

Subpart F—Equipment Authorization for Compulsory Ships

§ 80.251 Scope.

(a) This subpart gives the general technical requirements for certification of equipment used on compulsory ships. Such equipment includes automatic-alarm-signal keying devices, survival craft radio equipment, watch receivers, and radar.

(b) The equipment described in this subpart must be certificated.

(c) The term *transmitter* means the transmitter unit and all auxiliary equipment necessary to make this unit operate as a main or emergency transmitter in a ship station at sea. Each separate motor-generator, rectifier, or other unit required to convert the ship primary power to the phase, frequency, or voltage necessary to energize the transmitter unit is considered a component of the transmitter.

(d) *Average ship station antenna* means an actual antenna installed on board ship having a capacitance of 750 picofarads and an effective resistance of 4 ohms at a frequency of 500 kHz, or an artificial antenna having the same electrical characteristics.

[51 FR 31213, Sept. 2, 1986, as amended at 63 FR 36606, July 7, 1998; 68 FR 46966, Aug. 7, 2003]

§ 80.268 Technical requirements for radiotelephone installation.

All radiotelephone installations in radiotelegraph equipped vessels must meet the following conditions.

(a) The radiotelephone transmitter must be capable of transmission of A3E or H3E emission on 2182 kHz and must be capable of transmitting clearly perceptible signals from ship to ship during daytime, under normal conditions over a range of 150 nautical miles when used with an antenna system in accordance with paragraph (c) of this section. The transmitter must:

(1) Have a duty cycle which allows for transmission of the radiotelephone alarm signal described in § 80.221.

(2) Provide 25 watts carrier power for A3E emission or 60 watts peak power on H3E emission into an artificial antenna consisting of 10 ohms resistance and 200 picofarads capacitance or 50 ohms nominal impedance to dem-

onstrate compliance with the 150 nautical mile range requirement.

(3) Have a visual indication whenever the transmitter is supplying power to the antenna.

(4) Have a two-tone alarm signal generator that meets § 80.221.

(5) This transmitter may be contained in the same enclosure as the receiver required by paragraph (b) of this section. These transmitters may have the capability to transmit J2D or J3E transmissions.

(b)(1) The radiotelephone receiver must receive A3E and H3E emissions when connected to the antenna system specified in paragraph (c) this section and must be preset to 2182 kHz. The receiver must additionally:

(i) Provide an audio output of 50 milliwatts to a loudspeaker when the RF input is 50 microvolts. The 50 microvolt input signal must be modulated 30 percent at 400 Hertz and provide at least a 6 dB signal-to-noise ratio when measured in the rated audio bandwidth.

(ii) Be equipped with one or more loudspeakers capable of being used to maintain a watch on 2182 kHz at the principal operating position or in the room from which the vessel is normally steered.

(2) The receiver required by § 80.805 may be used instead of this receiver. If the watch is stood at the place from which the ship is normally steered, a radiotelephone distress frequency watch receiver must be used for this purpose.

(3) This receiver may be contained in the same enclosure as the transmitter required by paragraph (a) of this section. These receivers may have the capability to receive J2D or J3E transmissions.

(c) The antenna system must be as nondirectional and efficient as is practicable for the transmission and reception of radio ground waves over seawater. The installation and construction of the required antenna must ensure, insofar as is practicable, proper operation in time of emergency. If the required antenna is suspended between masts or other supports subject to whipping, a safety link must be installed which under heavy stress will reduce breakage of the antenna, the

halyards, or any other supporting elements.

(d) The radiotelephone installation must be provided with a device for permitting changeover from transmission to reception and vice versa without manual switching.

(e) An artificial antenna must be provided to permit weekly checks, without causing interference, of the automatic device for generating the radiotelephone alarm signal on frequencies other than the radiotelephone distress frequency.

(f) The radiotelephone installation must be located in the radiotelegraph operating room or in the room from which the ship is normally steered.

(g) Demonstration of the radiotelephone installation may be required by Commission representatives to show compliance with applicable regulations.

(h) The radiotelephone installation must be protected from excessive currents and voltages.

(i) The radiotelephone installation must be maintained in an efficient condition.

[51 FR 31213, Sept. 2, 1986. Redesignated and amended at 68 FR 46973, Aug. 7, 2003]

§ 80.269 Technical requirements for radiotelephone distress frequency watch receiver.

(a) The radiotelephone distress frequency watch receiver is comprised of a receiver, a loudspeaker and a radiotelephone auto alarm device.

(b) The radiotelephone distress frequency watch receiver must meet the following requirements:

(1) The receiver must be capable of being switched to 2182 kHz and of receiving signals of at least A2A and A2B emissions;

(2) The receiver sensitivity must provide a SINAD of 20 dB at the audio output when a 30 microvolt signal with A2A or A2B emission modulated 30% at 400 Hz is applied to the receiver RF terminals;

(3) The audio output of the receiver must be at least 50 milliwatts at the rated load impedance;

(4) The receiver must be provided with an auto alarm device which mutes the receiver (silences the loudspeaker) unless the radiotelephone alarm signal

or the signal preceeding a vital navigational warning is received. When the auto alarm is activated the receiver audio output level must be louder than the output level of the received speech signal. Additionally, the receiver must meet the following requirements:

(i) When the receiver is muted its audio output power must be less than 1 milliwatt;

(ii) If tone filters are used to process the 1300 Hz and 2200 Hz tones the tolerance of their center frequency must be ± 1.5 percent of the alerting frequency. The response must be flat within 6 dB to $\pm 3\%$ of the center frequency of the filters; and

(iii) The receiver must not be unmuted by atmospherics or by strong signals other than the radiotelephone alarm and the vital navigational warning signal.

(5) The receiver must be unmuted within 4 to 6 seconds when a double sideband alarm signal modulated at 70% is applied at its input terminals at a level which produces a SINAD of 10 dB under the following conditions:

(i) For radiotelephone alarm the signal must be modulated sequentially by a 1300 ± 20 Hz tone and a 2200 ± 35 Hz tone. The duration of each tone must be 250 ± 50 milliseconds and the period between each tone must not exceed 50 milliseconds; and

(ii) For navigational warning the signal must be modulated by a 2200 ± 35 Hz tone and the modulated carrier must be turned "on" for 250 ± 50 milliseconds and then "off" for 250 ± 50 milliseconds.

(6) The receiver must not be unmuted when a double sideband signal of 70 dB above the receiver measured sensitivity, modulated at 70% by a 2200 ± 35 Hz tone with the following durations is applied at its input terminals:

(i) "On" periods of less than 175 milliseconds or more than 325 milliseconds followed by "off" periods of any duration; and

(ii) "Off" periods of less than 175 milliseconds or more than 425 milliseconds followed by "on" periods of any duration.

(7) The controls listed below must be provided on the exterior of the equipment:

(i) On/off switch with a visual indication that the device is on;