

(b) 250 millimetres on ships of 1,600 gross tonnage and more but less than 10,000 gross tonnage;

(c) 340 millimetres in the case of one display and 250 millimetres in the case of the other on ships of 10,000 gross tonnage and upwards.

(2) The equipment shall provide one of the two following sets of range scales of display:

(a) 1.5, 3, 6, 12 and 24 nautical miles and one range scale of not less than 0.5 and not greater than 0.8 nautical miles; or

(b) 1, 2, 4, 8, 16 and 32 nautical miles.

(3) Additional range scales may be provided.

(4) The range scale displayed and the distance between range rings shall be clearly indicated at all times.

36. Range measurement—(1) Fixed electronic range rings shall be provided for range measurements as follows:

(a) where range scales are provided in accordance with clause 35(2)(a) of this performance standard, on the range scale of between 0.5 and 0.8 nautical miles at least two range rings shall be provided and on each of the other range scales six range rings shall be provided, or

(b) where range scales are provided in accordance with clause 35(2)(b) of this performance standard, four range rings shall be provided on each of the range scales.

(2) A variable electronic range marker shall be provided with a numeric readout of range.

(3) The fixed range rings and the variable range marker shall enable the range of an object to be measured with an error not exceeding 1.5 per cent of the maximum range of the scale in use, or 70 metres, whichever is the greater.

(4) It shall be possible to vary the brilliance of the fixed range rings and the variable range marker and to remove them completely from the display.

37. Heading Indicator—(1) The heading of the ship shall be indicated by a line on the display with a maximum error not greater than plus or minus 1 degree. The thickness of the displayed heading line shall not be greater than 0.5 degrees.

(2) Provision shall be made to switch off the heading indicator by a device which cannot be left in the "heading marker off" position.

38. Bearing measurement—(1) Provision shall be made to obtain quickly the bearing of any object whose echo appears on the display.

(2) The means provided for obtaining bearings shall enable the bearing of a target whose echo appears at the edge of the display to be measured with an accuracy of plus or minus 1 degree or better.

39. Discrimination—(1) The equipment shall be capable of displaying as separate indications on a range scale of 2 nautical miles or less, two small similar targets at a range of between 50 per cent and 100 per cent of the range scale in use, and on the same azimuth, separated by not more than 50 metres in range.

(2) The equipment shall be capable of displaying as separate indications two small similar targets both situated at the same range between 50 per cent and 100 per cent of the 1.5 or 2 mile range scales, and separated by not more than 2.5 degrees in azimuth.

40. Roll or pitch—The performance of the equipment shall be such that when the ship is rolling or pitching up to plus or minus 10 degrees the range performance requirements of clauses 33 and 34 of this performance standard continue to be met.

41. Scan—The scan shall be clockwise, continuous and automatic through 360 degrees of azimuth. The scan rate shall be not less than 12 revolutions per minute. The equipment shall operate satisfactorily in relative wind speeds of up to 100 knots.

42. Azimuth stabilisation—(1) Means shall be provided to enable the display to be stabilised in azimuth by a transmitting compass. The equipment shall be provided with a compass input to enable it to be stabilised in azimuth. The accuracy of alignment with the compass transmission shall be within 0.5 degrees with a compass rotation rate of 2 revolutions per minute.

(2) The equipment shall operate satisfactorily in the unstabilised mode when the compass control is inoperative.

43. Performance check—Means shall be available, while the equipment is used operationally, to determine readily a significant drop in performance relative to a calibration standard established at the time of installation, and to check that the equipment is correctly tuned in the absence of targets.

44. Anti-clutter devices—Suitable means shall be provided for the suppression of unwanted echoes from sea clutter, rain and other forms of precipitation, clouds and sandstorms. It shall be possible to adjust manually and continuously the anti-clutter controls. Anti-clutter controls shall be inoperative in the fully anti-clockwise positions. In addition, automatic anti-clutter controls may be provided; however, they must be capable of being switched off.

45. Operation—(1) The equipment shall be capable of being switched on and operated from the display position.

(2) Operational controls shall be accessible and easy to identify and use. Where symbols are used they shall comply with the recommendations of the Organisation on symbols for controls on marine navigational radar equipment.

(3) After switching on from cold the equipment shall become fully operational within 4 minutes.

(4) A standby condition shall be provided from which the equipment can be brought to an operational condition within 15 seconds.

46. Interference—After installation and adjustment on board, the bearing accuracy as prescribed in clause 38 of this performance standard shall be maintained without further adjustment irrespective of the movement of the ship in the earth's magnetic field.

47. Sea or ground stabilisation (true motion display)—(1) Where sea or ground stabilisation is provided the accuracy and discrimination of the display shall be at least equivalent to that required by this performance standard.

(2) The motion of the trace origin shall not, except under manual override conditions, continue to a point beyond 75 per cent of the radius of the display. Automatic resetting may be provided.

48. Antenna system—The antenna system shall be installed in such a manner that the design efficiency of the radar system is not substantially impaired.

49. Operation with radar beacons—(1) All radars operating in the 3 centimetre band shall be capable of operating in a horizontally polarized mode.

(2) It shall be possible to switch off those signal processing facilities which might prevent a radar beacon from being shown on the radar display.

50. Multiple radar installations—(1) Where two radars are required to be carried they shall be so installed that each radar can be operated individually and both can be operated simultaneously without being dependent upon one another. When an emergency source of electrical power is provided both radars shall be capable of being operated from this source.

(2) Where two radars are fitted, interswitching facilities may be provided to improve the flexibility and availability of the overall radar installation. They shall be so installed that failure of either radar would not cause the supply of electrical energy to the other radar to be interrupted or adversely affected.