

## **CHAPTER 1**

|                                                                        |
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| <b>A1.0- ADMINISTRATION, GENERAL<br/>COMMENTS AND SUMMARY OF TESTS</b> |
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## 1.1 GENERAL COMMENTS

This document reports the procedures and results of certification tests on 406-MHz SARSAT beacons. The tests were conducted for the United States Coast Guard (USCG) by INTESPACE (ITS) under a Center National d'Etudes Spatiales (C.N.E.S., the French Space Agency) contract.

## 1.2 ADMINISTRATION

### 1.2.1 WORK ORDER

Manufacturer : JOTRON  
 Address : P.O. Box 85 – TJODALYNG, NORWAY  
 Represented by : Mr Fred Ivar TALLAKSEN

### 1.2.2 INTESPACE TEST CENTER

The test operations have been conducted by : Mr Gérard PEYROU

### 1.2.3 SCHEDULE

Start of test : 09 may 2000  
 End of test : 13 october 2000

### 1.2.4 WORK REFERENCE : M2393-RTCM

### 1.2.5 EQUIPEMENT UNDER TEST

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

| Equipement Under Test (EUT) | Model      | Beacon serial number | Flot free system auto-release mechanism | Comments                                                    |
|-----------------------------|------------|----------------------|-----------------------------------------|-------------------------------------------------------------|
| 1                           | TRON 40GPS | 7000                 | JOTRON Model : FB4 AA<br>S/N : 2811     |                                                             |
| 2                           | TRON 40GPS | 7001                 |                                         | - Antenna disconnected<br>- 50 $\Omega$ RF Output Connector |

### 1.3 TEST FACILITIES

- ARGOS – COSPAS/SARSAT Certification Test Bench
- INTESPACE Enviromental Test Equipements
- Toulouse CNES MCC

### 1.4 STANDARDS AND TEST PROCEDURES APPLICABLES

- COSPAS-SARSAT standards :
  - "C/S T. 001- Issue 3 - Revision 3 - October 1999 "
  - "C/S T. 007- Issue 3 - Revision 6 - October 1999"
- RTCM Recommended Standards for 406 MHz Satellite Emergency Position-Indicating Radiobeacons (EPIRBs) - Version 2.0 - February 5, 1997
- INTESPACE Radiobeacon Test Procedures

### 1.5 TEST SEQUENCE

#### 1.5.1 SERIES OF TESTS TO BE RUN IN ORDER : (RTCM item)

- |                                                    |          |
|----------------------------------------------------|----------|
| 1 - Initial Alivness Test                          | (A 1.0)  |
| 2 - Dry Heat Test                                  | (A 3.0)  |
| 3 - Damp Heat Test                                 | (A 4.0)  |
| 4 - Vibration Test                                 | (A 5.0)  |
| 5 - Bump Test                                      | (A 6.0)  |
| 6 - Salt Fog Test                                  | (A 7.0)  |
| 7 - Drop Tests                                     | (A 8.0)  |
| 8 - Leakage and Immersion Tests                    | (A 9.0)  |
| 9 - Spurious Emission Test                         | (A 10.0) |
| 10 - Thermal Shock Tests                           | (A 11.0) |
| 11 - Cospas-Sarsat C/S T.007 Tests                 | (A 12.0) |
| 12 - Operational Life, Strobe Light and Self Tests | (A 13.0) |

**1.5.2 SERIES OF TESTS TO BE RUN ANY TIME DURING THE SEQUENCE :**

- Automatic Release Mechanism & Automatic Activation Tests (A 14.0)
- Stability & Buoyancy Test (A 15.0)
- Inadvertent Activation Test (A 16.0)
- Auxillary Radio-Locating Device Transmitter Test (A 17.0)
- Humidity Test (A 18.0)
- Orientation Test (A 19.0)

The two electronic beacon are identical :

- EUT 1 : TRON 40GPS n° 7001 was used for environmental and electrical tests RTCM items A 2.0 to A 13.0, A 17 (partial) and A 18
- EUT 2 : TRON 40GPS n° 7000 was used for tests RTCM items A 12.0 (partial), A14.0 to A 17 (partial), and A19.0 .

**1.6 RESULTS**

See following pages Summary of Test results and following chapters Test Result Reports (data and graphs)

*General remark :*

*Regarding the issue of the measurement results performed on the certification test bench, due to the numbering of the computer data sheets, the beacon serial number alters from one curve to the other although the same beacon is concerned.*

## SUMMARY OF TESTS

| PARAMÈTRES TO BE MEASURED<br>DURING TESTS                                                                                                                                                                                                                      | RANGE OF<br>SPECIFICATION                                                                                      | UNITS                                              | TEST RESULTS                |                             |                                                                    | COMMENTS                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------|-----------------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                |                                                                                                                |                                                    | T min. (± 3 °C)<br>( __ °C) | T amb. (± 3 °C)<br>( 22 °C) | T max. (± 3 °C)<br>( + 70 to + 55 °C)                              |                                                                                                   |
| <b>1. INITIAL ALIVENESS TEST (A1.0)</b><br><br>* Carrier Frequency<br>* Power Output<br>* Data Message                                                                                                                                                         | 406.025 ± 0.002<br>35 - 39<br>must be correct                                                                  | MHz<br>dBm<br>√                                    |                             | 406.025101<br>37.6<br>√     |                                                                    | <b>Chapter 2</b><br><br>11may, 2000<br>( C/S Elec. & Funct.<br>Test at amb Temp.<br>Chapter 12 )  |
| <b>2. DRY HEAT CYCLE (A3.0)</b><br><br>• Aliveness Test (during 2 hour period)<br><br>* Carrier Frequency<br>* Power Output<br>* Data Message<br><br>• Aliveness Test (at end of 2 hour period)<br><br>* Carrier Frequency<br>* Power Output<br>* Data Message | 406.025 ± 0.002<br>35 - 39<br>must be correct<br><br><br><br><br>406.025 ± 0.002<br>35 - 39<br>must be correct | MHz<br>dBm<br>√<br><br><br><br><br>MHz<br>dBm<br>√ |                             |                             | 406.025072<br>37.4<br>√<br><br><br><br><br>406.025061<br>37.4<br>√ | <b>Chapter 3</b><br><br>11-12 may, 2000<br>( C/S Elec. & Funct.<br>Test at + 55°C<br>Chapter 12 ) |

| PARAMÈTRES TO BE MEASURED<br>DURING TESTS                                                                                                                                                                                                                     | RANGE OF<br>SPECIFICATION                                                                              | UNITS                                      | TEST RESULTS                |                                      |                                                            | COMMENTS                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------|--------------------------------------|------------------------------------------------------------|-----------------------------------------|
|                                                                                                                                                                                                                                                               |                                                                                                        |                                            | T min. (± 3 °C)<br>( __ °C) | T amb. (± 3 °C)<br>( 22°C)           | T max. (± 3 °C)<br>( +40 °C)                               |                                         |
| <b>3. DAMP HEAT CYCLE (A4.0)</b><br><br>• Aliveness Test (during 2 hour period)<br><br>* Carrier Frequency<br>* Power Output<br>* Data Message<br><br>• Aliveness Test ( end of 2 hour period)<br><br>* Carrier Frequency<br>* Power Output<br>* Data Message | 406.025 ± 0.002<br>35 - 39<br>must be correct<br><br><br>406.025 ± 0.002<br>35 - 39<br>must be correct | MHz<br>dBm<br>√<br><br><br>MHz<br>dBm<br>√ |                             |                                      | 406.025080<br>37.6<br>√<br><br><br>406.025081<br>37.6<br>√ | <b>Chapter 4</b><br><br>17-18 may, 2000 |
| <b>4. VIBRATION TEST (A5.0)</b><br><br>• Exterior Mechanical Inspection<br><br><br>• Aliveness Test<br><br>* Carrier Frequency<br>* Power Output<br>* Data Message                                                                                            | No damage<br><br><br>406.025 ± 0.002<br>35 - 39<br>must be correct                                     | √<br><br><br>MHz<br>dBm<br>√               |                             | √<br><br><br>406.025090<br>37.1<br>√ |                                                            | <b>Chapter 5</b><br><br>6-7 june, 2000  |

| PARAMÈTRES TO BE MEASURED<br>DURING TESTS                                                                                                                 | RANGE OF<br>SPECIFICATION                                              | UNITS                        | TEST RESULTS                   |                                      |                                | COMMENTS                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|------------------------------|--------------------------------|--------------------------------------|--------------------------------|-----------------------------------------|
|                                                                                                                                                           |                                                                        |                              | T min. (± 3 °C)<br>( _____ °C) | T amb. (± 3 °C)<br>( 22° )           | T max. (± 3 °C)<br>( _____ °C) |                                         |
| <b>5. BUMP TEST (A6.0)</b><br>• Exterior Mechanical Inspection<br><br>• Aliveness Test<br><br>* Carrier Frequency<br>* Power Output<br>* Data Message     | No damage<br><br><br><br>406.025 ± 0.002<br>35 - 39<br>must be correct | √<br><br><br>MHz<br>dBm<br>√ |                                | √<br><br><br>406.025096<br>37.2<br>√ |                                | <b>Chapter 6</b><br><br>8 june, 2000    |
| <b>6. SALT FOG TEST (A7.0)</b><br>• Exterior Mechanical Inspection<br><br>• Aliveness Test<br><br>* Carrier Frequency<br>* Power Output<br>* Data Message | No damage<br><br><br>406.025 ± 0.002<br>35 - 39<br>must be correct     | √<br><br><br>MHz<br>dBm<br>√ |                                | √<br><br><br>406.025094<br>37.1<br>√ |                                | <b>Chapter 7</b><br><br>8-12 june, 2000 |



| PARAMÈTRES TO BE MEASURED<br>DURING TESTS                                                                                                                                                 | RANGE OF<br>SPECIFICATION                                                      | UNITS                                              | TEST RESULTS                                                     |                                                                |                                                                    | COMMENTS                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|----------------------------------------------------|------------------------------------------------------------------|----------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------|
|                                                                                                                                                                                           |                                                                                |                                                    | T min. ( $\pm 3^{\circ}\text{C}$ )<br>( - $30^{\circ}\text{C}$ ) | T amb. ( $\pm 3^{\circ}\text{C}$ )<br>( $22^{\circ}\text{C}$ ) | T max. ( $\pm 3^{\circ}\text{C}$ )<br>( _____ $^{\circ}\text{C}$ ) |                                      |
| <b>7-A. DROP TEST (A8.1)</b><br><br><b>On Hard Surface</b><br><br>• Exterior Mechanical Inspection<br><br>• Aliveness Test<br><br>* Carrier Frequency<br>* Power Output<br>* Data Message | No damage<br><br><br><br><br>406.025 $\pm$ 0.002<br>35 - 39<br>must be correct | $\checkmark$<br><br><br>MHz<br>dBm<br>$\checkmark$ | $\checkmark$<br><br><br>406.025094<br>37.4<br>$\checkmark$       |                                                                |                                                                    | <b>Chapter 8</b><br><br>20 june 2000 |
| <b>7-B. DROP TEST (A8.2)</b><br><br><b>Into Water</b><br><br>• Exterior Mechanical Inspection<br><br>• Aliveness Test<br><br>* Carrier Frequency<br>* Power Output<br>* Data Message      | No damage<br><br><br><br><br>406.025 $\pm$ 0.002<br>35 - 39<br>must be correct | $\checkmark$<br><br><br>MHz<br>dBm<br>$\checkmark$ |                                                                  | $\checkmark$<br><br><br>406.025086<br>37.6<br>$\checkmark$     |                                                                    | 20 june 2000                         |

| PARAMÈTRES TO BE MEASURED<br>DURING TESTS                                                                                                                           | RANGE OF<br>SPECIFICATION                                     | UNITS                                                  | TEST RESULTS                   |                                  |                                | COMMENTS                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|--------------------------------------------------------|--------------------------------|----------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                     |                                                               |                                                        | T min. (± 3 °C)<br>( _____ °C) | T amb. (± 3 °C)<br>( 22 °C)      | T max. (± 3 °C)<br>( _____ °C) |                                                                                                                              |
| <b>8. LEAKAGE AND IMMERSION TEST<br/>(A9.0)</b><br><br>• Aliveness Test<br><br>* Carrier Frequency<br>* Power Output<br>* Data Message<br><br>• Interior Inspection | 406.025 ± 0.002<br>35 - 39<br>must be correct<br><br>No water | MHz<br>dBm<br>√<br><br>√                               |                                | 406.025067<br>37.4<br>√<br><br>√ |                                | <b>Chapter 9</b><br><br>20-22 june 2000                                                                                      |
| <b>9. SPURIOUS EMISSIONS TEST<br/>(A10.0)</b><br><br>• 406 MHz<br><br>• 121.5 MHz                                                                                   | Figure 2-1<br><br>Figure 2-6                                  | √<br>(attach<br>graphs)<br><br>√<br>(attach<br>graphs) |                                | √<br><br>√                       |                                | <b>Chapter 10</b><br>20-22 june 2000<br><br>OK after manufacturer<br>Adjustment (See<br>Annex of C/S Results<br>Chapter 12 ) |

| PARAMÈTRES TO BE MEASURED<br>DURING TESTS                                                                                                                                                                                                                                                                  | RANGE OF<br>SPECIFICATION                                                                             | UNITS                                                                                                                             | TEST RESULTS                                                                                                                  |                                |                                                                                                                               | COMMENTS                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
|                                                                                                                                                                                                                                                                                                            |                                                                                                       |                                                                                                                                   | T min. (± 3 °C)<br>( _____ °C)                                                                                                | T amb. (± 3 °C)<br>( _____ °C) | T max. (± 3 °C)<br>( _____ °C)                                                                                                |                                          |
| <b>10. THERMAL SHOCK TEST (A11.0)</b><br><br>• Self-activation in water<br><br>• Aliveness Test :<br>* Carrier Frequency<br>* Power Output<br>* Data Message<br><br>• Frequency Stability<br>* Short term stability<br><br>* Medium term stability :<br>• mean slope<br><br>• residual frequency variation | ≤ 5<br><br>406.025 ± 0.002<br>35 - 39<br>must be correct<br><br>≤ 0.002<br><br>≤ 0.001<br><br>≤ 0.003 | minutes<br><br>MHz<br>dBm<br>√<br><br>parts/<br>million<br>in 100 ms<br><br>parts/<br>million<br>/minute<br><br>parts/<br>million | LOW<br>TEMPERATURE<br>- 31° → 0.1°C<br><br>< 0.2<br><br>406.025011<br>37.4<br>√<br><br>≤ 0.0002<br><br>< 0.001<br><br>< 0.002 |                                | HIGH<br>TEMPERATURE<br>+70° → +31°C<br><br>< 0.2<br><br>406.025062<br>37.4<br>√<br><br>≤ 0.0008<br><br>< 0.001<br><br>< 0.001 | <b>Chapter 11</b><br><br>22-24 june 2000 |
| <b>11. COSPAR-SARSAT TYPE (A12.0)<br/>APPROVAL TESTS</b>                                                                                                                                                                                                                                                   | C-S Certificate<br>(attach test report)                                                               | √                                                                                                                                 | -20 °C ± 3 °C<br>√                                                                                                            | 22 °C ± 3 °C<br>√              | 55 °C ± 3 °C<br>√                                                                                                             | <b>Chapter 12</b>                        |

| PARAMÈTRES TO BE MEASURED<br>DURING TESTS                                                                                                                                                                                                                                                                                                                           | RANGE OF<br>SPECIFICATION                                                                                                                  | UNITS                                                                                                                                                    | TEST RESULTS                                                                                                              |                                  |                                  | COMMENTS                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                            |                                                                                                                                                          | T min. ( ± 3 °C )<br>( - 20 °C)                                                                                           | T amb. ( ± 3 °C )<br>( _____ °C) | T max. ( ± 3 °C )<br>( _____ °C) |                                                                                                                                                                                                                                              |
| <b>12. OPERATIONAL LIFE, STROBE<br/>LIGHT AND SELF TESTS (A13.0)</b><br><br>Operational Life<br><br>• Frequency<br>* Nominal Carrier<br>* Short-term stability<br><br><br>• Medium term stability :<br>* Mean slope<br><br>* Residual variation<br><br>• RF output power<br><br>• Strobe flash rate<br><br>• Auxiliary radio-locating Peak Envelope<br>output Power | <br><br><br><br>$406.025 \pm 0.002$<br>$\leq 0.002$<br><br><br><br>$\leq 0.001$<br><br>$\leq 0.003$<br><br>35-39<br><br>20-30<br><br>14-20 | <br><br><br><br>MHz<br>parts/<br>million<br>in 100<br>ms<br><br><br>parts/<br>million<br>/min<br><br>parts/<br>million<br><br>dBm<br><br>/min<br><br>dBm | <br><br><br><br>$406.025129$<br>$< 0.0003$<br><br><br><br>$< 0.00002$<br><br>$< 0.0003$<br><br>36.9<br><br>21<br><br>24.8 |                                  |                                  | <b>Chapter 13</b><br><br>30 june to 4 july 2000<br><br>Résultats after 50 hours<br><br>( C/S Oper. Life<br>Test at min Temp.<br>Chapter 12 )<br><br><br><br><br><br><br>Acceptable<br>taking account of the<br>PERP result<br>See Chapter 17 |

| PARAMÈTRES TO BE MEASURED<br>DURING TESTS                                                                           | RANGE OF<br>SPECIFICATION                                     | UNITS                   | TEST RESULTS                  |                             |                             | COMMENTS                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|-------------------------|-------------------------------|-----------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------|
|                                                                                                                     |                                                               |                         | T min. (± 3 °C)<br>( - 20 °C) | T amb. (± 3 °C)<br>( 22 °C) | T max. (± 3 °C)<br>( 55 °C) |                                                                                                                  |
| <b>13. STROBE LIGHT TEST (A13.2)</b><br><br>• Flash rate<br>• Effective intensity<br>• Pulse duration               | 20-30<br><br>0.75<br><br>10 <sup>-6</sup> to 10 <sup>-2</sup> | /min<br><br>Cd<br><br>S | 21<br><br>0.85<br><br>0.85    | 20<br><br>0.85<br><br>0.80  | 20<br><br>0.80<br><br>0.80  | <b>Chapter 13<br/>and<br/>Chapter 12</b><br>( C/S Elec. & Funct.<br>Test at min, amb,<br>and max Temp. )         |
| <b>14. SELF TEST (A13.3)</b><br><br>• RF pulse duration<br>• Frame synchronization pattern<br>• Number of RF bursts | ≤ 0.444 sec<br><br>0 1101 0000<br><br>1-burst                 | √<br><br>√<br><br>√     | √<br><br>√<br><br>√           | √<br><br>√<br><br>√         | √<br><br>√<br><br>√         | <b>Chapter 13<br/>and<br/>Chapter 12</b><br>( C/S Elec. & Funct.<br>Test at min, amb,<br>and max Temp.<br>P 43 ) |

| PARAMÈTRES TO BE MEASURED<br>DURING TESTS                                                                                                                                                                                                                                                           | RANGE OF<br>SPECIFICATION                                                 | UNITS                      | TEST RESULTS                  |                             |                             | COMMENTS                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|----------------------------|-------------------------------|-----------------------------|-----------------------------|----------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                     |                                                                           |                            | T min. (± 3 °C)<br>( - 30 °C) | T amb. (± 3 °C)<br>( 22 °C) | T max. (± 3 °C)<br>( 70 °C) |                                                                                                    |
| <b>15. AUTOMATIC RELEASE<br/>MECHANISM TEST (A14.0)</b><br><br><ul style="list-style-type: none"> <li>• Normal mounted orientation</li> <li>• Rolling 90° starboard</li> <li>• Rolling 90° port</li> <li>• Rolling 90° bow down</li> <li>• Rolling 90° stern down</li> <li>• Upside down</li> </ul> | Release and<br>float free before<br>4 meters ;<br>automatic<br>activation | √<br>√<br>√<br>√<br>√<br>√ | √                             | √<br>√<br>√<br>√<br>√<br>√  | √                           | <b>Chapter 14</b><br><br>29 june 2000                                                              |
| <b>16. STABILITY AND BUOYANCY<br/>TEST (A15.0)</b><br><br><ul style="list-style-type: none"> <li>• Time to upright</li> <li>• Reserve buoyancy</li> <li>• Float upright ; Antenna base</li> </ul>                                                                                                   | ≤ 2<br>≥ 5<br>> 4                                                         | s<br>%<br>cm               |                               | 1<br>0.4<br>> 4             |                             | <b>Chapter 15</b><br><br>24 july 2000<br><br>OK with old method<br>of specification<br>measurement |
| <b>17. INADVERTENT ACTIVATION<br/>TEST (A16.0)</b><br><br><ul style="list-style-type: none"> <li>• EUT not release from bracket</li> <li>• EUT not automatically activate</li> </ul>                                                                                                                |                                                                           | √<br>√                     |                               | √<br>√                      |                             | <b>Chapter 16</b><br><br>27 july 2000                                                              |

| PARAMÈTRES TO BE MEASURED<br>DURING TESTS                                   | RANGE OF<br>SPECIFICATION               | UNITS | TEST RESULTS                    |                                |                                | COMMENTS                                                                                             |
|-----------------------------------------------------------------------------|-----------------------------------------|-------|---------------------------------|--------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------|
|                                                                             |                                         |       | T min. ( ± 3 °C )<br>( -20 °C ) | T amb. ( ± 3 °C )<br>( 22 °C ) | T max. ( ± 3 °C )<br>( 55 °C ) |                                                                                                      |
| <b>18. AUXILIARY RADIO-LOCATING<br/>DEVICE TRANSMITTER TEST<br/>(A17.0)</b> |                                         |       |                                 |                                |                                | <b>Chapter 17<br/>and Chapter 12<br/>(C/S T.A. Tests<br/>Results )</b><br>9 march to 26 july<br>2000 |
| • Carrier frequency                                                         | 121.5 ± 0.006                           | MHz   | 121.501                         | 121.5007                       | 121.501                        |                                                                                                      |
| • PERP                                                                      | 14-20                                   | dBm   |                                 | 16.6                           |                                |                                                                                                      |
| • Duty Cycle                                                                | 100                                     | %     | 100                             | 100                            | 100                            |                                                                                                      |
| • Modulation                                                                |                                         |       |                                 |                                |                                |                                                                                                      |
| * Frequency                                                                 | ≤ 700 Hz within<br>range of 300-1600 Hz | Hz    | 380 → 1560                      | 380 → 1560                     | 380 → 1560                     |                                                                                                      |
| * Direction                                                                 | Upward                                  | √     | √                               | √                              | √                              |                                                                                                      |
| * Duty cycle                                                                | 33-55                                   | %     | 48                              | 47                             | 48                             |                                                                                                      |
| * Factor                                                                    | 0.85-1.0                                | #     | 0.90                            | 0.92                           | 0.93                           |                                                                                                      |
| * Sweep repetition rate                                                     | 2 - 4                                   | Hz    | 2.6                             | 2.6                            | 2.6                            |                                                                                                      |
| • Antenna                                                                   |                                         |       |                                 |                                |                                |                                                                                                      |
| * Pattern                                                                   | Omnidirectional                         | √     |                                 | √                              |                                | 9 march 2000                                                                                         |
| * Polarization                                                              | Vertical                                | √     |                                 | √                              |                                |                                                                                                      |
| * VSWR                                                                      | ≤ 1.5:1                                 | √     |                                 |                                |                                | Not checked<br>(Antenna integrated)                                                                  |

| PARAMÈTRES TO BE MEASURED<br>DURING TESTS                                                                                                                                                                                                                                                                                                                        | RANGE OF<br>SPECIFICATION                                                                                                                                 | UNITS                                                                 | TEST RESULTS                   |                                                                                              |                             | COMMENTS                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|--------------------------------|----------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                           |                                                                       | T min. (± 3 °C)<br>( _____ °C) | T amb. (± 3 °C)<br>( _____ °C)                                                               | T max. (± 3 °C)<br>( 40 °C) |                                                                                                      |
| <b>19. HUMIDITY TEST (A18.0)</b><br><br>• Aliveness Test :<br>* Carrier frequency<br>* Power Output<br>* Data Message                                                                                                                                                                                                                                            | 406.025 ± 0.002<br>35-39<br>must be correct                                                                                                               | MHz<br>dBm<br>√                                                       |                                |                                                                                              | 406.025080<br>37.9<br>√     | <b>Chapter 18</b><br><br>19 july 2000                                                                |
| <b>20. ORIENTATION TEST (A19.0)</b><br><br><b>VERTICAL</b><br>• Aliveness Test :<br>* Carrier frequency<br>* Power Output<br>* Data Message<br><br><b>UPSIDE DOWN</b><br>• Aliveness Test :<br>* Carrier frequency<br>* Power Output<br>* Data Message<br><br><b>HORIZONTAL</b><br>• Aliveness Test :<br>* Carrier frequency<br>* Power Output<br>* Data Message | 406.025 ± 0.002<br>35-39<br>must be correct<br><br><br>406.025 ± 0.002<br>35-39<br>must be correct<br><br><br>406.025 ± 0.002<br>35-39<br>must be correct | MHz<br>dBm<br>√<br><br><br>MHz<br>dBm<br>√<br><br><br>MHz<br>dBm<br>√ |                                | 406.025105<br>37.7<br>√<br><br><br>406.025061<br>37.4<br>√<br><br><br>406025134<br>36.6<br>√ |                             | <b>Chapter 19<br/>and Chapter 12<br/>(C/S T.A. Tests<br/>Results )</b><br>9 march to 26 july<br>2000 |