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ANNEX E

CHANGE NOTICE FORM

The Manufacturer of the Cospas-Sarsat Type Approved 406 MHz Distress Beacons:

Manufacturer:

**STANDARD COMMUNICATIONS PTY LTD**

(name and address)

**6 Frank St., Gladesville**

**N.S.W. Australia**

406 MHz Beacon Model Numbers:

**a) MT400 - Class 2, manually activated and manually released EPIRB**

**b) MT401 - Class 2, manually / water activated and manually released EPIRB**

Cospas-Sarsat Type Approval Certificate Numbers: **TAC 139**

Proposed New Model Numbers of Beacon: **c) MT401FF - Class 2, manually / water activated EPIRB with auto-release bracket**

hereby informs Cospas-Sarsat of the following changes to production beacons

planned date of change

**Expected within 1 month of C-S Approval.  
(National Authority approvals pending C-S approval)**

Oscillator type:

**No**

Battery:

**No** (specify): \_\_\_\_\_

Antenna type:

**No**

Homing transmitter:

**No**

Strobe light:

**No**

Size or shape of beacon package:

**No**

Significant change to circuit design:

**No**

Internal navigation device:

**No** (specify): \_\_\_\_\_

Other

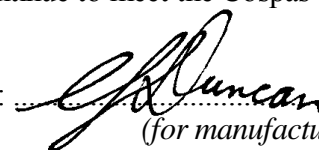
**Yes** (specify): **Auto-release bracket. Protocol coding appropriately changed on model so equipped.**

and substantiates these changes with the attached technical documentation and beacon test results (if applicable).

I hereby confirm that with these changes the above 406 MHz beacon models are technically equivalent to the type approved beacon and continue to meet the Cospas-Sarsat requirements.

Dated: **22nd July, 2005**

Signed: \_\_\_\_\_

  
(for manufacturer)

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**ANNEX J**

**BEACON QUALITY ASSURANCE PLAN**

We, manufacturer of Cospas-Sarsat 406 MHz beacons (*Manufacturer name and address*)

**STANDARD COMMUNICATIONS PTY LTD**

**6 Frank St., Gladesville**

**N.S.W. Australia**

confirm that ALL PRODUCTION UNITS of the following beacon model(s),

**MT400 series beacon to be produced in either MT400, MT401 or MT401FF configuration**

*(model, part number)*

designed by us will be subjected to following tests at ambient temperature:

- Digital message
- Bit rate
- Rise and fall times of the modulation waveform
- Modulation Index (positive/negative)
- Output power
- Frequency stability (short, medium)\*

Note\*: Beacon manufacturer shall provide technical data on the beacon frequency generation to demonstrate that the frequency stability tests at ambient temperature are sufficient for ensuring that each production beacon will exhibit frequency stability performance similar to the beacon submitted for type approval. **NOT APPLICABLE MT400/401/401FF** If such assurance of adequate performance over the complete operating temperature range cannot be deduced from the technical data provided and the frequency stability test results at ambient temperature, a thermal gradient test shall be performed on all production units.

**Each production unit to be temperature cycled over operating temperature range during calibration and test.**

- Other tests:

**Extensive test of circuit parameters including, but not limited to, current consumption in each operational state.**

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We confirm that the above tests will be performed as appropriate to ensure that the complete beacon satisfies Cospas-Sarsat requirements, as demonstrated by the test unit submitted for type approval.

We agree to keep the test result sheet of every production beacon for inspection by Cospas-Sarsat, if required, for a minimum of 10 years.

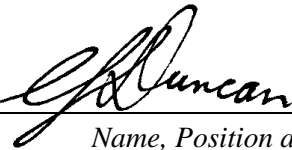
We confirm that Cospas-Sarsat representative(s) have the right to visit our premises to witness the production and testing process of the above-mentioned beacons. We understand that the cost related to the visit is to be borne by Cospas-Sarsat.

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We also accept that, upon official notification of Cospas-Sarsat, we may be required to re-submit a unit of the above beacon model selected by Cospas-Sarsat for the testing of parameters chosen at Cospas-Sarsat discretion at a Cospas-Sarsat accepted test facility selected by the Cospas-Sarsat. We understand that the cost of the testing shall be borne by Cospas-Sarsat.

We understand that the Cospas-Sarsat Type Approval Certificate is subject to revocation should the beacon type for which it was issued, or its modifications, cease to meet the Cospas-Sarsat specifications, or Cospas-Sarsat has determined that this quality assurance plan is not implemented in a satisfactory manner.

**19th September, 2005**



**Craig Duncan, Project Engineering Manager**

*Date*

*Name, Position and Signature of beacon Manufacturer Representative*

**PROTOCOL: SERIAL USER****A) PROGRAMMING SOFTWARE****UNIT INFORMATION**

Date & Time: 19/09/2005 11:33:11 AM  
 Model: EPIRB MT401 (C/S Class2 Water Activation)  
 S/N (Year + Month + Serial): YMM07163  
 Firmware Version: OS0010.4.04  
 PCB Version: 3  
 Transmission Frequency: 406.028 MHz

**MESSAGE INFORMATION**

Message Format[25]: 0 (Short)  
 Protocol Flag[26]: 1  
 Country Code[27-36]: 503 (Australia)  
 User Protocol Type[37-39]: 3 (Serial user protocol)  
 Beacon Type[40-42]: 2 (Float free EPIRB with serial number)  
 TAC Flag[43]: 0  
 User Defined Serial Number[44-63]: 7163  
 National Use Field 1[64-73]: Not used, all 0s  
 National Use Field 2[74-83]: Not used, all 0s  
 Auxiliary Radio-Locating Device[84-85]: 1 (121.5 MHz)  
 Activation Mode[108]: 1 (Auto And Manual)  
 15-HEX ID/UIN[26-85]: BEED006FEC00001  
 Full Message[25-112]: 5F768037F600000E9B6490

**B) COSPAS/SARSAT WEB BASED DECODE SOFTWARE**

Home	Description	Status	Beacons	Documentation	Management
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**406 MHz Decode Program  
(Version 3.1)**

5F768037F600000E9B6490     15 Hexadecimal ID     22 Hexadecimal     30 Hexadecimal   

Click [here](#) for the ITU List of MID Country Code Numbers.

ITEM	BITS	VALUE
Message format: short format	25	0
Protocol: User	26	1
Country code: 503	27-36	0111110111
User type: Serial User	37-39	011
Serial Type: Float Free EPIRB with Serial Identification Number	40-42	010
Cospas-Sarsat Certificate Number in bits 74-83: No	43	0
Serial Number: 7163	44-63	0000000110111111011
All 0s or National Use	64-73	0000000000
C/S Number or National Use (bit 43 refers): Nationally Assigned (not Cospas-Sarsat)	74-83	0000000000
Aux radio device: 121.5 MHz	84-85	01
Encoded BCH 1:	86-106	110100110110110010010
Calculated BCH 1:	N/A	110100110110110010010
Emerg Code: Emergency Code Data Not Entered	107	0
Activation Type: Automatic and Manual Activation	108	1
Emergency Code: No information entered if all 0s, otherwise Nationally assigned	109-112	0000
15 Hex ID:	N/A	BEED006FEC00001

**C) ACTUAL DECODE OF PROGRAMMED BEACON****SELF TEST**

```
**** SARTECH ARG5410 BEACON TESTER ****
***** 12:43:47 19 Sep 2005 ****
MESSAGE No.23
RECEIVED AT: 11:35:09 19 Sep 2005
FRAMING/STATUS: S'TEST OK
FREQUENCY: 406.0285 MHz PASS
COUNTRY: 503 AUSTRAL
30 HEX ID: 5F768037F600000E9B649000000000
15 HEX ID: BEED006FEC00001
PROTOCOL: SERIALISED
BEACON TYPE: EPIRB AUTOMATIC
IDENTITY: #7163
HOMING: 121.5MHz
OTHER INFO:
406MHz Power 262
121.5MHz Power 30
```

**NORMAL**

```
**** SARTECH ARG5410 BEACON TESTER ****
***** 12:44:17 19 Sep 2005 ****
MESSAGE No.24
RECEIVED AT: 11:36:19 19 Sep 2005
FRAMING/STATUS: NORMAL OK
FREQUENCY: 406.0286 MHz PASS
COUNTRY: 503 AUSTRAL
30 HEX ID: 5F768037F600000E9B649000000000
15 HEX ID: BEED006FEC00001
PROTOCOL: SERIALISED
BEACON TYPE: EPIRB AUTOMATIC
IDENTITY: #7163
HOMING: 121.5MHz
OTHER INFO:
406MHz Power 262
```

# PROTOCOL: MARITIME USER

## A) PROGRAMMING SOFTWARE

### UNIT INFORMATION

Date & Time: 19/09/2005 11:37:02 AM  
 Model: EPIRB MT401 (C/S Class2 Water Activation)  
 S/N (Year + Month + Serial): YMM07163  
 Firmware Version: OS0010.4.04  
 PCB Version: 3  
 Transmission Frequency: 406.028 MHz

### MESSAGE INFORMATION

Message Format[25]: 0 (Short)  
 Protocol Flag[26]: 1  
 Country Code[27-36]: 316 (Canada)  
 User Protocol Type[37-39]: 2 (Maritime user protocol)  
 Trailing 6 Digits of MMSI[40-75]: 000345  
 Specific Beacon Number[76-81]: 5  
 Spare[82-83]: 0  
 Auxiliary Radio-Locating Device[84-85]: 1 (121.5 MHz)  
 Activation Mode[108]: 1 (Auto And Manual)  
 15-HEX ID/UIN[26-85]: A788D34D40A0411  
 Full Message[25-112]: 53C469A6A0502089CC6F90

## B) COSPAS/SARSAT WEB BASED DECODE SOFTWARE

Home	Description	Status	Beacons	Documentation	Management
<b>406 MHz Decode Program (Version 3.1)</b>					
<input type="text" value="53C469A6A0502089CC6F90"/> <input type="radio"/> 15 Hexadecimal ID <input checked="" type="radio"/> 22 Hexadecimal <input type="radio"/> 30 Hexadecimal <input type="button" value="process"/>					
Click <a href="#">here</a> for the ITU List of MID Country Code Numbers.					
ITEM	BITS	VALUE			
Message format: short format	25	0			
Protocol: User	26	1			
Country code: 316	27-36	0100111100			
User type: Maritime User	37-39	010			
Maritime MMSI (6 digits): 000345	40-75	001101001101001101010000001010000001			
Specific bcn: 5	76-81	000001			
Spare	82-83	00			
Aux radio device: 121.5 MHz	84-85	01			
Encoded BCH 1:	86-106	001110011000110111110			
Calculated BCH 1:	N/A	001110011000110111110			
Emerg Code: Emergency Code Data Not Entered	107	0			
Activation Type: Automatic and Manual Activation	108	1			
Emergency Code: No information entered or Nationally assigned	109-112	0000			
15 Hex ID:	N/A	A788D34D40A0411			

**C) ACTUAL DECODE OF PROGRAMMED BEACON****SELF TEST**

```
**** SARTECH ARG5410 BEACON TESTER ****
***** 12:44:54 19 Sep 2005 ****
MESSAGE No.25
RECEIVED AT: 12:05:23 19 Sep 2005
FRAMING/STATUS: S'TEST OK
FREQUENCY: 406.0284 MHz PASS
COUNTRY: 316 CANADA
30 HEX ID: 53C469A6A0502089CC6F9000000000
15 HEX ID: A788D34D40A0411
PROTOCOL: MARITIME U
BEACON TYPE: EPIRB AUTOMATIC
IDENTITY: Callsign: 000345 5
HOMING: 121.5MHz
OTHER INFO:
406MHz Power 260
121.5MHz Power 30
```

**NORMAL**

```
**** SARTECH ARG5410 BEACON TESTER ****
***** 12:45:26 19 Sep 2005 ****
MESSAGE No.26
RECEIVED AT: 12:06:30 19 Sep 2005
FRAMING/STATUS: NORMAL OK
FREQUENCY: 406.0285 MHz PASS
COUNTRY: 316 CANADA
30 HEX ID: 53C469A6A0502089CC6F9000000000
15 HEX ID: A788D34D40A0411
PROTOCOL: MARITIME U
BEACON TYPE: EPIRB AUTOMATIC
IDENTITY: Callsign: 000345 5
HOMING: 121.5MHz
OTHER INFO:
406MHz Power 263
```

## PROTOCOL: CALL SIGN USER

### A) PROGRAMMING SOFTWARE

#### UNIT INFORMATION

Date & Time: 19/09/2005 12:18:42 PM  
 Model: EPIRB MT401 (C/S Class2 Water Activation)  
 S/N (Year + Month + Serial): YMM07163  
 Firmware Version: OS0010.4.04  
 PCB Version: 3  
 Transmission Frequency: 406.028 MHz

#### MESSAGE INFORMATION

Message Format[25]: 0 (Short)  
 Protocol Flag[26]: 1  
 Country Code[27-36]: 367 (USA)  
 User Protocol Type[37-39]: 6 (Radio call sign user protocol)  
 Radio Call Sign[40-75]: WUT8284  
 Specific Beacon Number[76-81]: 2  
 Spare[82-83]: 0  
 Auxiliary Radio-Locating Device[84-85]: 1 (121.5 MHz)  
 Activation Mode[108]: 1 (Auto And Manual)  
 15-HEX ID/UIN[26-85]: ADFB9F2130A1191  
 Full Message[25-112]: 56FDCF9098508C8C61FBD0

### B) COSPAS/SARSAT WEB BASED DECODE SOFTWARE


[Home](#)
[Description](#)
[Status](#)
[Beacons](#)
[Documentation](#)
[Management](#)

#### 406 MHz Decode Program (Version 3.1)

 15 Hexadecimal ID
  22 Hexadecimal
  30 Hexadecimal

Click [here](#) for the ITU List of MID Country Code Numbers.

ITEM	BITS	VALUE
Message format: short format	25	0
Protocol: User	26	1
Country code: 367	27-36	0101101111
User type: Radio Call Sign	37-39	110
Radio Call Sign Identification: WUT8284	40-75	111001111100100001001100001010000100
Specific bcn: 2	76-81	011001
Spare	82-83	00
Aux radio device: 121.5 MHz	84-85	01
Encoded BCH 1:	86-106	100011000011111101111
Calculated BCH 1:	N/A	100011000011111101111
Emerg Code: Emergency Code Data Not Entered	107	0
Activation Type: Automatic and Manual Activation	108	1
Emergency Code: No information entered if all 0s, otherwise Nationally assigned	109-112	0000
15 Hex ID:	N/A	ADFB9F2130A1191



**C) ACTUAL DECODE OF PROGRAMMED BEACON****SELF TEST**

```
**** SARTECH ARG5410 BEACON TESTER ****
***** 12:46:28 19 Sep 2005 ****
MESSAGE No.29
RECEIVED AT: 12:26:46 19 Sep 2005
FRAMING/STATUS: S'TEST OK
FREQUENCY: 406.0285 MHz PASS
COUNTRY: 367 USA
30 HEX ID: 56FDCF9098508C8C61FBD000000000
15 HEX ID: ADFB9F2130A1191
PROTOCOL: RADIO CLSN
BEACON TYPE: EPIRB AUTOMATIC
IDENTITY: Callsign: WUT8284 2
HOMING: 121.5MHz
OTHER INFO:
406MHz Power 260
121.5MHz Power 30
```

**NORMAL**

```
**** SARTECH ARG5410 BEACON TESTER ****
***** 12:47:21 19 Sep 2005 ****
MESSAGE No.30
RECEIVED AT: 12:27:52 19 Sep 2005
FRAMING/STATUS: NORMAL OK
FREQUENCY: 406.0286 MHz PASS
COUNTRY: 367 USA
30 HEX ID: 56FDCF9098508C8C61FBD000000000
15 HEX ID: ADFB9F2130A1191
PROTOCOL: RADIO CLSN
BEACON TYPE: EPIRB AUTOMATIC
IDENTITY: Callsign: WUT8284 2
HOMING: 121.5MHz
OTHER INFO:
406MHz Power 263
```



Product Service

TUV Product Service Ltd, Octagon House, Segensworth North,  
Fareham, Hampshire, PO15 5RL United Kingdom  
Tel: +44(0)1489 558196 Website: [www.tuvps.co.uk](http://www.tuvps.co.uk)



## TEST HOUSE CERTIFICATE

**CLIENT:** Standard Communications Pty.  
6 Frank Street  
Gladesville  
New South Wales 2111  
Australia

**CERTIFICATE NUMBER** SJ614521-001  
**PROJECT NUMBER** OS614521/DHG  
**CLIENT'S ORDER NUMBER** 44570, dated 28 June 2005

**INCOMING RELEASE NOTE**

Not released. Delivered on Air Waybill 676435061487

**DATE OF RECEIPT**

12 August 2005

**TEST ITEM(S)**

Emergency Position Indicating Radio Beacon (EPIRB), c/w housing

**NUMBER OF ITEMS TESTED**

One

**SERIAL NUMBER(S)**

YMM07116, firmware version OS010.4.04a, pcb version 3

**MODEL / PART NUMBER(S)**

MT401FF (C/S Class 2 Water Activation)

**TEST SPECIFICATION / ISSUE**

ETSI EN 300 066 V1.3.1 (2001-01)

**DATE OF TEST**

19 to 22 August 2005

**TEST(S) APPLIED**

6.3 Vibration test

See continuation page for test details

**RESULT(S) OF TEST**

The satellite EPIRB did not release from its mounting arrangement nor did it automatically activate during the vibration test.

No visible damage was sustained by the EPIRB, release mechanism, or housing bracket. The EPIRB passed its self-tests during and on completion of the vibration.

2-hour dwells were carried out at the resonance frequencies identified during the search in each axis:

Vertical: 46.7Hz  
Longitudinal: 99Hz  
Lateral: 52.3Hz

Approved by .....

R Harris  
Authorised Signatory

Date .... 13 September 2005



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Product Service

TEST HOUSE CERTIFICATE SJ614521-001

CONTINUATION PAGE

**TEST APPLIED**

**6.3 Vibration test**

**6.3.2 Method of measurement**

The EPIRB and release mechanism, installed in its housing bracket, was mounted with the unit fixed (at four points) hard against a flat vertical surface, such that the EPIRB antenna was pointing vertical.

It was then subjected to sinusoidal vertical vibration at all frequencies between:

3 Hz and 13.2 Hz with an excursion of  $\pm 1$  mm ( $7 \text{ m/s}^2$  maximum acceleration at 13.2 Hz); and

13.2 Hz and 100 Hz with a constant maximum acceleration of  $7 \text{ m/s}^2$ .

The frequency sweep rate was 1 octave/min

A resonance search was carried out during the vibration test, with a monitoring accelerometer fixed to the EPIRB. If any resonance was observed, the equipment was subjected to a vibration endurance test at each resonance frequency with the duration of not less than 2 hours at the vibration level specified above. The test was repeated with vibration in each of the mutually perpendicular directions in the horizontal planes.

A self-test and frequency measurement of the EPIRB was carried out during and after the test. At the end of the test, the equipment was examined for any mechanical deterioration.

**6.3.3 Requirement**

The satellite EPIRB shall not release from its mounting arrangement nor shall it automatically activate during the vibration test.

The requirement for the performance check shall be met. No damage or mechanical deterioration shall be visible to the naked eye.



Product Service

TUV Product Service Ltd, Octagon House, Segensworth North,  
Fareham, Hampshire, PO15 5RL United Kingdom  
Tel: +44(0)1489 558196 Website: [www.tuvps.co.uk](http://www.tuvps.co.uk)



## TEST HOUSE CERTIFICATE

**CLIENT:** Standard Communications Pty.  
6 Frank Street  
Gladesville  
New South Wales 2111  
Australia

**CERTIFICATE NUMBER** SJ614521-002  
**PROJECT NUMBER** OG614521/DHG  
**CLIENT'S ORDER NUMBER** 44570, dated 28 June 2005

**INCOMING RELEASE NOTE**

Not released. Delivered on Air Waybill 676435061487

**DATE OF RECEIPT**

12 August 2005

**TEST ITEM(S)**

Emergency Position Indicating Radio Beacon (EPIRB), c/w housing

**NUMBER OF ITEMS TESTED**

One

**SERIAL NUMBER(S)**

YMM07116, firmware version OS010.4.04a, pcb version 3

**MODEL / PART NUMBER(S)**

MT401FF (C/S Class 2 Water Activation)

**TEST SPECIFICATION / ISSUE**

ETSI EN 300 066 V1.3.1 (2001-01)

**DATE OF TEST**

22 August 2005

**TEST(S) APPLIED**

6.4 Ruggedness test (bump)

The EPIRB and release mechanism, installed in its housing bracket, was mounted with the unit fixed (at four points) hard against a flat vertical surface, such that the EPIRB antenna was pointing vertical. The equipment was subjected to the ruggedness test according to the following profile:

- peak acceleration: 98 m/s<sup>2</sup> ±10 %;
- pulse duration: 18 ms ±20 %;
- wave shape : half-cycle sine wave;
- test axis: vertical;
- number of bumps: 4 000.

6.4.3 Requirements

The satellite EPIRB shall not release from its mounting arrangement nor shall it automatically activate during the ruggedness test.

Successful completion of the self-test shall be indicated.

No damage or mechanical deterioration shall be visible to the naked eye.

**RESULT(S) OF TEST**

The EPIRB did not release from its mounting arrangement nor did it automatically activate during the ruggedness test.

No visible damage was sustained by the EPIRB, release mechanism, or housing bracket. The EPIRB passed its self-test.

Approved by .....

R L Harris  
Authorised Signatory

Date ... 13 September 2005



0141  
Group



## TEST HOUSE CERTIFICATE

**CLIENT:** Standard Communications Pty.  
6 Frank Street  
Gladesville  
New South Wales 2111  
Australia

**CERTIFICATE NUMBER** SJ614521-003 Issue 1  
**PROJECT NUMBER** OS814521/DHG  
**CLIENT'S ORDER NUMBER** 44570, dated 28 June 2005

**INCOMING RELEASE NOTE**

Not released. Delivered on Air Waybill 676435061487

**DATE OF RECEIPT**

12 August 2005

**TEST ITEM(S)**

Emergency Position Indicating Radio Beacon (EPIRB), c/w housing

**NUMBER OF ITEMS TESTED**

One

**SERIAL NUMBER(S)**

YMM07116, firmware version OS010.4.04a, pcb version 3

**MODEL / PART NUMBER(S)**

MT401FF (C/S Class 2 Water Activation)

**TEST SPECIFICATION / ISSUE**

EN / IEC 60945

**DATE OF TEST**

6 October 2005 2005

**TEST(S) APPLIED**

11.2 Compass Safe Distance

See continuation page for test details

**RESULT(S) OF TEST**

**1. Magnetic condition as received.**

EUT orientation	0.3° deflection	1° deflection
Front	35cm	25cm
LHS	35cm	25cm
RHS	35cm	25cm
Top	15cm	-
Underside	15cm	-
Rear	35cm	25cm

Approved by ..... 

Date .... 7<sup>th</sup> October 2005

**K Adsetts**  
Authorised Signatory



0141  
Group



Product Service

TUV Product Service Ltd, Octagon House, Segensworth North,  
Fareham, Hampshire, PO15 5RL United Kingdom  
Tel: +44(0)1489 558196 Website: [www.tuvps.co.uk](http://www.tuvps.co.uk)



## TEST HOUSE CERTIFICATE

**CLIENT:** Standard Communications Pty.  
6 Frank Street  
Gladesville  
New South Wales 2111  
Australia

**CERTIFICATE NUMBER** SJ614521-003 Issue 1

**PROJECT NUMBER** OS614521/DHG

**CLIENT'S ORDER NUMBER** 44570, dated 28 June 2005

**INCOMING RELEASE NOTE**

Not released. Delivered on Air Waybill 676435061487

**DATE OF RECEIPT**

12 August 2005

**TEST ITEM(S)**

Emergency Position Indicating Radio Beacon (EPIRB), c/w housing

**NUMBER OF ITEMS TESTED**

One

**SERIAL NUMBER(S)**

YMM07116, firmware version OS010.4.04a, pcb version 3

**MODEL / PART NUMBER(S)**

MT401FF (C/S Class 2 Water Activation)

**TEST SPECIFICATION / ISSUE**

EN / IEC 60945

**DATE OF TEST**

6 October 2005 2005

**TEST(S) APPLIED**

11.2 Compass Safe Distance

See continuation page for test details

**RESULT(S) OF TEST**

**1. Magnetic condition as received.**

EUT orientation	0.3° deflection	1° deflection
Front	35cm	25cm
LHS	35cm	25cm
RHS	35cm	25cm
Top	15cm	-
Underside	15cm	-
Rear	35cm	25cm

Approved by ..... 

Date .... 7<sup>th</sup> October 2005

**K Adsetts**  
Authorised Signatory



0141  
Group



Product Service

TEST HOUSE CERTIFICATE SJ614521-003 Issue 1 CONTINUATION PAGE

**TEST APPLIED**

11.2.1 Purpose

This test determines the distances above which equipment will not cause an unacceptable deviation of the ship's standard and steering compasses. The actual deviation varies with the strength of the earth's magnetic field, but is in the order 0.1° for the standard compass, and 0.3° for the steering compass in equatorial regions, rising to 1° and 3°, respectively, in high latitudes.

11.2.2 Test Method

The EUT was tested in the position and attitude relative to the compass or magnetometer at which the error produced at the compass would be a maximum.

The compass safe distance is defined as the distance between the nearest point of the EUT and the centre of the compass or magnetometer at which it will not produce a deviation in the standard compass of more than  $5.4^\circ/H$  where  $H$  is the horizontal component of the magnetic flux density in microtesla at the place of testing.

For the steering compass, the standby steering compass and the emergency compass, the permitted deviation is  $18^\circ/H$ .

The EUT was tested in:

1. Magnetic condition in which it was received with the EUT unpowered
2. After normalising with the EUT unpowered  
(Normalising is the procedure to maximize the homogeneity of the magnetic flux of the EUT by placing it in Helmholtz coils).

Magnetometer reading: 18.4 microtesla

Temperature: 20°C

Relative Humidity: 62%

**RESULT(S) OF TEST (continued)**

**2. After normalising in a magnetic field of 79 Amps/metre**

EUT orientation	0.3° deflection	1° deflection
Front	35cm	25cm
LHS	35cm	25cm
RHS	35cm	25cm
Top	15cm	-
Underside	15cm	-
Rear	35cm	25cm

Testing in the powered condition was not applicable



Product Service

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## TEST HOUSE CERTIFICATE

**CLIENT:** Standard Communications Pty.  
6 Frank Street  
Gladesville  
New South Wales 2111  
Australia

**CERTIFICATE NUMBER** SX614521-001 Issue 1  
**PROJECT NUMBER** OS614521/DHG  
**CLIENT'S ORDER NUMBER** 44570, dated 28 June 2005

**INCOMING RELEASE NOTE**

Not released. Delivered on Air Waybill 676435061487

**DATE OF RECEIPT**

12 August 2005

**TEST ITEM(S)**

Emergency Position Indicating Radio Beacon (EPIRB), c/w housing

**NUMBER OF ITEMS TESTED**

One

**SERIAL NUMBER(S)**

YMM07116, firmware version OS010.4.04a, pcb version 3

**MODEL / PART NUMBER(S)**

MT401FF (C/S Class 2 Water Activation)

**TEST SPECIFICATION / ISSUE**

ETSI EN 300 066 V1.3.1 (2001-01)

**DATE OF TEST**

25 August 2005

**TEST(S) APPLIED**

6.7 Thermal shock test

The equipment was placed in a climatic chamber at a temperature of +65°C for 1 hour. While still at +65°C it was immersed in water at +20°C to a depth of 10 cm, measured from the highest point of the equipment to the surface of the water, for a period of 1 hour. Transfer time from the chamber to the immersion tank was less than 10 seconds.  
At the end of the test, the self-test of the satellite EPIRB was carried out.

6.7.3 Requirements

Successful completion of the self-test shall be indicated.  
No damage shall be visible to the naked eye.

**RESULT(S) OF TEST**

No visible damage was sustained by the EPIRB, release mechanism, or housing bracket. The EPIRB passed its self-test.

Approved by ..... 

R L Harris  
Authorised Signatory

Date .... 13 September 2005



0141  
Group





Product Service

TUV Product Service Ltd, Octagon House, Segensworth North,  
Fareham, Hampshire, PO15 5RL United Kingdom  
Tel: +44(0)1489 558196 Website: [www.tuvps.co.uk](http://www.tuvps.co.uk)



## TEST HOUSE CERTIFICATE

**CLIENT:** Standard Communications Pty.  
6 Frank Street  
Gladesville  
New South Wales 2111  
Australia

**CERTIFICATE NUMBER** SX614521-002 Issue 1  
**PROJECT NUMBER** OS614521/DHG  
**CLIENT'S ORDER NUMBER** 44570, dated 28 June 2005

**INCOMING RELEASE NOTE**

Not released. Delivered on Air Waybill 676435061487

**DATE OF RECEIPT**

12 August 2005

**TEST ITEM(S)**

Emergency Position Indicating Radio Beacon (EPIRB)

**NUMBER OF ITEMS TESTED**

One

**SERIAL NUMBER(S)**

YMM07116, firmware version OS010.4.04a, pcb version 3

**MODEL / PART NUMBER(S)**

MT401 (C/S Class 2 Water Activation)

**TEST SPECIFICATION / ISSUE**

ETSI EN 300 066 V1.3.1 (2001-01)

**DATE OF TEST**

7 to 23 September 2005

**TEST(S) APPLIED**

12.2 Automatic release of the satellite EPIRB

See continuation page for test details

**RESULT(S) OF TEST**

The release operated correctly at all attitudes whilst at normal ambient temperature, and in the normal mounting position at the specified extreme temperatures of +65°C and -30°C

Approved by .....

Date .... 23 September 2005

R Harris  
Authorised Signatory



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## TEST HOUSE CERTIFICATE SX614521-002 Issue 1 CONTINUATION PAGE

### TEST APPLIED

#### 12.2 Automatic release of the satellite EPIRB

##### 12.2.1 Definition

Automatic release is the ability of the release mechanism to release the satellite EPIRB after having been submerged in water under specified conditions.

##### 12.2.2 Method of measurement

The satellite EPIRB installed in the release mechanism was submerged in non-freezing water in a pressure chamber, and a positive pressure applied in stages to simulate a maximum depth of 4 metres. The temperature of the water was 23°C. This was performed six times with the equipment rotated each time as follows:

- normal mounting position;
- rolling 90° to starboard;
- rolling 90° to port;
- pitching 90° bow down;
- pitching 90° stern down;
- upside-down position.

A camera installed in the chamber permitted visual confirmation of the performance of the EUT.

The test under extreme temperature test conditions (subclause 5.11) was performed in the normal mounting position only.

##### 12.2.3 Requirement

The satellite EPIRB shall be automatically released and float free of the mounting before reaching a depth of 4 metres at any orientation.

The release mechanism shall be capable of operating throughout the temperature range of -30°C to +65°C.



Product Service

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## TEST HOUSE CERTIFICATE

<b>CLIENT:</b> Standard Communications Pty. 6 Frank Street Gladesville New South Wales 2111 Australia	<b>CERTIFICATE NUMBER</b> SX614521-003 Issue 1
	<b>PROJECT NUMBER</b> OS614521/DHG
	<b>CLIENT'S ORDER NUMBER</b> 44570, dated 28 June 2005

<b>INCOMING RELEASE NOTE</b>	Not released. Delivered on Air Waybill 676435061487
<b>DATE OF RECEIPT</b>	12 August 2005
<b>TEST ITEM(S)</b>	Emergency Position Indicating Radio Beacon (EPIRB)
<b>NUMBER OF ITEMS TESTED</b>	One
<b>SERIAL NUMBER(S)</b>	YMM07116, firmware version OS010.4.04a, pcb version 3
<b>MODEL / PART NUMBER(S)</b>	MT401 (C/S Class 2 Water Activation)
<b>TEST SPECIFICATION / ISSUE</b>	ETSI EN 300 066 V1.3.1 (2001-01)
<b>DATE OF TEST</b>	10 October 2005
<b>TEST(S) APPLIED</b>	<u>6.9 Hose stream test</u> See continuation page for test details
<b>RESULT(S) OF TEST</b>	The satellite EPIRB did not release from its bracket nor did it automatically activate as a result of the water from the hose stream. The EPIRB passed the post Hose Stream self-test.

Approved by ..... 

R Harris  
Authorised Signatory

Date ... 11<sup>th</sup> October 2005



Product Service

TEST HOUSE CERTIFICATE SX614521-003 Issue 1

CONTINUATION PAGE

## TEST APPLIED

### 6.9 Hose stream test

#### 6.9.2 Method of measurement

The satellite EPIRB and release mechanism were mounted successively in each method intended for mounting on a ship. A stream from a fire hose was directed at the satellite EPIRB for a period of 5 minutes. The hose had a nominal diameter of 63.5 mm and a water delivery rate of approximately 2,300 litres of water per minute. The end of the hose was 3.5 m away from the satellite EPIRB and 1.5 m above the base of the antenna. The hose was moved during the test, so that water struck the satellite EPIRB from all directions in an arc of at least 180° perpendicular to the normal mounting position of the satellite EPIRB.

#### 6.9.3 Requirements

The satellite EPIRB shall not release from its bracket nor shall it automatically activate as a result of the water from the hose stream.



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## TEST HOUSE CERTIFICATE

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**CERTIFICATE NUMBER** SX614521-003 Issue 1  
**PROJECT NUMBER** OS614521/DHG  
**CLIENT'S ORDER NUMBER** 44570, dated 28 June 2005

**INCOMING RELEASE NOTE**

Not released. Delivered on Air Waybill 676435061487

**DATE OF RECEIPT**

12 August 2005

**TEST ITEM(S)**

Emergency Position Indicating Radio Beacon (EPIRB)

**NUMBER OF ITEMS TESTED**

One

**SERIAL NUMBER(S)**

YMM07116, firmware version OS010.4.04a, pcb version 3

**MODEL / PART NUMBER(S)**

MT401 (C/S Class 2 Water Activation)

**TEST SPECIFICATION / ISSUE**

ETSI EN 300 066 V1.3.1 (2001-01)

**DATE OF TEST**

10 October 2005

**TEST(S) APPLIED**

6.9 Hose stream test

See continuation page for test details

**RESULT(S) OF TEST**

The satellite EPIRB did not release from its bracket nor did it automatically activate as a result of the water from the hose stream. The EPIRB passed the post Hose Stream self-test.

Approved by .....  .....

Date ... 11<sup>th</sup> October 2005

R Harris  
Authorised Signatory

**TEST APPLIED**

6.11 Solar radiation test

The equipment was placed on a suitable support and exposed continuously to a simulated solar radiation source (table 3) for 80 hours. The intensity at the test point, which included any radiation reflected from the test enclosure, was  $1\,120\text{ W/m}^2 \pm 10\%$  with a spectral distribution given in table 3 below.

**Table 3: Spectral distribution**

Spectral Region	Ultra-violet B	Ultra-violet A	Visible			Infra-red
Bandwidth ( $\mu\text{m}$ )	0.28 - 0.32	0.32 - 0.40	0.40 - 0.52	0.52 - 0.64	0.64 - 0.78	0.78 - 3,00
Radiance ( $\text{W/m}^2$ )	5	63	200	186	174	492
Tolerance (%)	$\pm 35$	$\pm 25$	$\pm 10$	$\pm 10$	$\pm 10$	$\pm 10$

6.11.3 Requirements

Successful completion of the self-test shall be indicated. No harmful deterioration of the equipment, including labelling, shall be visible to the naked eye.



Product Service

**TEST HOUSE CERTIFICATE SX614521-004 Issue 1**

**CONTINUATION PAGE**

## **APPENDIX 1**

**Cardiff University Test Report 3110**



0392

## Solar Energy Testing Service

Cardiff University  
Queen's Buildings  
The Parade  
Cardiff CF24 0YT  
Wales UK  
Tel +44(0)29 2087 0076  
Fax +44(0)29 2087 4039  
www.cardiff.ac.uk/enqn/  
Email ENGNResearch@cf.ac.uk

# TEST REPORT

UKAS Report No.: N/A

MMM Dept. Report No.: 3110

Client Order No.: 54444

M. Spratt

Sept. 2005

## Solar Radiation Testing on an EPIRBS Housing

Client Name: TUV Product Services Ltd  
Address: Octagon House, Concorde Way  
Segensworth North  
Fareham  
HAMPSHIRE  
PO15 5RL

Testing dates: 05/09/05 to 08/09/05



## SUMMARY

An EPIRBS Housing was subjected to combined Solar-UV radiation in an environmental test chamber by the Solar Energy Testing Service at Cardiff University.

The test item was submitted for testing by TUV Product Services Ltd.

This test does not fall within the scope of the test service UKAS accreditation.

Test Engineer: ..... *S. Mous* ..... (Dr. M. Spratt)

Authorised by: ..... *C. J. Bates* ..... (Dr. C. J. BATES)

Date: ..... *19/9/5* .....

## **1.0 DESCRIPTION OF SAMPLE(S)**

Test item: EPIRBS Housing

Dimensions: (LxWxH) 380x150x105 (mm)

## **2.0 TEST SPECIFICATION**

The solar radiation test was carried out in accordance with ETSI EN 300 066 V1.3.1 (2001-01) test 6.11 at the request of the client. A brief description of the irradiation and temperature specifications of a cycle are described below:

Irradiation cycle: 0 to 80 hrs.  $1120 \text{ Wm}^{-2}$

Air Temperature:  $25^{\circ}\text{C}$

The spectral properties of the lamps are measured using a spectroradiometer at the beginning of each HMI bulb's lifecycle to ensure spectral uniformity. A recent measurement and spectral powers up to 1800 nm is shown in Appendix B.

### 3.0 TEST METHOD

The test was performed in one of the environmental chambers depicted in Appendix A in accordance with the test customer's requirements.

The Housing as supplied by the client was placed in the centre of the chamber and two thermocouples were placed on the top surface: surfaces 1 and 2 being the upper and lower parts of the top surface, respectively. Fig.2. The air temperature was raised to 25°C and stabilized prior to starting the test. The Housing remained in the chamber for the duration of the test. No power was supplied to the Housing and no functional tests were carried out during the test duration.

The temperature was maintained at approximately 25°C with simulated solar radiation exposure for 80 hours at 1120(W/m<sup>2</sup>). The distance between the lamp source and the test items was in excess of 1.5 m. The shortest distance between the test item and the chamber walls was 0.75 m. Fig. 1 shows the temperature and irradiance profile.

To check for any changes frequent visual inspections were made via the chamber window throughout the test duration.

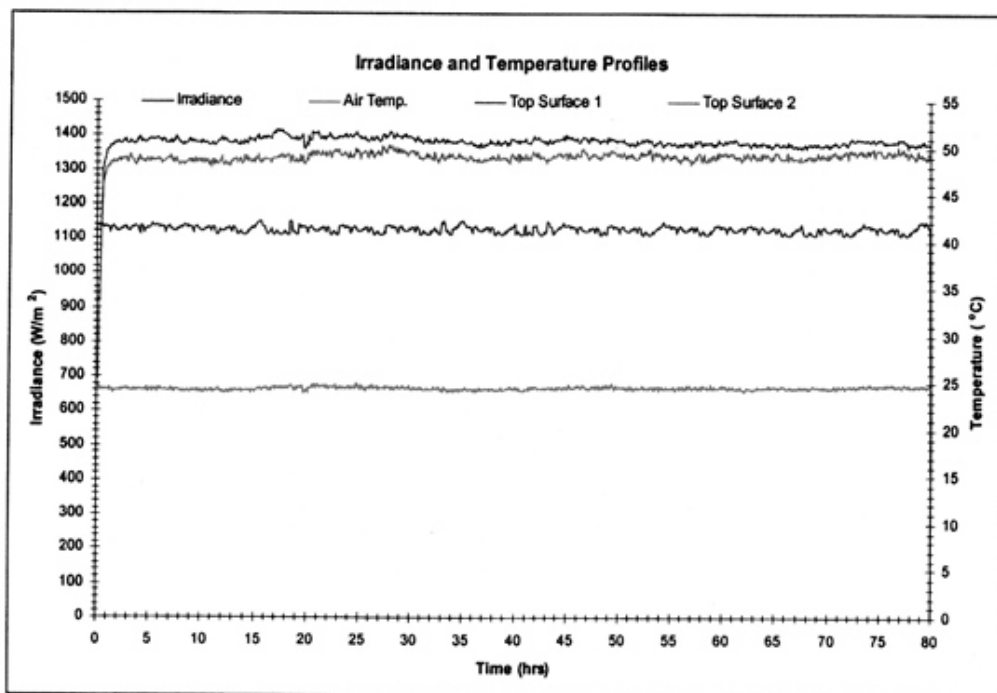


Fig. 1 Measured temperature and irradiance profile.

#### 4.0 RESULTS

No material effects were noticed during the test when the Housing was visually inspected daily through the chamber window. Upon completion of the test the Housing appeared to be normal with a visual inspection.

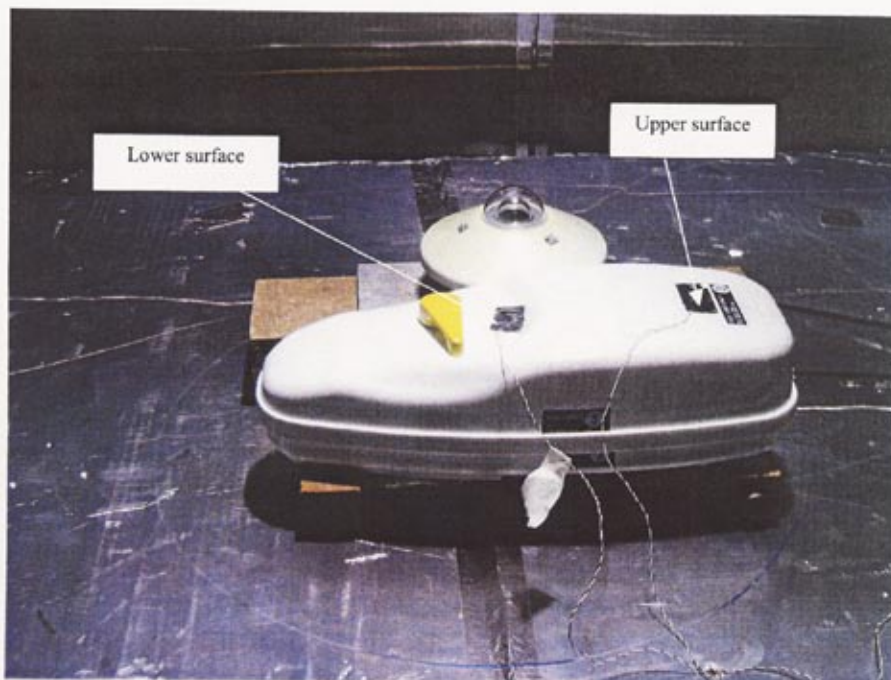


Fig. 2 is a digital image of the EPIRBS Housing during the test.

### 5.0 INSTRUMENTATION

Instrument	SETS Instrument No.	Date of Last Calibration	Calibration Standard	Calibration Frequency
Thermotron Environmental Chamber	003	Before test	In house procedures*	Quarterly
Digital Multimeter	010	05/05/04	UKAS	Every 2 years
F250 Temperature Probe/Display	007	05/11/04	UKAS	Every 2 years
Delta-T Data Logger			In house procedures*	Every test

Note: \* In house procedures fall within the remit of our UKAS accreditation.

## APPENDIX A – ENVIRONMENTAL CHAMBER



- The environmental test chamber facility enables products to be tested through a range of simulated environmental conditions. It is computer controlled, provides for full data acquisition of temperature and humidity, and can simulate solar/UV radiation within the controlled environment. Ideal for testing of products that are required to operate outdoors for prolonged periods of time.
- Temperature, humidity and solar radiation testing in accordance with many international standards including BS 2011, IEC 68, DEF STAN 07-55, MIL STAN 810.



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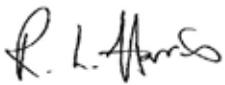


## TEST HOUSE CERTIFICATE

**CLIENT:** Standard Communications Pty.  
6 Frank Street  
Gladesville  
New South Wales 2111  
Australia

**CERTIFICATE NUMBER** SX614521-005 issue 1  
**PROJECT NUMBER** OS614521/DHG  
**CLIENT'S ORDER NUMBER** 44570, dated 28 June 2005

<b>INCOMING RELEASE NOTE</b>	Not released. Delivered on Air Waybill 676435061487
<b>DATE OF RECEIPT</b>	12 August 2005
<b>TEST ITEM(S)</b>	MT401 Beacon
<b>NUMBER OF ITEMS TESTED</b>	One
<b>SERIAL NUMBER(S)</b>	YMM07116, firmware version OS010.4.04a, pcb version 3
<b>MODEL / PART NUMBER(S)</b>	MT401 (C/S Class 2 Water Activation)
<b>TEST SPECIFICATION / ISSUE</b>	ETSI EN 300 066 V1.3.1 (2001-01)
<b>DATE OF TEST</b>	14 to 15 September 2005
<b>TEST(S) APPLIED</b>	<u>6.12 Oil resistance test</u>  See continuation page for test details
<b>RESULT(S) OF TEST</b>	No sign of damage such as shrinking, cracking, swelling, dissolution or change of mechanical qualities of the satellite EPIRB, including labelling, was visible to the naked eye.  The EPIRB passed the self-test.

Approved by 

R L Harris  
Authorised Signatory

Date . . . 26 September 2005



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Product Service

TEST HOUSE CERTIFICATE SX614521-005 Issue 1

CONTINUATION PAGE

**TEST APPLIED**

**6.12 Oil resistance test**

**6.12.2 Method of measurement**

The equipment was immersed horizontally for a period of 24 hours under a 100 mm head of mineral oil as specified below at normal room temperature.

- aniline point: 120°C;
- flash point: 280°C;
- viscosity: 18.4 cSt at 99°C.

The following oil was used:

- ASTM Oil No. 1

At the end of the test the self-test of the satellite EPIRB (subclause 4.8) was carried out.

**6.12.3 Requirements**

Successful completion of the self-test shall be indicated. No sign of damage such as shrinking, cracking, swelling, dissolution or change of mechanical qualities of the satellite EPIRB, including labelling, shall be visible to the naked eye.