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Radio Standards Specification

# **Intelligent Transportation Systems — Dedicated Short Range Communications (DSRC) — On-Board Unit (OBU)**

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**Canada** 

## Preface

Radio Standards Specification RSS-252, issue 1, *Intelligent Transportation Systems – Dedicated Short Range Communications (DSRC) – On-Board Unit (OBU)*, establishes the certification requirements for licence-exempt Dedicated Short Range Communication (DSRC) On-Board (OBU) devices. These devices operate in the 5850-5925 MHz frequency range.

Issued under the authority of  
the Minister of Innovation, Science and Economic Development Canada

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## 1. Scope

Radio Standards Specification 252 (RSS-252), *Intelligent Transportation Systems – Dedicated Short Range Communications (DSRC) – On-Board Unit (OBU)*, sets out the certification requirements for licence-exempt Dedicated Short Range Communication (DSRC) On-Board Units (OBUs). These devices operate in the 5850-5925 MHz frequency range.

This document will be in force as of its publication on Innovation, Science and Economic Development Canada's (ISED) [website](#).

## 2. General requirements and information

### 2.1 Purpose and application

DSRC systems consist of short-range, wireless links to transfer data between vehicles and:

- roadside units,
- other vehicles,
- portable units.

Such systems are designed to support Intelligent Transportation Systems (ITS) applications.

An on-board unit (OBU) is a DSRC transceiver that is vehicle-mounted or portable that can be operational while in motion or stationary.

### 2.2. Certification

Equipment covered by this standard is classified as Category I equipment. Either a technical acceptance certificate (TAC) issued by ISED's Certification and Engineering Bureau or a certificate issued by a certification body (CB) is required.

### 2.3 Licensing

Equipment covered by this standard is exempt from licensing requirements pursuant to section 15 of the [Radiocommunication Regulations](#).

## 2.4 RSS-Gen compliance

RSS-252 shall be used in conjunction with RSS-Gen, [General Requirements for Compliance of Radio Apparatus](#), for general specifications and information relevant to the equipment for which this standard applies.

## 2.5 Test report

A test report shall provide a record of the tests and results demonstrating compliance with the requirements prescribed herein and with RSS-Gen. If applicable, the test report shall clearly indicate that the OBU is portable as defined in section 3.

## 2.6 Reference publications

### 2.6.1 Normative reference publications

All Spectrum Management and Telecommunications publications are available on its [website](#) under *Official Publications*.

The following document must be consulted as per the applicable version(s) specified in RSS-Gen, *General Requirements for Compliance of Radio Apparatus*:

ANSI C63.10 *American National Standard for Testing Unlicensed Wireless Devices*

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ANSI – American National Standards Institute

### 2.6.2 Normative reference to ASTM E2213-03 (2010)

This RSS refers and adopts the following specific issue of the ASTM E2213-03 standard:

ASTM E2213-03(2010), [Standard Specification for Telecommunications and Information Exchange Between Roadside and Vehicle Systems — 5 GHz Band Dedicated Short Range Communications \(DSRC\) Medium Access Control \(MAC\) and Physical Layer \(PHY\) Specifications](#)

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ASTM, American Society for Testing and Materials

### 3. Definitions

In this document, the following definitions apply:

*Dedicated short range communications (DSRC)* consists of the use of radio techniques to transfer data over short distances between roadside and mobile units, between mobile units, and between portable and mobile units to perform operations related to the improvement of traffic flow, traffic safety, and other intelligent transportation service applications in a variety of environments. DSRC systems may also transmit status and instructional messages related to the units involved.

*On-board unit (OBU)* is a DSRC transceiver that is normally mounted in or on a vehicle, or in some instances may be a portable unit. An OBU can be operational while a vehicle or person is either mobile or stationary. The OBUs receive and contend for time to transmit on one or more radio frequency (RF) channels. Except where specifically excluded, OBU operation is permitted wherever vehicle operation or human passage is permitted. The OBUs mounted in vehicles communicate with roadside units (RSUs) and other OBUs.

*Portable OBU* is a transmitting device designed to be used in such a way that the radiating structure(s) of the device is (are) within 20 centimeters of the body of the user.

*Roadside unit (RSU)* is a DSRC transceiver that is mounted along a road or pedestrian passageway. Note: RSUs are outside the scope of this Radio Standard Specification.

### 4. Measurement requirements

The measurements shall be performed in accordance with the requirements of RSS-Gen and shall also follow the method of measurements provided in ANSI C63.10. Should there be any discrepancies between the referenced standards and this standard (i.e. RSS-252), the measurement requirements of this standard shall take precedence.

### 5. Technical requirements

#### 5.1 ASTM E2213-03 (2010)

OBU devices shall comply with the requirements of the ASTM E 2213-03 (2010) standard, as referenced in section 2.6.2. In case of any discrepancy between the ASTM standard and this RSS (i.e. RSS-252), the RSS shall take precedence.

A statement declaring testing and compliance to the ASTM E 2213-03 (2010) standard shall be included in the test report.

## 5.2 DSRC frequencies (channelling)

OBU devices shall comply with the following channel designations of frequencies available:

**Table 1: DSRC channel designations**

Channel number	Channel use	Frequency range (MHz)
170	Reserved	5850-5855
172 *	Service channel	5855-5865
174	Service channel	5865-5875
175	Service channel	5865-5885
176	Service channel	5875-5885
178	Control channel	5885-5895
180	Service channel	5895-5905
181	Service channel	5895-5915
182	Service channel	5905-5915
184 *	Service channel	5915-5925

\*Channels 172 and 184 are designated for safety applications involving safety of life and property.

## 5.3 Transmitter power levels

OBU devices shall comply with the transmitter power levels described in the ASTM E 2213-03 (2010) standard.

### 5.3.1 Portable OBU

OBU portable devices shall limit their maximum output power to 1 mW.

### 5.3.2 Cable loss

A device is allowed to transmit more power to overcome cable losses to the antenna as long as the prescribed antenna input power and equivalent isotropically radiated power (e.i.r.p.) limits are respected.

#### **5.4 Transmitter unwanted emission masks**

OBU devices shall comply with the transmitter emission masks described in the ASTM E 2213-03 (2010) standard.

Emissions in frequencies beyond the DSRC emission masks described in the ASTM E2213-03 (2010) standard, shall comply with the same emission limit as the limit that is applicable to the highest frequency offset described in the emission mask.

#### **5.5 Transmitter center frequency tolerance**

OBU devices shall comply with the transmitter center frequency tolerance described in the ASTM E2213-03 (2010) standard.