

RESOLUTION A.612(15)

*Adopted on 19 November 1987
Agenda item 12*

**PERFORMANCE STANDARDS FOR FLOAT-FREE VHF EMERGENCY
POSITION-INDICATING RADIO BEACONS**

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECOGNIZING the need to prepare performance standards for VHF EPIRBs to be used in the global maritime distress and safety system (GMDSS) in order to ensure the operational reliability of such equipment and to avoid, as far as practicable, adverse interaction between such equipment and other communication and navigation equipment aboard ship,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its fifty-fourth session,

1. ADOPTS the Recommendation on Performance Standards for Float-Free VHF EPIRBs, the text of which is set out in the Annex to the present resolution;
2. RECOMMENDS Member Governments to ensure that VHF EPIRBs which will form part of the global maritime distress and safety system (GMDSS) conform to performance standards not inferior to those specified in the Annex to the present resolution.

ANNEX

**RECOMMENDATION ON PERFORMANCE STANDARDS
FOR FLOAT-FREE VHF EPIRBs**

PART A – GENERAL

1 INTRODUCTION

The VHF emergency position-indicating radio beacon (EPIRB), in addition to meeting the requirements of the Radio Regulations, the relevant CCIR Recommendations and the general requirements set out in resolution A.569(14), should comply with the following performance standards.

2 GENERAL

2.1 The EPIRB should be capable of transmitting a VHF distress alert and of providing a locating signal by means of a 9 GHz radar transponder. These two functions may be provided in an integral unit. The radar transponder (SART) should comply with the Recommendation on Performance Standards for Survival Craft Radar Transponders for Use in Search and Rescue Operations (Assembly resolution A.604(15)) and should be capable of indicating the location of a unit in distress on the assisting units' radars by means of a series of equally spaced dots as specified in Assembly resolution A.530(13).

2.2 The EPIRB should be of an automatic float-free type. The equipment, mounting and releasing arrangements should be reliable even under extreme conditions.

2.3 The VHF EPIRB should:

- .1 be capable of being easily activated by unskilled personnel;
- .2 be fitted with adequate means to prevent inadvertent activation;
- .3 be so designed that the electrical portions are watertight at a depth of 10 m for at least 5 min. Consideration should be given to a temperature variation of 45°C during transitions from the mounted position to immersion. The harmful effects of a marine environment, condensation and water leakage should not affect the performance of the beacon;
- .4 be automatically activated after floating free;
- .5 be capable of manual activation and manual deactivation;
- .6 be provided with means to indicate that signals are being emitted;
- .7 be capable of floating upright in calm water and have positive stability and sufficient buoyancy (preferably more than 20 N) in all sea conditions;
- .8 be capable of being dropped into the water without damage from a height of 20 m;
- .9 be capable of being tested on board, without radiating an alerting signal, to determine that it is capable of operating properly;
- .10 be of highly visible yellow/orange colour and be fitted with retroreflecting material;
- .11 be equipped with a buoyant captive lanyard, suitable for use as a tether, which should be so arranged as to prevent its being trapped in the ship's structure when floating free;
- .12 be provided with a low duty cycle light (0.75 cd) activated by darkness to indicate its position for the survivors nearby and rescue units;
- .13 not be unduly affected by seawater or oil; and
- .14 be resistant to deterioration by prolonged exposure to sunlight.

2.4 The battery should have sufficient capacity to operate the VHF EPIRB for a period of at least 48 h.

2.5 The VHF EPIRB should be so designed as to operate under any of the following environmental conditions:

- .1 ambient temperatures of -20°C to $+55^{\circ}\text{C}$;
- .2 icing;

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- .3 relative wind speeds up to 100 knots; and
- .4 after stowage, at temperatures between -30°C and $+65^{\circ}\text{C}$.

2.6 The installed VHF EPIRB should:

- .1 have local manual activation; remote activation may also be provided from the navigating bridge, while the device is installed in the float-free mounting;
- .2 be capable, while mounted on board, of operating properly over the ranges of shock and vibrations and other environmental conditions normally encountered above deck on seagoing vessels; and
- .3 be designed to release and float free before reaching a depth of 4 m at a list or trim of up to 45° .

3 LABELLING

In addition to the items specified in resolution A.569(14) on general requirements, the following should be clearly indicated on the exterior of the equipment:

- .1 brief operating instructions; and
- .2 expiry date for the primary battery used.

PART B – DSC ALERTING SIGNAL

- 1 The VHF EPIRB DSC distress alerting signal should be transmitted on the frequency of 156.525 MHz using G2B class of emission.
- 2 The frequency tolerance should not exceed 10 parts per million.
- 3 The necessary bandwidth should be less than 16 kHz.
- 4 The output power should be at least 100 mW.
- 5 The emission should be vertically polarized at the source.

6 MODULATION

- 6.1 Frequency modulation with a pre-emphasis characteristic of 6 dB/octave (phase modulation) with the modulating subcarrier, should be used.
- 6.2 A subcarrier of 1,700 Hz with frequency shift between 1,300 Hz and 2,100 Hz should be used.
- 6.3 The frequency tolerance of 1,300 Hz and 2,100 Hz tones should be within ± 10 Hz.
- 6.4 The modulation rate should be 1,200 bauds.
- 6.5 The index of modulation should be $2.0 \pm 10\%$.

7 DSC MESSAGE FORMAT AND TRANSMISSION SEQUENCE

7.1 The technical characteristics for the DSC message should be in accordance with the sequence for the "distress call" specified in CCIR Recommendation 493.

7.2 The "nature of distress" indication should be "EPIRB emission".

7.3 The "distress co-ordinates" and "time" information need not be included. In this case the digit 9 repeated 10 times and the digit 8 repeated 4 times should be included as specified in CCIR Recommendation 493.

7.4 The "type of subsequent communication" indication should be "no information" (symbol # 126) which indicates that no subsequent communications will follow.

7.5 The alerting signals should be transmitted in bursts. The $(N + 1)$ burst of transmission which consists of five successive DSC sequences should be made with an interval of T_n after the (N) th burst as given in figure 1.

Where: $T_n = (230 + 10N)$ seconds $\pm 5\%$ and $N = 1, 2, 3, \dots$

Figure 1

