Spectrum Management and Telecommunications

Radio Standards Specification

Wireless Power Transfer Devices (Wireless Chargers)
Preface

Radio Standards Specification 216, Issue 1, *Wireless Power Transfer Devices (Wireless Chargers)*, sets out the minimum requirements for wireless power transfer devices with power management and/or control capabilities. These devices are either defined as Category I equipment or Category II equipment as per RSS-Gen.

This document will be in force as of the publication date of Notice SMSE-xxx-14 in *Canada Gazette*, Part I. Upon publication, the public has 120 days to submit comments. Comments received will be taken into account in the preparation of the next version of the document.

Issued under the authority of
the Minister of Industry

____________________________________
Marc Dupuis
Director General
Engineering, Planning and Standards Branch
Contents

1. Scope................................................................................................................................................1

2. General Information..........................................................................................................................1
   2.1 Related Documents .......................................................................................................................2
   2.2 Definitions ...................................................................................................................................2

3. Wireless Power Transfer Devices Classified as a Category I Equipment .................................2
   3.1 Technical Requirements and Measurement Methods .................................................................2
   3.2 Limits ...........................................................................................................................................3
   3.3 Radio Frequency (RF) Exposure Compliance ............................................................................3
   3.4 Equipment Label .......................................................................................................................3

4. Wireless Power Transfer Devices Classified as a Category II Equipment ............................3
   4.1 Technical Requirements and Measurement Methods .................................................................4
   4.2 Limits ...........................................................................................................................................4
   4.3 Radio Frequency (RF) Exposure Compliance ............................................................................4
   4.4 Equipment Labels .......................................................................................................................4
1. **Scope**

This Radio Standards Specification (RSS) sets out the minimum requirements for a wireless power transfer device (wireless chargers) with power management and/or control capabilities, which either requires certification or is exempt from certification.

2. **General Information**

Wireless power transfer devices (wireless chargers) are devices which generate near field inductive or resonant power which includes sending power management and/or control data by transferring energy to a device (e.g. cellphone, tablet) for the purpose of recharging this latter device (e.g. cellphone, tablet, vehicle).

Devices under the scope of Section 3 of this standard are classified as Category I equipment and 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.

Devices under the scope of Section 4 of this standard are classified as Category II equipment, and are exempt from certification. The manufacturer or importer of Category II radio apparatus subject to this RSS shall ensure that compliance with all applicable technical requirements has been demonstrated and the results compiled into a proper test report. Tests shall be performed and test reports prepared in accordance with the provisions of RSS-Gen (except those provisions applicable only to certification of Category I Equipment). The test report shall be retained by the manufacturer or importer for as long as the model is manufactured, imported, offered for sale, distributed and/or leased in Canada, and shall be made available to Industry Canada upon request.

If the wireless power transfer device provides data communication other than for power management and/or for control (load management) for the purpose of charging a device, it shall also be certified under the RSS(s) containing the technical requirements applicable to the type of radio apparatus concerned. Furthermore, if the wireless power transfer device uses a secondary frequency for load management, it shall also be certified under the applicable RSS(s) based on its control and data capabilities.

If the wireless power transfer device has neither power management and/or control capabilities nor any other communication capabilities, it shall meet the technical requirements set forth in Industry Canada’s ICES-001—*Industrial, Scientific and Medical (ISM) Radio Frequency Generators*.

Category I and Category II licence-exempt equipment is required to comply with the provisions in RSS-Gen with respect to emissions falling within restricted frequency bands. These restricted frequency bands are listed in RSS-Gen.

The wireless power transfer devices (wireless chargers) covered by this standard are licence-exempt. The devices subject to this standard operate on a “no-interference, no-protection” basis.
2.1 Related Documents

RSS-216, Issue 1, must be used in conjunction with RSS-Gen, General Requirements for Compliance of Radio Apparatus – Limits and Methods of Measurements, for general specifications and information relevant to the equipment for which this standard applies.

2.2 Definitions

The following definitions apply to this standard:

**Control Capabilities**
means of controlling power transfer by modulating and demodulating a control signal via an impedance network to achieve the required regulation of transferred power.

**Load Management**
means the device being charged switches the amount of power that it draws from the wireless power transfer device between two discrete levels using load modulation techniques (means of communication using load modulation).

**Power Management**
means of initiating power transfer from the power transmitter (wireless power transfer device) to the power receiver (e.g. cellphone) when the latter is identified as a valid device, requesting more or less power and finally ending the power transfer.

**Wireless Power Transfer Device (Wireless Chargers)**
means a device which generates near field inductive or resonant power which includes sending power management and/or control data by transferring energy to a device (e.g. cellphone, tablet, etc.) for the purpose of recharging a particular device (e.g. cellphone, tablet, etc.).

3. Wireless Power Transfer Devices Classified as a Category I Equipment

This section applies to wireless power transfer devices with power management and/or control capabilities, which do not meet the requirements specified in Section 4 of this document.

3.1 Technical Requirements and Measurement Methods

All devices which fall under Section 3 of this document, must comply with all applicable technical requirements set forth in RSS-Gen. The measurements methods shall be in accordance with RSS-Gen. All transmitters that can transmit simultaneously shall be active during the measurements.
3.2  Limits

3.2.1  AC Power Line Conducted Emission Limits

The wireless power transfer device shall comply with the AC power line conducted emission limits listed in RSS-Gen.

3.2.2  Field Strength Limits

The wireless power transfer device shall comply with either the general field strength limits listed in RSS-Gen or the requirements outlined in Annex 2 (Devices Operating in Frequency Bands for Any Application) of RSS-210 if the operating frequency of the wireless power transfer device functions within the specified bands of the aforementioned Annex.

3.3  Radio Frequency (RF) Exposure Compliance

All devices which fall under Section 3 of this document shall comply with the applicable requirements of RSS-102, Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)\(^1\).

3.4  Equipment Label

All devices which fall under Section 3 of this document shall be labeled based on the labeling requirements set forth in RSP-100.

4.  Wireless Power Transfer Devices Classified as a Category II Equipment

This section is applicable to a wireless power transfer device with power management and/or control capabilities, which meets all of the following requirements:

i)  wireless power transfer frequency is below 1 MHz;
ii) output power from each primary coil is less than 5 Watts;
iii) the wireless power transfer system includes only a single primary coil and a single secondary coil\(^2\);
iv) the device to be charged is inserted in or placed in direct contact with the transmitter of the wireless power transfer device;

---

\(^1\) Field strength measurements may be performed at a separation distance of 10 cm rather than 20 cm when an RF exposure evaluation applies to the wireless power transfer device (see definition in RSS-102). RF exposure shall be evaluated with the wireless power transfer system operating at maximum output power. A combination of analytical analysis, electric and magnetic field strength measurements, radiated and conducted power measurements, in conjunction with computational modeling may be required to demonstrate compliance with RF exposure limits depending on the operating frequency of the wireless power transfer device.

\(^2\) It can include a wireless power transfer device with multiple primary coils if the valid device (e.g. cellphone) is able to detect and only allow coupling between individual pairs of coils.
v) the coupling surface area of the wireless power transfer device is between 60-400 cm², and
vi) the total leakage fields from all simultaneous transmitting coils are demonstrated to be less than 30% of the applicable Health Canada’s Safety Code 6 limits for uncontrolled environments at 10 cm from the wireless power transfer system.

The wireless power transfer device with power management and/or control capabilities, whose fundamental emission lies below 490KHz and for which it is shown that all emissions are at least 40 dB below the general field strength limits listed in RSS-Gen, shall need to comply only with the general provisions of Section 4 of this standard and the applicable provisions of RSS-Gen.

4.1 Technical Requirements and Measurement Methods

All devices which fall under Section 4 of this document must comply with all applicable technical requirements set forth in RSS-Gen (except for the provisions applicable only to the certification of Category I Equipment). The measurement methods shall be in accordance with RSS-Gen. All transmitters that can transmit simultaneously shall be active during the measurements.

4.2 Limits

4.2.1 AC Power Line Conducted Emission Limits

The wireless power transfer device shall comply with the AC power line conducted emission limits listed in RSS-Gen.

4.2.2 Field Strength Limits

The wireless power transfer device shall comply with either the general field strength limits listed in RSS-Gen or the requirements outlined in Annex 2 (Devices Operating in Frequency Bands for Any Application) of RSS-210 if the operating frequency of the wireless power transfer device functions within the specified bands of the aforementioned Annex.

4.3 Radio Frequency (RF) Exposure Compliance

All devices which fall under Section 4 of this document are exempt from a RF exposure and/or SAR routine evaluation set forth in RSS-102. However, the above exemption from routine evaluation is not an exemption from compliance with Health Canada’s Safety Code 6 limits.

4.4 Equipment Labels

The manufacturer, importer or distributor shall meet the labelling requirements set out in this section for every unit:

(i) prior to marketing in Canada, for radio apparatus manufactured in Canada; and
(ii) prior to importation into Canada, for imported radio apparatus.

The label for the radio apparatus represents the manufacturer’s or importer’s compliance to Industry Canada regulatory requirements.

To indicate compliance of Category II radio apparatus with RSS-216, the manufacturer or importer shall ensure that each unit of the equipment model bears a permanent label on which is indelibly displayed the following information: the manufacturer's name or brand name; the model number, preceded by the word "Model:"; and, the words "Canada 216." The word "Model" may be abbreviated; for example, the model number displayed on the label and proceeded by the text “M / N:”, and the words “Can-216” or equivalent is acceptable. The label shall appear as follows (this information can be shown in a different order):

**Manufacturer's Name or Brand Name**

**Model:** (model number)

**Canada 216**

The label shall be securely affixed to a permanent part of the device in a location where it is visible or easily accessible to the user, and shall not be readily detachable. The label shall be sufficiently durable to remain fully legible and intact on the device in all normal conditions of use throughout the device's expected lifetime. These requirements may be met either by a label or nameplate permanently attached to the device, or by permanently imprinting or impressing the label directly onto the device.

The label shall be legible without the aid of magnification, but is not required to be larger than 8-point font size.

**Note:** The RSS-216 compliance label is not required on devices consisting of Category II radio apparatus (subject to Section 4 of RSS-216) housed together with Category I radio apparatus, these devices being subject to the labeling requirements applicable to Category I radio apparatus set out in RSP-100. However, compliance of such Category II radio apparatus with the applicable user manual, testing and reporting requirements set out in this RSS-216 Standard is mandatory.