

CHAPTER 9

A 9.0 - LEAKAGE AND IMMERSION TEST

9.1. TEST SPECIFICATIONS AND SEQUENCE

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

- Leave beacon in off position throughout test .
- Place the beacon in an atmosphere of $+ 65 \pm 3^{\circ}\text{C}$ for one hour.
- Fully immerse beacon in water at $+ 20 \pm 3^{\circ}\text{C}$ to a depth of 100 ± 5 mm measured from its highest point to the surface of water for a period of 48 hours (Test equipment : Pressure Chamber).
- Set chamber to 1 kg/cm^2 to simulate a 10 meter head of water .
- Leave pressure on for five minutes.
- Remove beacon from chamber, wipe it dry and perform an aliveness test then check that there is no free water inside the case.

9.2. EQUIPMENT UNDER TEST

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

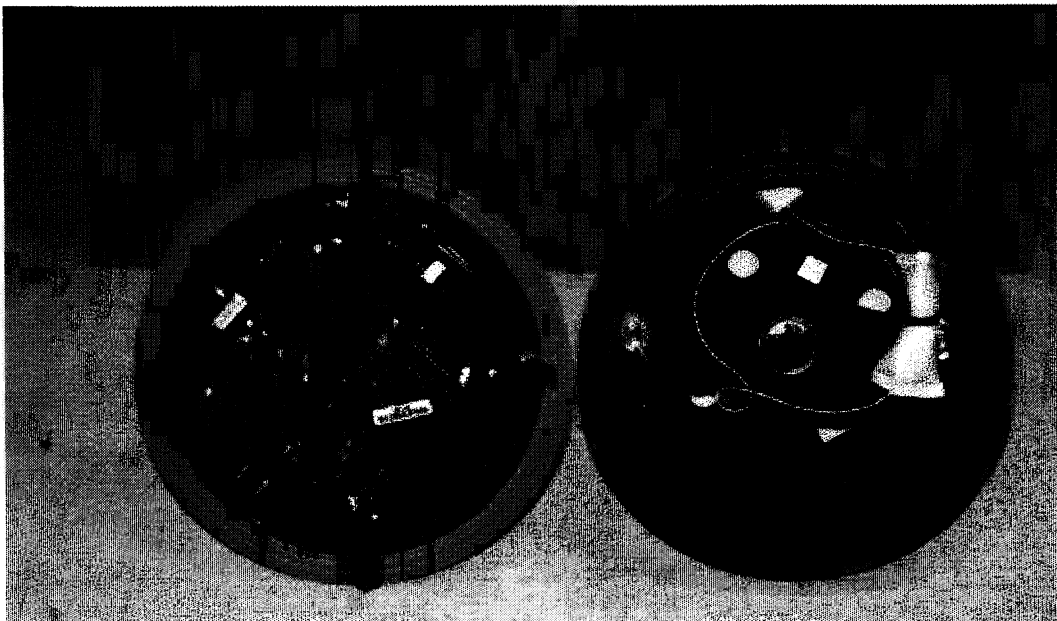
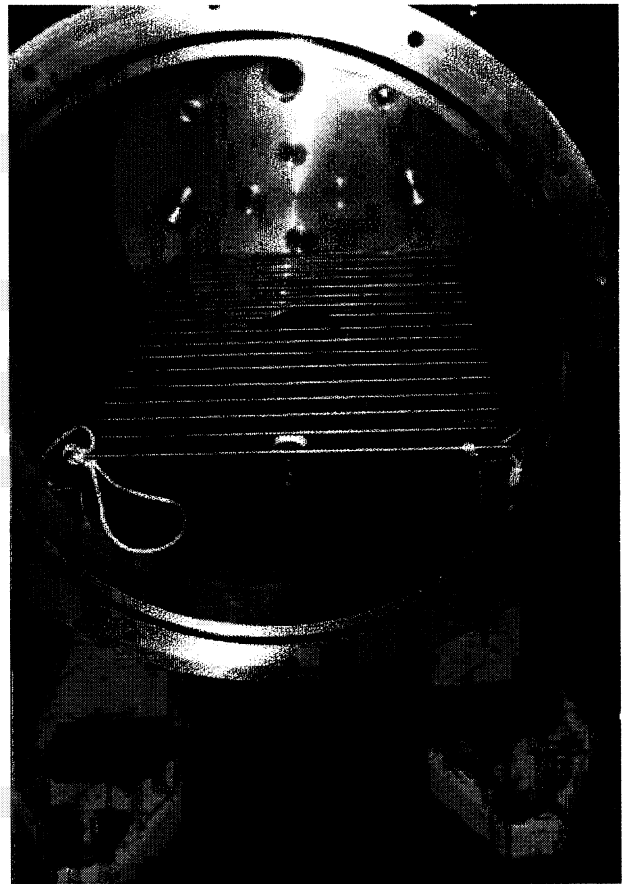
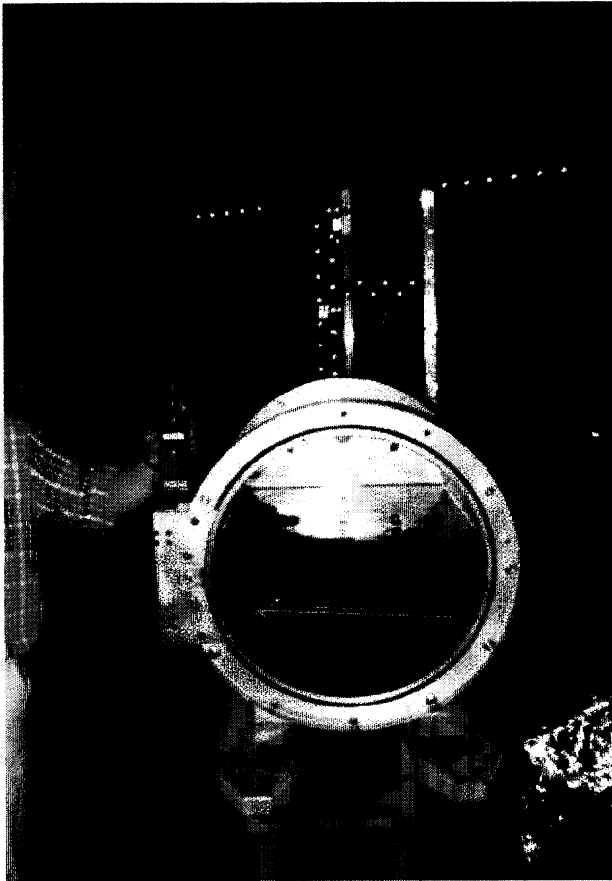
9.3 TEST SITE

Toulouse Space Center (CST) - INTESPACE Metrology.

9.4. TEST EQUIPMENT

- Pressure chamber : Intespace 100 liters Pressure Chamber (see photo next page),
- Pressure sensor : BARFLEX BOURDON Electronique Type 0-2000 hPa
- Pressure reducer.
- Nitrogen cylinder.
- Argos - Cospas/Sarsat Test Bench.

LEAKAGE AND IMMERSION TEST



9.5. TEST RESULTS

9.5.1 Test implementation

Place : INTESPACE Laboratory

Date	Hour	Events - Observations
20 June 2000	16:30	Beacon (battery disconnected) leaved in thermal chamber at + 65 °C for one hour minimum
	18:00	Beacon submerged under 100 mm of water for 48 hours minimum in pressure chamber
22 June 2000	18:00	Beacon submerged and chamber pressurized to 10 ⁵ Pascal for five minutes
22 June 2000	18:05	Chamber depressurized and then beacon removed, wiped and dried .
22 June 2000	18:21	Electrical checks : See results of aliveness test next pages
	18:30	Beacon opened for visual inspection at ≈ 22 °C: OK. Nothing abnormal to note .(see photos)

9.5.2 ALIVENESS TEST RESULTS AFTER SALT FOG TEST

EUT : 2/2
 Name : JOTRON
 Type : TRON 40GPS
 Number : 7001
 Date : 22 June 2000 18:21 :11

406 MHZ MEASUREMENTS

1 - Environmental Temperature (° C)			+ 22° C
2 - POWER OUTPUT			
- Transmission power	dBm	37 ± 2	37.4
- Power risetime	ms	< 5	0.65 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	398.86
- Transmission time	ms	440 ± 4.4 / 520 ± 5.2	520.48
- CW preamble	ms	160 ± 1.6	160.07
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	0257
- 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	1D3226 / 1D3226
- BCH 2 code read / calculated	bits	133-144 / 107-132	CDA / CDA
6 - FREQUENCY			
- Nominal value	KHz	406 025 ± 2	↗ 0.06701
- Short term stability		< 2x10 ⁻⁹ /100 ms	7.5 x 10 ⁻¹¹

* See data and graphs next pages

Laboratoire de certification
Contrôle balise ARGOS/SARSAT

Constructeur JOTRON
Modele TRON 40GPS
Numero de serie OCA07001
Reference M2393
Type SARSAT

Date de l'essai 22 Jun 2000 18:21:11

Message balise

Message reçu (1-144): FFFE2F901E1E24002B80374C89B78E014CDA
Format flag (25): 1
Protocole flag (26): 0
Code pays (27-36): 0257
Pays : NORWAY
Code protocole (37-40): 1110
Protocole utilise : Standard - Test
Identification :
Numero :
BCH 1 lu/calculé (86-106/25-85): 1D3226/1D3226
BCH 2 lu/calculé (133-144/107-132): CDA/CDA
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 : 43.5°3'32'' Nord
Longitude position : .5°58'44'' Est
Delta position : .138284782391 km

Contrôle message

Duree de la porteuse pure 160.07ms +- 0.00
Duree de l'emission 520.48 ms
Frequence de modulation 398.86Hz +- 0.00

Stabilité de fréquence

Frequence moyenne F2 406025067.01 Hz
SIGMA2 F2-F1 7.854E-10
SIGMA3 F3-F2 7.489E-11

Mesures d'indice

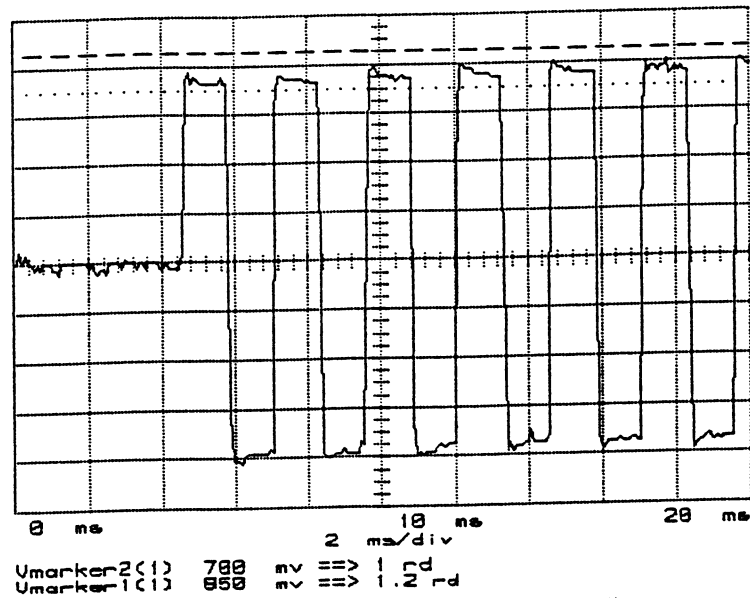
F	F1	G1
50067.71	219	63
50068.02	218	63

	rd	<=	
Excursion de phase totale	rd	<= 2.48	2.26
Excursion de phase positive	rd	0.96< <1.24	1.09
Excursion de phase negative	rd	-1.24< <-0.96	-1.17
Symetrie de l'excursion	%	<= 5	3.61

Mesures de puissance

Puissance dBm 37.41

Oscillo



Spectre de frequence

