Shipborne Radar in the 2900-3100 MHz and 9225-9500 MHz Bands
Preface


This document will be in force as of the publication date of Notice SMSE-017-13 in the *Canada Gazette*, Part I. Upon publication, the public will have 120 days to submit comments. Comments received will be taken into account in the preparation of the next version of this document.

Listed below are the changes:

1. General reformatting and removal of material common to most RSS documents, which has instead been integrated into the principle document, RSS-Gen, *General Requirements and Information for the Certification of Radio Apparatus*. The requirement that RSS-Gen be used in conjunction with this standard is stated.

2. The standard is renumbered as RSS-238 from RSS-138 in accordance with the convention adopted for RSS documents that covers equipment subject to certification but exempt from licensing.

3. The maximum power of the equipment is allowed up to 60 kW instead of 100 kW.

4. The standard now applies to shipborne radar having transmitted power of less than 1 kW.

5. The frequency band 5470-5650 MHz has been removed.

6. The definition of the 40 dB bandwidth has been added.

7. The specified unwanted emission is related to the transmitter peak power instead of the spectral power density.

8. The requirement for receiver standard emission section has been withdrawn consequential to decisions made under Regulator Standard Notice 2012-DRS0126.

Issued under the authority of
the Minister of Industry

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1. Scope

This Radio Standards Specification (RSS) sets out minimum requirements for the certification of shipborne radar operating in the maritime radionavigation service in the bands 2900-3100 MHz and 9225-9500 MHz and having a rated peak transmit power of less than or equal to 60 kW.

1.1 Exclusion

This standard does not apply to survival craft Search and Rescue Transponder (SART) operating in the band 9200-9500 MHz. These SART devices are certified under RSS-288.

2. General Information

Equipment covered by this standard is classified as Category I equipment. Either a technical acceptance certificate (TAC) issued by the Certification and Engineering Bureau of Industry Canada or a certificate issued by a recognized Certification Body (CB) is required.

2.1 Licensing Requirements

Subject to the operating conditions detailed in the Radiocommunication Regulations subsections 15.2, 34.(1), 34.(2) and 34.2, equipment that is certified under this standard is licence-exempt.

2.2 Definitions

40 dB bandwidth, $B_{40}$: The width of a frequency band, such that below the lower and above the upper frequency limits, the spectral power density is 40 dB down related to the maximum inband spectral power density.

Pulse fall time, $t_f$: Emitted pulse fall time in microseconds from the 90% to the 10% amplitude (voltage) points on the trailing edge (see Figure 1).

Pulse rise time, $t_r$: Emitted pulse rise time in microseconds from the 10% to the 90% amplitude (voltage) points on the leading edge (see Figure 1). For coded pulses, it is the rise time of a sub-pulse; if the sub-pulse rise time is not discernible, assume that it is 40% of the time to switch from one phase or sub-pulse to the next.

Pulse width, $t$: The width of the pulse in microseconds at 50% amplitude (voltage) points. For coded pulses, the pulse duration is the interval between 50% amplitude points of one chip (sub-pulse). The 100% amplitude is the nominal flat top level of the pulse (see Figure 1).
3. Certification Requirements

3.1 RSS-Gen Compliance

RSS-238 shall be used in conjunction with RSS-Gen, General Requirements and Information for the Certification of Radio Apparatus, for general specifications and information relevant to the equipment for which this standard applies.

3.2 Test Report

In addition to the required information and measurements specified in RSS-Gen, the test report submitted with the application shall contain the following information:

(a) the pulse width, pulse rise time and pulse repetition rate;

(b) the size, type, gain, beamwidths, and side and back lobe suppression values of the antenna; and

(c) the 40 dB bandwidth.

All tests shall be conducted on a frequency that is near the middle of the frequency range within which the equipment is designed to operate.
4. Transmitter and Receiver Standard Specifications

4.1 Frequency Stability

The carrier frequency shall not depart from the reference frequency in excess of 800 ppm for equipment which operates in the band 2900-3100 MHz nor in excess of 1250 ppm for equipment which operates in the band 9225-9500 MHz.

4.2 Transmitter Output Power and Antenna Gain

The transmitter output power shall not exceed 60 kW and the antenna gain shall not exceed 35 dBi.

4.3 Transmitter Unwanted Emissions

The unwanted emission and the transmitter power shall be measured using a peak detector.

The unwanted emission power in any 1 MHz bandwidth shall be attenuated below the transmitter peak power by at least 20 dB per decade from the edge of the 40 dB bandwidth and beyond.

The unwanted emissions power shall not need to be attenuated more than 60 dB below the transmitter peak power.