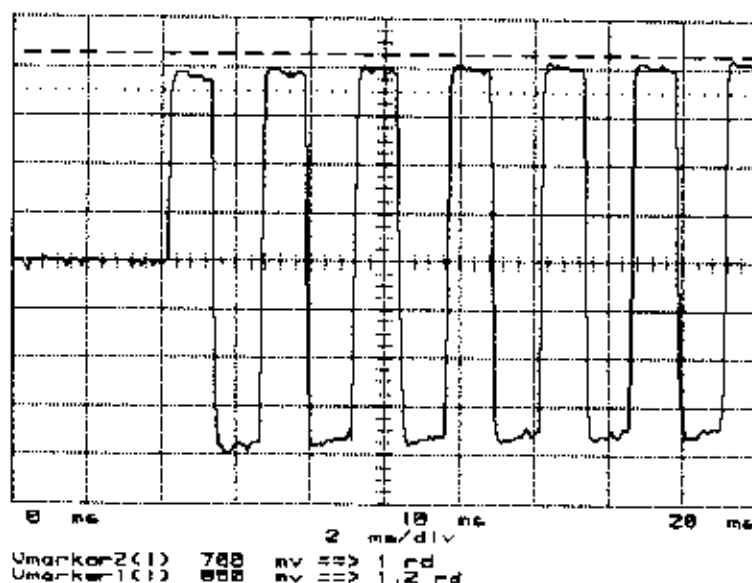
F	F1	G1
49458.94	233	59
49458.57	233	59

Excursion de phase totale rd <= 2.48 2.24
 Excursion de phase positive rd 0.96< <1.24 1.18
 Excursion de phase négative rd -1.24< <-0.96 -1.06
 Symétrie de l'excursion % <= 5 -5.09

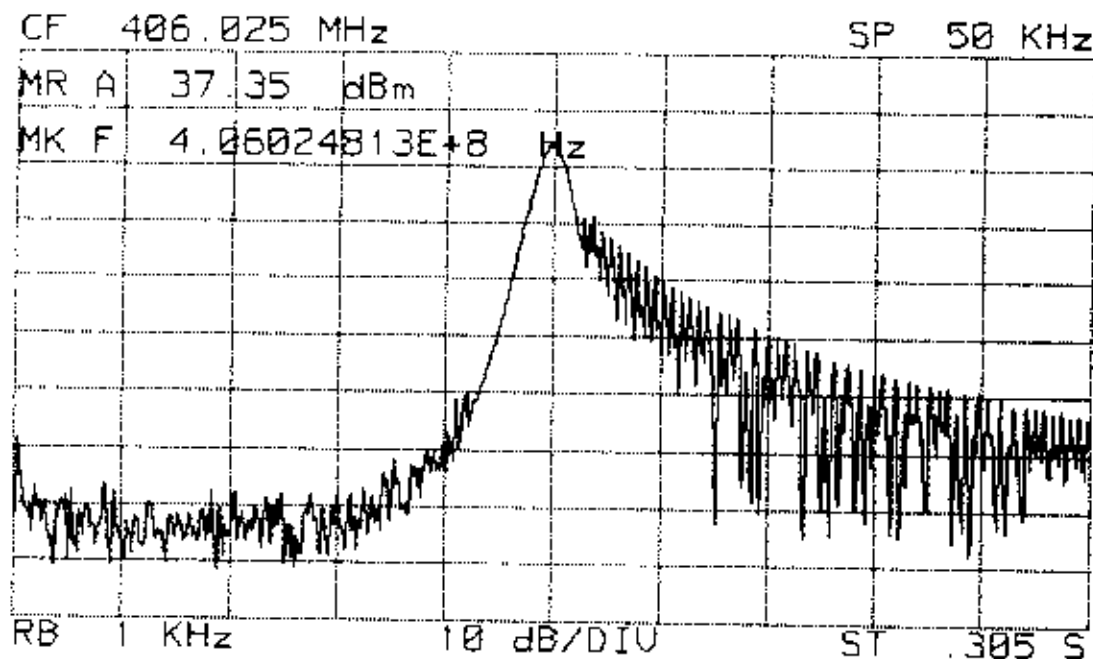
Mesures de puissance

Puissance dBm 37.59

Oscillo



Spectre de fréquence



9.5.2 ALIVENESS TEST RESULTS BEACON - HORIZONTAL POSITION

Beacon Unit : 1/2
 Name : ACR
 Type : RLB35
 Number : 07

 Date : June 8th, 2001 09 :56

406 MHZ MEASUREMENTS

1 - Environmental Temperature (° C)			+ 22 ° C
2 - POWER OUTPUT			
- Transmission power	dBm	37 ± 2	37.6
- Power risetime	ms	< 5	0.85 ms
- Power falltime	ms	< 5	-
3 - SPURIOUS OUTPUT			
- In band	*		OK
- Carrier harmonics			
4 - DIGITAL MESSAGE GENERATOR			
- Repetition rate			OK
- Bit rate	bits/S	400 ± 4	401.29
- Transmission time	ms	440 ± 4.4 / 520 ± 5.2	519.35
- CW preamble	ms	160 ± 1.6	160.37
5 - DIGITAL MESSAGE			
- Bit and frame sync	bits	1-24	FFFE2F
- Format flag	bit	25	1
- Protocol flag	bit	26	0
- Country code	bits	27-36	0366
- Protocol	bits	37-40	1110
- Encoded Position Data Source	bits	111	1
- Homing	bits	112	1
- BCH 1 code read / calculated	bits	86-106 / 25-85	087645 / 087645
- BCH 2 code read / calculated	bits	133-144 / 107-132	EC2 / EC2
6 - FREQUENCY			
- Nominal value	KHz	406 025 ± 2	-0.54560
- Short term stability		< 2x10 ⁻⁹ /100 ms	1.2 x 10 ⁻¹²

* See data and graphs next pages

Laboratoire de certification
Contrôle balise ARGOS/SARSAT
HORIZONTAL POSITION

Constructeur ACR
 Modèle RLB35
 Numéro de série 07
 Référence M3223-1
 Type SARSAT

Date de l'essai 8 Jun 2001 09:56:40

Message balise

Message reçu (1-144): FFFE2F96EE2EC0012C00221D917769BCAEC2
 Format flag (25): 1
 Protocole flag (26): 0
 Code pays (27-36): 0366
 Pays : USA
 Code protocole (37-40): 1110
 Protocole utilise : Standard - Test
 Identification :
 Numéro :
 BCH 1 lu/calculé (86-106/25-85): 087645/087645
 BCH 2 lu/calculé (133-144/107-132): EC2/EC2
 Pos. Data Source (111): Internal
 121.5 MHz Homing (112): Yes
 Position GPS de référence : N 43°33'34'' E 1°28'48
 Position GPS : Yes
 Position GPS par défaut : No
 Latitude position : 43°33'36'' Nord
 Longitude position : 1°28'40'' Est
 Delta position : 0 km

Contrôle message

Durée de la porteuse pure 160.37ms +- 0.00
 Durée de l'émission 519.35 ms
 Fréquence de modulation 401.29Hz +- 0.00
 Stabilité de fréquence

Fréquence moyenne F2 406024454.40 Hz

SIGMA2 F2-F1 2.473E-10
 SIGMA3 F3-F2 1.742E-12

Mesures d'indice

F	F1	G1
49454.38	233	60
49454.34	233	60

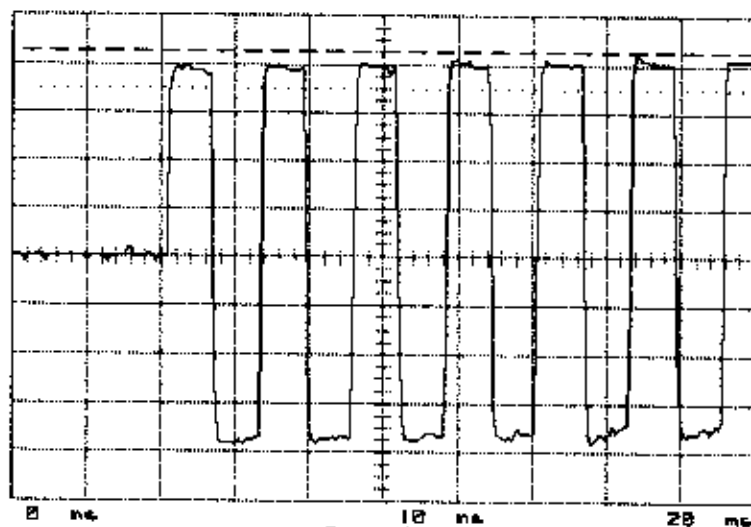
Excursion de phase totale	rd	<= 2.48	2.30
Excursion de phase positive	rd	0.96< <1.24	1.19
Excursion de phase négative	rd	-1.24< <-0.96	-1.11
Symétrie de l'excursion	%	<= 5	-3.47

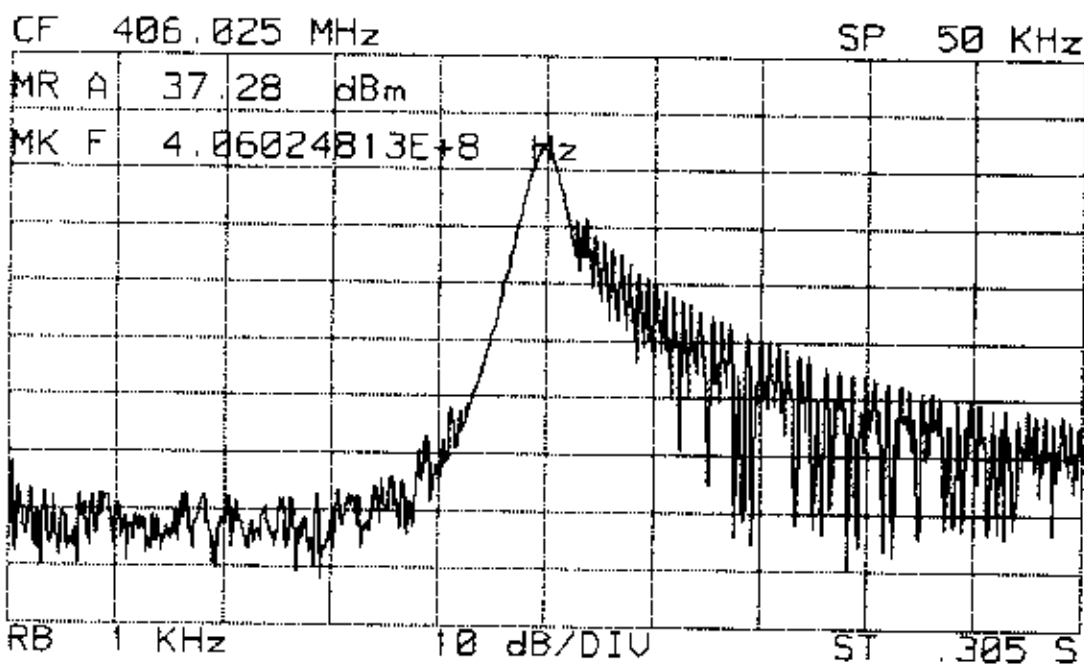
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Mesures de puissance

Puissance dBm 37.60

Oscillo

Umarker2(1) 780 mv ==> 1.2 d
Umarker1(1) 850 mv ==> 1.2 d

Spectre de fréquence


9.5.3 ALIVENESS TEST RESULTS BEACON - UPSIDE DOWN POSITION

Beacon Unit : 1/2
 Name : ACR
 Type : RLB35
 Number : 07

Date : June 8th, 2001 10:55

406 MHZ MEASUREMENTS

1 - Environmental Temperature (° C)			+ 22 ° C
2 - POWER OUTPUT			
- Transmission power	dBm	37 ± 2	37.6
- Power risetime	ms	< 5	0.85 ms
- Power falltime	ms	< 5	-
3 - SPURIOUS OUTPUT			
- In band	*		OK
- Carrier harmonics			
4 - DIGITAL MESSAGE GENERATOR			
- Repetition rate			OK
- Bit rate	bits/S	400 ± 4	401.29
- Transmission time	ms	440 ± 4.4 / 520 ± 5.2	519.35
- CW preamble	ms	160 ± 1.6	160.37
5 - DIGITAL MESSAGE			
- Bit and frame sync	bits	1-24	FFFE2F
- Format flag	bit	25	1
- Protocol flag	bit	26	0
- Country code	bits	27-36	0366
- Protocol	bits	37-40	1110
- Encoded Position Data Source	bits	111	1
- Homing	bits	112	1
- BCH 1 code read / calculated	bits	86-106 / 25-85	087645 / 087645
- BCH 2 code read / calculated	bits	133-144 / 107-132	EC2 / EC2
6 - FREQUENCY			
- Nominal value	KHz	406 025 ± 2	-0.54467
- Short term stability		< 2x10 ⁻⁹ /100 ms	7.0 x 10 ⁻¹¹

* See data and graphs next pages

UPSIDE DOWN POSITION

Constructeur	ACR
Modele	RLB35
Numero de serie	07
Reference	M3223-1
Type	SARSAT

Date de l'essai 8 Jun 2001 10:55:44

Message balise

```

Message reçu          (1-144): FFFE2F96EE2EC0012C00221D917769BCAEC2
Format flag           (25): 1
Protocole flag        (26): 0
Code pays             (27-36): 0366
Pays                  : USA
Code protocole        (37-40): 1110
Protocole utilise     : Standard - Test
Identification        :
Numero                :
BCH 1 lu/calculer    (86-106/25-85): 087645/087645
BCH 2 lu/calculer    (133-144/107-132): EC2/EC2
Pos. Data Source      (111): Internal
121.5 MHz Homing      (112): Yes
Position GPS de reference : N 43°33'34'' E 1°28'48
Position GPS          : Yes
Position GPS par défaut : No
Latitude position     : 43°33'36'' Nord
Longitude position     : 1°28'40'' Est
Delta position         : 0 km

```

Control message

Durée de la porteuse pure	160.37ms +- 0.00
Durée de l'émission	519.35 ms

Frequency de modulation 401.29Hz +/- 0.00

Stabilité de fréquence

Frequence moyenne	P2	406024455.33 Hz
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SIGMA2	F2-F1	4.580E-10
SIGMA3	F3-F2	6.966E-11

Mesures d'indice

P	F1	G1
49455.11	233	60
49455.02	233	59

Excursion de phase totale	rd	≤ 2.48	2.28
Excursion de phase positive	rd	$0.96 < \leq 1.24$	1.08
Excursion de phase negative	rd	$-1.24 < \leq -0.96$	-1.21
Symetrie de l'excursion	q	≤ 5	5.63

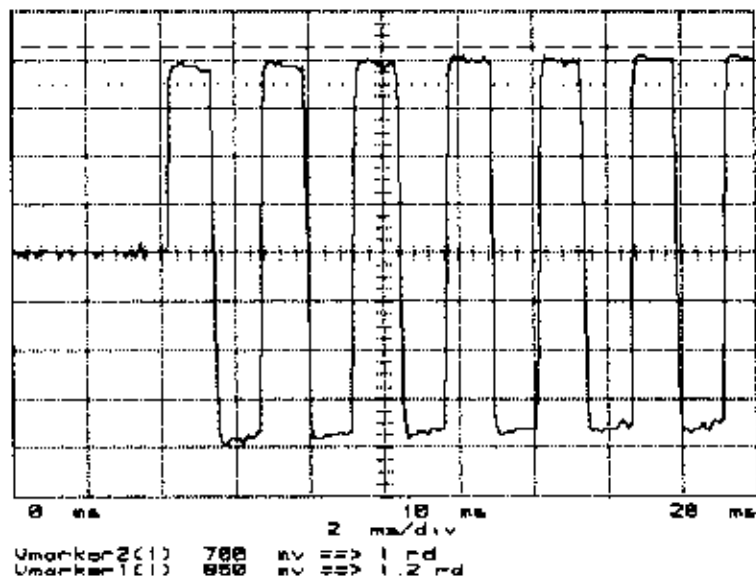
Mesures de puissance

Puissance

dBm

37.72

Oscillo


Spectre de fréquence
