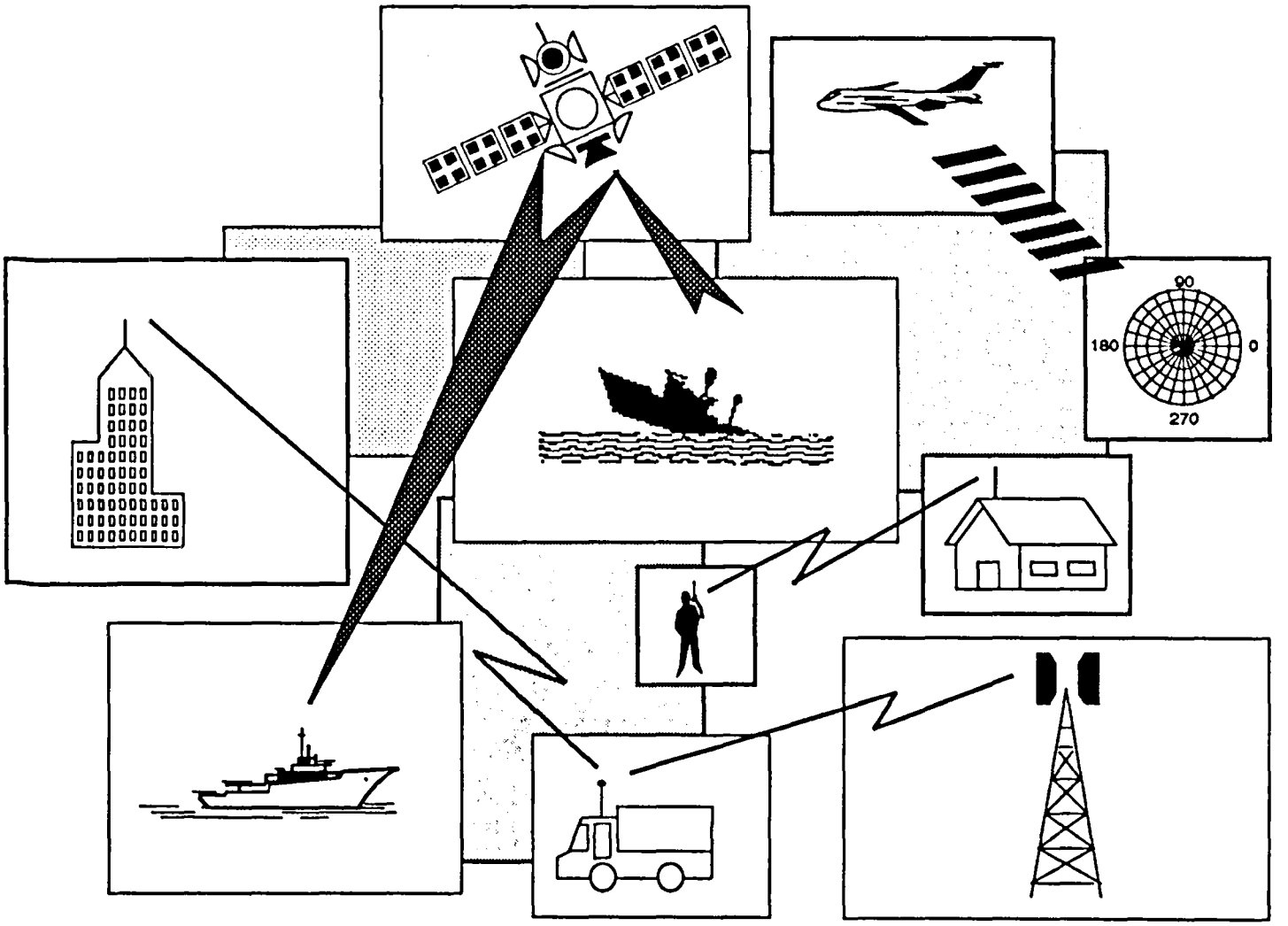
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Recommendation 628-2 (1992)

Technical characteristics for search and rescue radar transponders

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RECOMMENDATION 628-2*

TECHNICAL CHARACTERISTICS FOR SEARCH AND RESCUE RADAR TRANSPONDERS

(Questions 28/8 and 45/8)

(1986-1990-1992)

The CCIR,

considering

a) that Regulations III/6.2.2 and IV/7.1.3 of the 1988 Amendments to the International Convention for the Safety of Life at Sea, (SOLAS) 1974 require the carriage of radar transponders operating in the 9 GHz frequency band for locating the ship when it is in distress at sea or its survival craft;

b) that such radar transponders may also be used by ships not subject to the 1974 SOLAS Convention; some of these radar transponders may be installed with a float-free release and activation arrangement or with a float-free EPIRB or float-free satellite EPIRB;

c) that Regulations V/12(g) and (h) of the 1988 Amendments to the 1974 SOLAS Convention prescribe the requirement that passenger ships irrespective of size and cargo ships of 300 tons gross tonnage and upwards carry a radar installation or if they are of 10 000 tons gross tonnage and upwards, two radar installations; from 1 February 1995, the radar installation or at least one of the radar installations shall be capable of operating in the 9 GHz frequency band;

d) that IMO has adopted a Recommendation on performance standards for survival craft radar transponders for use in search and rescue operations (Resolution A.697(17));

e) that location is part of the basic requirements for the GMDSS;

f) that a locating system would be more effective if the radar transponder was in conformity with internationally agreed technical and operating characteristics,

recommends

that the technical characteristics of search and rescue radar transponders operating in the frequency range 9 200-9 500 MHz should be in accordance with Annex 1.

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* The Director, CCIR, is requested to bring this Recommendation to the attention of the International Maritime Organization (IMO), the International Civil Aviation Organization (ICAO), and the International Association of Lighthouse Authorities (IALA).

ANNEX 1

Minimum technical characteristics for search and rescue radar transponders operating over the band 9 200-9 500 MHz

1. Frequency: 9 200-9 500 MHz.

2. Polarization: horizontal.

3. Sweep rate: 5 μs per 200 MHz, nominal.

4. The response signal should consist of 12 sweeps.

5. Form of sweep: sawtooth, forward sweep time: 7.5 μs ± 1 μs,
return sweep time: 0.4 μs ± 0.1 μs.
The response should commence with a return sweep.

6. Pulse emission: 100 μs national

7. e.i.r.p.: not less than 400 mW (equivalent to +26 dBm).

8. Effective receiver sensitivity: better than –50 dBm (equivalent to 0.1 mW/m^2) (see Note 1).

9. Duration of operation: 96 h in stand-by condition followed by 8 h of transponder transmissions while being continuously interrogated with a pulse repetition frequency of 1 kHz.

10. Temperature range: ambient: –20 °C to +55 °C,
stowage: –30 °C to +65 °C.

11. Recovery time following excitation: 10 μs or less.

12. Effective antenna height: ≥ 1 m (see Note 2).

13. Delay between receipt of radar signal and start of transmission: 0.5 μs or less.

14. Antenna vertical beamwidth: at least ± 12.5° relative to the radar transponders' horizontal plane.

15. Antenna azimuthal beamwidth: omnidirectional within ± 2 dB.

Note 1 – Effective receiver sensitivity includes antenna gain.

– Effective receiver sensitivity of better than –50 dBm applies to interrogating radar pulses (medium and long) of > 400 ns.

– Effective receiver sensitivity of better than –37 dBm applies to interrogating radar pulses (short) of ≤ 100 ns.

– The receiver should be capable of correct operation when subjected to the radiated field (28 dB(W/m^2)) emitted from a shipborne radar complying with IMO Resolution A.477(XII) at any distance > 20 m.

Note 2 – This effective antenna height is applicable for equipment required by Regulations III/6.2.2 and IV/7.1.3 of the 1988 Amendments to the 1974 SOLAS Convention.