Guidelines on Annual Testing of 406MHz satellite EPIRBs

In accordance with IMO MSC/Circ.1040 (reproduced on Page 4)

Purpose
From July 2002 all EPIRBs must be tested annually to comply with IMO regulations. This document explains how to perform the tests on the specified products in order to satisfy the requirement.

Recording
The results from these tests should be recorded on the Orolia Ltd form QA4211 406MHz EPIRB Annual Test Record or similar.

McMurdo E5 & G5
Smartfind & Smartfind Plus
Sailor SE and SGE 406-II
Simrad EP50 and EG50

Section 3.1 Checking positioning and mounting for float-free operation
The enclosure should be mounted upright against a vertical bulkhead or horizontally on a flat surface, such as a cabin roof. No other orientations are recommended; an expanse of flat surface is required to allow the enclosure lid to eject. The released EPIRB must not get trapped by overhangs, rigging, antennas etc, should the vessel ever sink.

DO:
• Mount on the outside of the vessel’s structure, as high as possible.
• Mount close to the vessel’s navigation position.
• Consider ease of access in an emergency.

AVOID:
• Positions with insufficient space for lid ejection and maintenance.
• Positions within 1m (3’) of any compass equipment or within 2m (6’) of any Radar antenna.
• Siting where damage is likely eg direct impact from waves
• Exhaust fumes, chemical and oil sources.

Sections 3.2 & 3.3 Refer to the IMO Guidelines (attached)

Section 3.4 Self test
Press and release the TEST button to run the self-test. The red lamp will come on for 4 seconds, then go off. During this time both the 121.5MHz homer and the 406MHz satellite transmitter make “safe” transmissions. If both of these test transmissions arrive at the antenna with sufficient power then the strobe light will flash up to 3 times to confirm a successful self-test. If the red lamp does not come on, or the strobe light does not flash, then there is a fault; the EPIRB should be taken to a service agent.
Section 3.5  **EPIRB identification**

The EPIRB is identified by a label fitted to the rear surface. If a label has not been fitted then the unit has not been programmed.

The label will give the following information:
- Vessel Name (if programmed MMSI or Callsign)
- Unique identity number (Hex ID)
- Country code (Flag state)
- Serial number (this is the national serial number) or MMSI
- EPIRB number (this will be 1 for vessels with only one EPIRB)
- EPIRB Category (1 for float free and 2 for Manual release)
- EPIRB Class (all Class 2 -20°C to +55°C)

In the case of a Category 1 EPIRB fitted in a float-free enclosure, the label fitted to the enclosure must carry the same identification as the EPIRB.

Section 3.6  **Decoding the EPIRB message and checking the frequencies**

It is a requirement that the EPIRB message is decoded and verified as being correct. This can be done with a Message Reader. A typical instrument is the ARG5410 mk2. This model will be used to describe the process. Operation of the Reader is detailed in its handbook and will not be repeated here. The procedure is as follows:

1. On the Reader select RECV mode
2. Position the Reader approx. 1m (3 feet) from the EPIRB
3. On the EPIRB press the TEST button (i.e. carry out a self test)
4. After about 4 seconds the Reader should receive a 121.5MHz and 406MHz transmission.
   - If the ARG 5410 Mk1 Reader is used, then another suitable facility for detecting the 121.5MHz must be provided (a Spectrum analyser for example). This is because this product does not transmit a swept 121.5MHz frequency during self test.
5. The Reader should report SITEST OK
6. The Reader will revert to its Menu. Select VIEW mode
7. Use ← → keys to view the decoded 406MHz message content
8. Confirm the frequency is correct.
   - This proves the 406MHz transmitter is radiating within the correct frequency band. If the reader being used does not record the frequency then another facility for measuring the 406MHz frequency must be provided (a spectrum analyser for example).
9. Confirm the 15 digit ID agrees with EPIRB rear identity label UIN
   - This proves the 406MHz transmitter is modulating correctly and the EPIRB is programmed with the correct identity.
10. Confirm the Flag state and the Serial No / MMSI / Callsign agrees

Common problems

<table>
<thead>
<tr>
<th>406MHz frequency</th>
<th>If outside limits, repeat self-test (up to 10 times, if necessary). (Provides a warm up time).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bad frame</td>
<td>This error message occurs if the Reader fails to synchronize. This occurs approx. 10% of the time. Repeat test as above. Also note that an exhausted Reader battery causes bad frames. Ensure that test is carried out where RF reflections are kept to a minimum. Çany problems repeat the test in another location.</td>
</tr>
</tbody>
</table>
Section 3.8 Battery expiry date

The battery expiry date is printed on the body moulding under the clear top moulding and also printed on the automatic release housing.

Section 3.9 HRU release and expiry date

Automatic bracket (enclosure)

<table>
<thead>
<tr>
<th>Cover intact</th>
<th>Confirm the following items are intact:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- sinker weight</td>
</tr>
<tr>
<td></td>
<td>- foam pads</td>
</tr>
<tr>
<td></td>
<td>- Check cover retaining pin is present and attached to cover.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lever arm</th>
<th>Release HRU (press down and slide upward)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Confirm lever arm moves freely and U-clamps are secure.</td>
</tr>
<tr>
<td></td>
<td>- Ensure that magnet is still in place.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HRU expiry date</th>
<th>Side of HRU should be marked with expiry date.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Confirm date is acceptable.</td>
</tr>
<tr>
<td></td>
<td>- Confirm HRU expiry date is marked on cover side label.</td>
</tr>
</tbody>
</table>

Press lever arm down and refit the HRU. Ensure washer engages.

Section 3.10 & 3.11 Refer to Section 3.6

Sections 3.12 to 3.14 Refer to the IMO Guidelines (attached)

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GUIDELINES ON ANNUAL TESTING OF 406 MHZ SATELLITE EPIRBs

1. The Maritime Safety Committee, at its seventy-fifth session (15 to 24 May 2002), approved the annexed Guidelines on annual testing of 406 MHz satellite EPIRBs, as required by new SOLAS regulation IV/15.9, which enters into force on 1 July 2002.

2. Member Governments are invited to bring these Guidelines to the attention of shipping companies, shipowners, ship operators, equipment manufacturers, classification societies, shipmasters and all parties concerned.

3. This circular supersedes MSC/Circ.882.

ANNEX

GUIDELINES ON ANNUAL TESTING OF 406 MHZ SATELLITE EPIRBs

1. The annual testing of 406 MHz satellite EPIRBs is required by new SOLAS regulation IV/15.9 entering into force on 1 July 2002.

2. The testing should be carried out using suitable test equipment capable of performing all the relevant measurements required in these guidelines. All checks of electrical parameters should be performed in the self-test mode, if possible.

3. The examination of the installed 406 MHz satellite EPIRB should include:

   .1 checking position and mounting for float-free operation;
   .2 verifying the presence of a firmly attached lanyard in good condition; the lanyard should be neatly stowed, and must not be tied to the vessel or the mounting bracket;
   .3 carrying out visual inspection for defects;
   .4 carrying out the self-test routine;
   .5 checking that the EPIRB identification (15 Hex ID and other required information) is clearly marked on the outside of the equipment;
   .6 decoding the EPIRB 15 Hexadecimal Identification Digits (15 Hex ID) and other information from the transmitted signal, checking that the decoded information (15 Hex ID or MMSI/callsign data, as required by the Administration) is identical to the identification marked on the beacon;
   .7 checking registration through documentation or through the point of contact associated with that country code;
   .8 checking the battery expiry date;
   .9 checking the hydrostatic release and its expiry date, as appropriate;
   .10 checking the emission in the 406 MHz band using the self-test mode or an appropriate device to avoid transmission of a distress call to the satellites;
   .11 if possible, checking emission on the 121.5 MHz frequency using the self-test mode or an appropriate device to avoid activating the satellite system;
   .12 checking that the EPIRB has been maintained by an approved shore-based maintenance provider at intervals required by the Administration;
   .13 after the test, remounting the EPIRB in its bracket, checking that no transmission has been started; and
   .14 verifying the presence of beacon operating instructions.