

## CHAPTER 13

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| <b>A13.0 - OPERATIONAL LIFE,<br/>STROBE LIGHT, AND SELF TESTS</b> |
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### 13.1 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 chamber stabilized at - 20° C (class 2).
- After two hours switch it 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.

### 13.2. EQUIPMENT UNDER TEST

#### Beacon

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

#### Beacon Battery Type

Chemistry : Li-SOCl<sub>2</sub>  
Manufacturer & model n° : SAFT LSH20  
Size & number of cells : Dx4

### 13.3. TEST SITE

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

### 13.4. TEST EQUIPMENT

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

### 13.5. 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 (-20° 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 TRON 40GPS N° 7001 ")

**The Minimum Operating Life Time was extended from 48 hours to 50 hours**

The measurements were made over a period of more than 75 hours.

#### 13.5.1 Test implementation

| Date         | Hour   | Operations                                                                                                                                                                     | Results                      |
|--------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| 30 June 2000 | 14:00  | The beacon, in the ready condition, is thermally soaked at - 20° C in the temperature-controlled oven .                                                                        |                              |
|              | 17:25  | The beacon in the oven at -20° C and connected into 50 Ohm load Argos Cospas Sarsat Test Bench is manually activated . Simultaneously an Automatic Operational Life Test begin | OK                           |
| 3 July 2000  | 21 :30 | End of Automatic Operational Life Test.                                                                                                                                        |                              |
| 4 July 2000  | 8 :30  | Analysis of Operating Life Test Results :                                                                                                                                      | Correct during<br>≈ 75 hours |

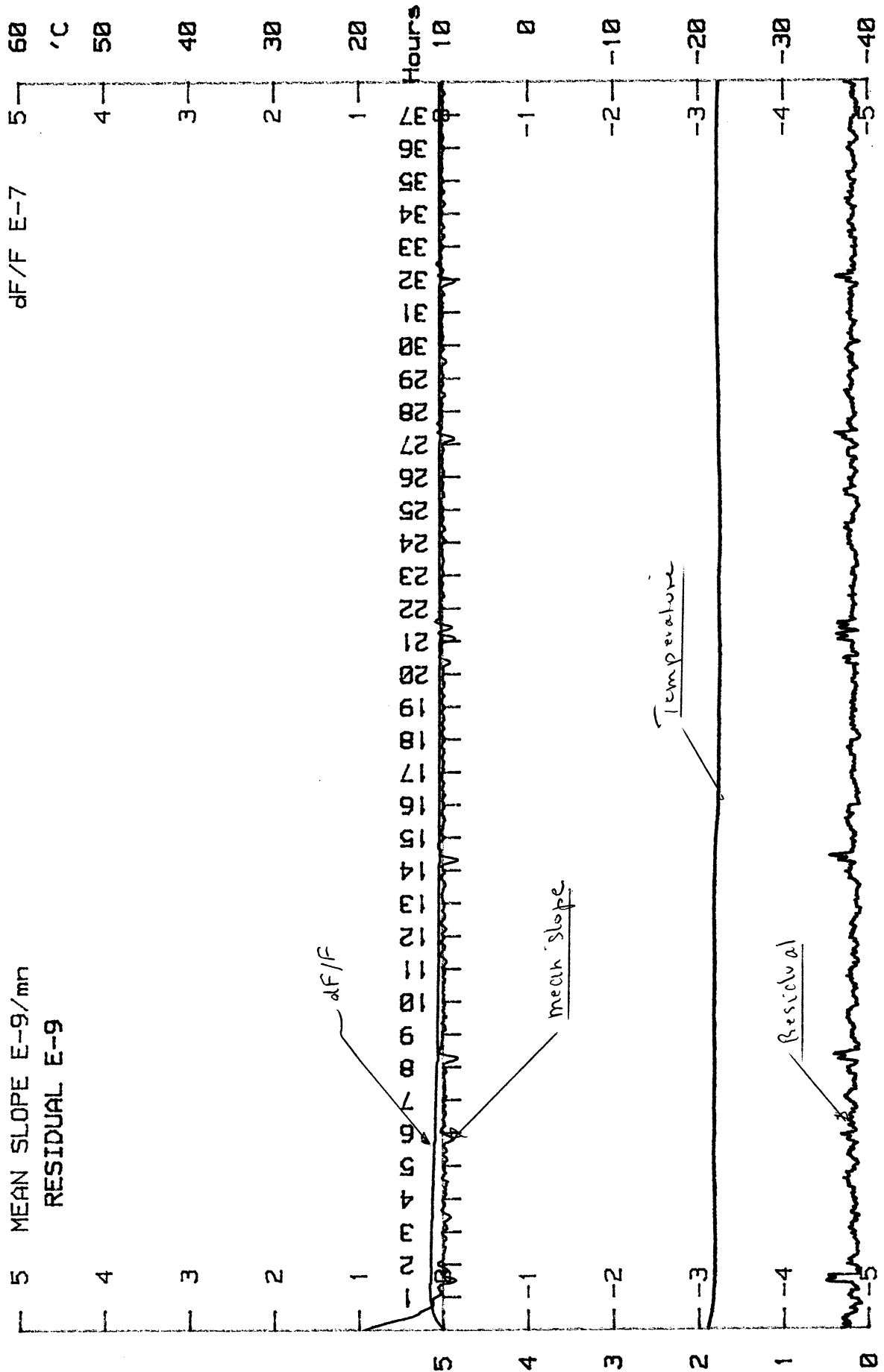
### 11.5.2 Electrical results of Operating Life, StrobeLight and Self Tests

| SPECIFICATIONS                                             | 12 h                  | 24 h                  | 36 h                  | 50 h                  | 75 h                  |
|------------------------------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>1 - FREQUENCY (MHz)</b>                                 |                       |                       |                       |                       |                       |
| Nominal Carrier $406.025 \pm 0.002$                        | 406.025134            | 406.025133            | 406.025131            | 406.025129            | 406.025126            |
| Short term stab. $< 2 \times 10^{-9}/100$ ms               | $< 3 \times 10^{-10}$ | $< 3 \times 10^{-10}$ | $< 2 \times 10^{-10}$ | $< 3 \times 10^{-10}$ | $< 3 \times 10^{-10}$ |
| Slope $< 1 \times 10^{-9}/\text{mn}$                       | $< 2 \times 10^{-11}$ | $< 2 \times 10^{-11}$ | $< 2 \times 10^{-11}$ | $< 2 \times 10^{-11}$ | $< 3 \times 10^{-11}$ |
| Sigma $< 3 \times 10^{-9}$                                 | $< 2 \times 10^{-10}$ | $< 3 \times 10^{-10}$ | $< 2 \times 10^{-10}$ | $< 3 \times 10^{-10}$ | $< 2 \times 10^{-10}$ |
| <b>2 - RF OUTPUT</b>                                       |                       |                       |                       |                       |                       |
| + 2.9<br>5 W (37 dBm $\pm$ 2 dBm)<br>- 1.8                 | 37.6                  | 37.5                  | 37.4                  | 36.9                  | 35.3                  |
| <b>3 - STROBE LIGHTS</b>                                   |                       |                       |                       |                       |                       |
| 20 to 30 flashes/min                                       | 21                    | 20                    | 20                    | 21                    | 20                    |
| Intensity $\geq 0.75$ cand.                                | -                     | 0.90                  | -                     | 0.85                  | -                     |
| <b>4 - HOMING</b>                                          |                       |                       |                       |                       |                       |
| Transmitter :                                              | 25                    | 25.1                  | 24.9                  | 24.8                  | 23                    |
| - peak envelope output power<br>(14 dBm + 6 dB<br>- 0 dBm) |                       |                       |                       |                       |                       |

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

OPERATING LIFE TEST ON JOTRON EPIRB  
MEDIUM TERM STABILITY

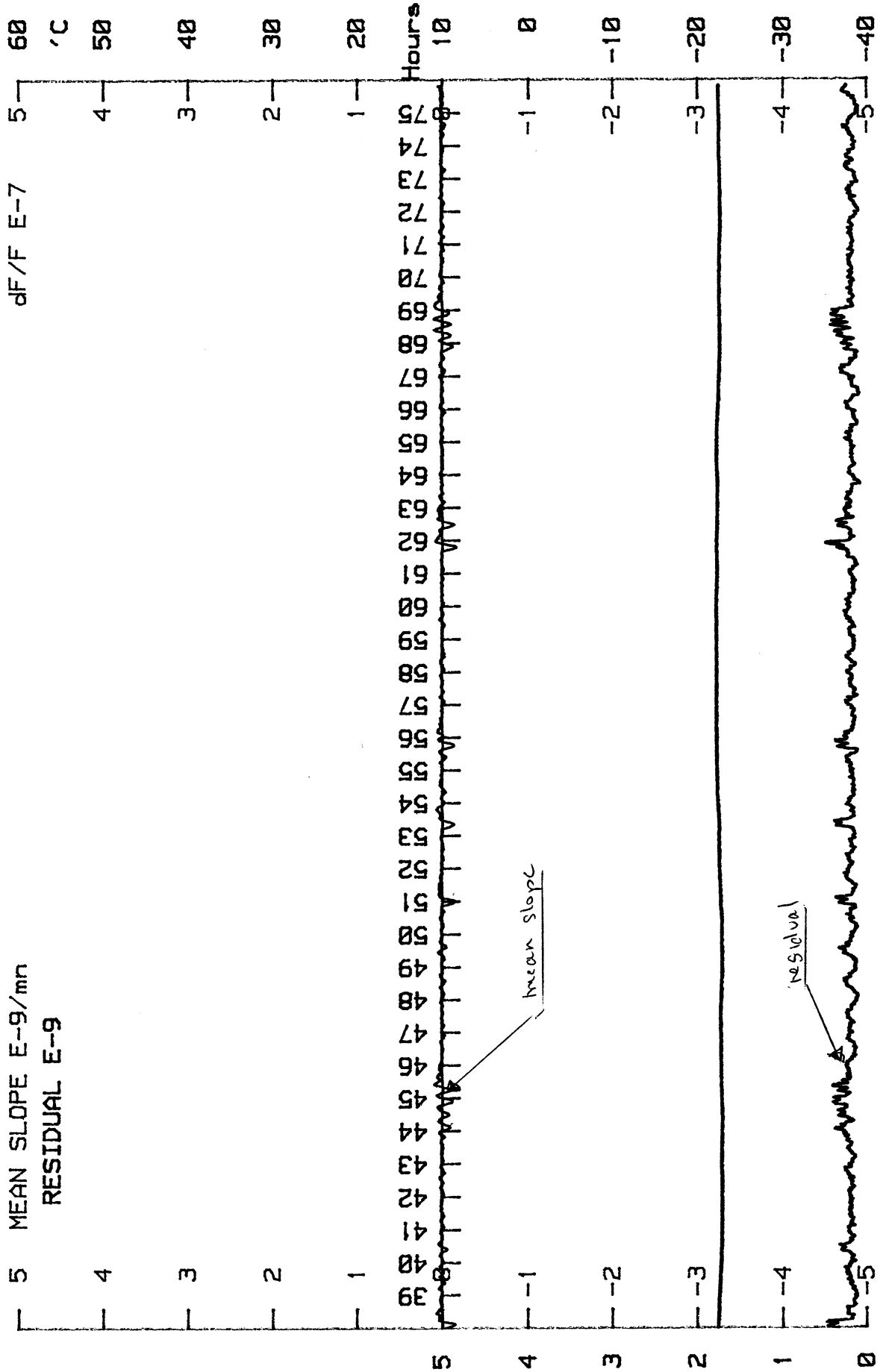
BEACON MANUFACTURER MODEL SERIAL Nr DATE TIME  $\emptyset$   
JOTRON TRON 40GPS 7001 30 Jun 2000 17:27:37  
5 MEAN SLOPE E-9/mn  
RESIDUAL E-9



OPERATING LIFE TEST ON JOTRON EPIRB

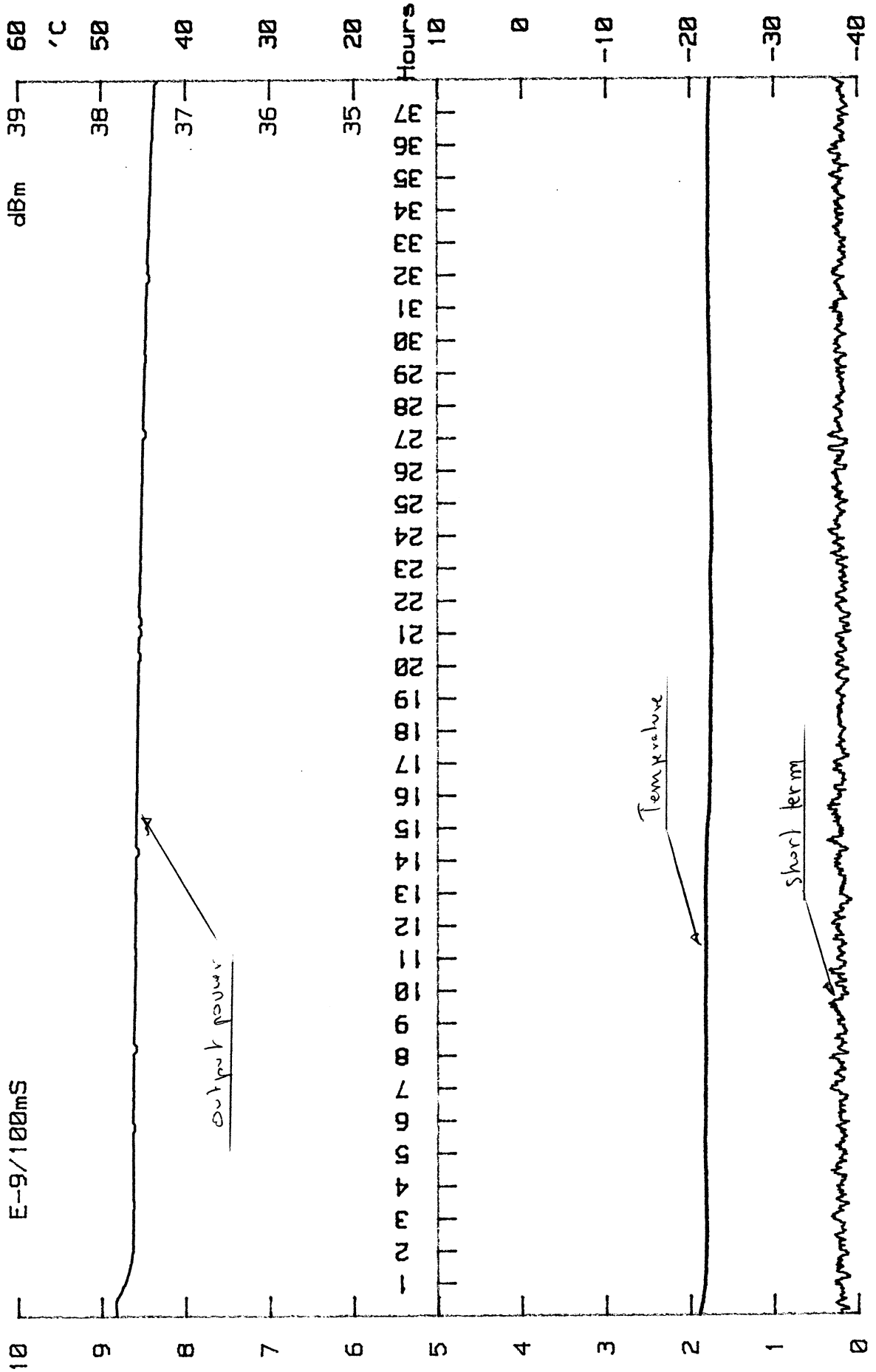
MEDIUM TERM STABILITY

BEACON MANUFACTURER MODEL SERIAL Nr DATE TIME 0  
JOTRON TRON 40GPS 7001 30 Jun 2000 17:27:37  
5 MEAN SLOPE E-9/mn  
RESIDUAL E-9



OPERATING LIFE TEST ON JOTRON EPIRB  
OUTPUT POWER and SHORT TERM STABILITY

BEACON MANUFACTURER JOTRON MODEL TRON 40GGS SERIAL N° 7001 DATE 30 Jun 2000 TIME 0 17:27:37



OPERATING LIFE TEST ON JOTRON EPIR  
OUTPUT POWER and SHORT TERM STABILITY

BEACON MANUFACTURER JOTRON MODEL TRON 40GPS SERIAL Nr 7001 DATE 30 Jun 2000 TIME 0 17:27:37

