



Recommendation ITU-R M.693-1
(03/2012)

**Technical characteristics of VHF emergency
position-indicating radio beacons using
digital selective calling**

M Series
**Mobile, radiodetermination, amateur
and related satellite services**



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SA	Space applications and meteorology
SF	Frequency sharing and coordination between fixed-satellite and fixed service systems
SM	Spectrum management
SNG	Satellite news gathering
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Note: This ITU-R Recommendation was approved in English under the procedure detailed in Resolution ITU-R 1.

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RECOMMENDATION ITU-R M.693-1

Technical characteristics of VHF emergency position-indicating radio beacons using digital selective calling

(1990-2012)

Scope

This Recommendation details the technical characteristics of an emergency position-indicating radio beacon. This beacon operates in the VHF band, in allocations exclusive to the maritime mobile service, and uses the digital selective calling (DSC) system as detailed in Recommendation ITU-R M.493. This radio beacon will be referred to by the acronym: VHF EPIRB.

The ITU Radiocommunication Assembly,

considering

- a) that the alerting and locating functions are parts of the basic requirements of the global maritime distress safety system (GMDSS);
- b) that the characteristics of the DSC system are given in Recommendation ITU-R M.493;
- c) that the characteristics of a search and rescue radar transponder (SART) for locating purposes are given in Recommendation ITU-R M.628,

recognizing

that chapter IV of the 1988 Amendments to the International Convention for the Safety of Life at Sea (SOLAS), 1974, permits the carriage of a DSC VHF EPIRB in sea area A1¹ in lieu of a satellite EPIRB,

recommends

that the technical characteristics of DSC VHF EPIRBs should be in accordance with Annex 1 and with Recommendation ITU-R M.493.

¹ “Sea area A1” means an area within the radiotelephone coverage of at least one VHF coast station in which continuous DSC alerting is available, as may be defined by a contracting government to the 1974 SOLAS Convention (as amended).

Annex 1

Minimum technical characteristics of DSC VHF EPIRBs

1 General

- DSC VHF EPIRBs should be capable of transmitting distress alerts by digital selective calling and of providing a locating or homing facility. To meet the locating requirements of the GMDSS, Regulation IV/8.3.1 of the 1974 SOLAS Convention requires that a SART (see Recommendation ITU-R M.628) be used for this function.
- The EPIRB should be provided with a battery of sufficient capacity to enable it to operate for a period of at least 48 hours.
- The EPIRB should be designed to operate under the following environmental conditions:
 - ambient temperatures of $-20\text{ }^{\circ}\text{C}$ to $+55\text{ }^{\circ}\text{C}$;
 - icing;
 - relative wind speeds up to 100 knots;
 - after stowage at temperatures between $-30\text{ }^{\circ}\text{C}$ and $+65\text{ }^{\circ}\text{C}$.

2 Alerting transmissions

- The alerting signals should be transmitted on the frequency 156.525 MHz using G2B class of emission.
- The frequency tolerance should not exceed 10 parts per million.
- The necessary bandwidth should be less than 16 kHz.
- The emission should be vertically polarized. The antenna should be omnidirectional in the azimuthal plane and sufficiently high to ensure reception of the transmission at the maximum range of the A1 sea area.
- The output power² should be at least 100 mW.

3 DSC message format and transmission sequence

- The technical characteristics for the DSC message should be in accordance with the sequence for the “distress call” specified in Recommendation ITU-R M.493.
- The “nature of distress” indication should be “EPIRB emission” (symbol No. 112).
- The “distress coordinates” and “time” information need not be included. In this case the digit 9 repeated 10 times and the digit 8 repeated four times should be included, respectively, as specified in Recommendation ITU-R M.493.
- The “type of subsequent communication” indication should be “no information” (symbol No. 126) which indicates that no subsequent communications will follow.

² The output power required to carry a ship-to-shore alert at the maximum range of the A1 sea area should be at least 6 W with an appropriate antenna height above sea level.

- The alerting signals should be transmitted in bursts. Each burst should consist of five successive DSC sequences with the $(N + 1)^{\text{th}}$ burst of transmission being made with an interval T_n after the $(N)^{\text{th}}$ burst as given in Fig. 1, where:

$$T_n = (240 + 10 N) \text{ s } (\pm 5\%) \text{ and}$$

$$N = 0, 1, 2, 3, \dots, \text{ etc.}$$

