
ANNEX 17**RESOLUTION MSC.510(105)**
(adopted on 28 April 2022)**PERFORMANCE STANDARDS FOR SEARCH AND RESCUE RADAR TRANSPONDERS**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolution A.530(13), by which the Assembly, at its thirteenth session, adopted the *Recommendation on the signal characteristic of radar transponders to assist in search and rescue operations*,

RECALLING FURTHER resolution A.802(19), by which the Assembly, at its nineteenth session, adopted the *Recommendation on Performance standards for survival craft radar transponders for use in search and rescue operations*, which was subsequently amended by resolution MSC.247(83),

RECALLING resolution A.886(21), by which the Assembly resolved that the functions of adopting performance standards for radio and navigational equipment, as well as amendments thereto, shall be performed by the Maritime Safety Committee on behalf of the Organization,

TAKING INTO ACCOUNT the amendments to the International Convention for the Safety of Life at Sea, 1974 ("the Convention") adopted by resolution MSC.496(105),

NOTING, in particular, regulations IV/7.2.1 and 7.3.1 of the Convention concerning radiocommunications for the Global Maritime Distress and Safety System (GMDSS), which require ships to be provided with search and rescue radar transponder(s) (radar SART(s)),

RECOGNIZING the need to revise the *Performance standards for survival craft radar transponders for use in search and rescue operations* 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,

NOTING that the International Telecommunication Union Radiocommunication Sector (ITU-R) has developed a Recommendation for the 9 GHz SAR transponders, and that the IEC has published a related technical standard for 9 GHz SAR transponders,

HAVING CONSIDERED, at its 105th session, the recommendation made by the Sub-Committee on Navigation, Communications and Search and Rescue at its eighth session,

1 ADOPTS the *Performance standards for search and rescue radar transponders*, set out in the annex to the present resolution;

2 RECOMMENDS Governments to ensure that radar SARTs that will form part of the GMDSS, conform to performance standards not inferior to those specified in the annex to this resolution;

3 DETERMINES that this resolution supersedes resolutions A.530(13) and A.802(19), as amended, as from 1 January 2024;

4 INVITES the Assembly to endorse the action taken by the Maritime Safety Committee.

ANNEX

PERFORMANCE STANDARDS FOR SEARCH AND RESCUE RADAR TRANSPONDERS

1 INTRODUCTION

The search and rescue radar transponder (radar SART) carried on ships to meet the requirements of SOLAS regulations IV/7.2.1 or 7.3.1, in addition to meeting the requirements of the relevant ITU-R Recommendations and the general requirements set out in resolution A.694(17), should comply with the following performance standards.

2 GENERAL

2.1 The radar SART should be capable of indicating the location of a unit in distress on the assisting units' radars by means of a series of 12 equally spaced dots.

2.2 The radar SART should:

- .1 be capable of being easily activated by unskilled personnel;
- .2 be fitted with means to prevent inadvertent activation;
- .3 be equipped with a means which is either visual or audible, or both visual and audible, to indicate correct operation and to alert survivors to the fact that a radar has triggered the radar SART;
- .4 be capable of manual activation and deactivation; provision for automatic activation may be included;*
- .5 be provided with an indication of the standby condition;
- .6 be capable of withstanding without damage drops from a height of 20 m into water;
- .7 be watertight at a depth of 10 m for at least 5 min;
- .8 maintain watertightness when subjected to a thermal shock of 45°C under specified conditions of immersion;
- .9 be capable of floating if it is not an integral part of the survival craft;
- .10 be equipped with a buoyant lanyard, suitable for use as a tether, if it is capable of floating;
- .11 not be unduly affected by seawater or oil;
- .12 be resistant to deterioration in prolonged exposure to sunlight;

* If an onboard test is performed using a shipborne 9 GHz radar, activation of the radar SART should be limited to a few seconds to avoid harmful interference with other shipborne radars and excessive consumption of battery energy.

- .13 be of a highly visible yellow/orange colour on all surfaces where this will assist detection;
- .14 have a smooth external construction to avoid damaging the survival craft; and
- .15 be provided with a pole or other arrangement compatible with the antenna pocket in a survival craft in order to comply with paragraph 2.5, together with illustrated instructions.

2.3 The radar SART should have sufficient battery capacity to operate in the standby condition for 96 h and, in addition, following the standby period, to provide transponder transmissions for 8 h when being continuously interrogated with a pulse repetition frequency of 1 kHz.

2.4 The radar SART should be so designed as to be able to operate under ambient temperatures of -20°C to +55°C. It should not be damaged in stowage throughout the temperature range of -30°C to +65°C.

2.5 The height of the installed radar SART antenna should be at least 1 m above sea level.

2.6 The vertical polar diagram of the antenna and hydrodynamic characteristics of the device should permit the radar SART to respond to search radars under heavy swell conditions. The polar diagram of the antenna should be substantially omnidirectional in the horizontal plane. Horizontal polarization or circular polarization should be used for transmission and reception.

2.7 The radar SART should operate correctly when interrogated at a distance of up to at least five nautical miles by a navigational radar using unmodulated pulses and complying with resolutions MSC.192(79), A.477(XII) and A.222(VII), with an antenna height of 15 m above sea level. It should also operate correctly when interrogated at a distance of up to 30 nautical miles by an airborne radar with at least 10 kW peak output power at a height of 3,000 ft above sea level.

3 TECHNICAL CHARACTERISTICS

Technical characteristics of the radar SART should be in accordance with Recommendation ITU-R M.628.

4 LABELLING

In addition to the items specified in resolution A.694(17) 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.
