

International Telecommunication Union

**ITU-R**  
Radiocommunication Sector of ITU

**Recommendation ITU-R SM.2103-0**  
(09/2017)

**Global harmonization of short-range  
devices categories**

**SM Series**  
**Spectrum management**



## Foreword

The role of the Radiocommunication Sector is to ensure the rational, equitable, efficient and economical use of the radio-frequency spectrum by all radiocommunication services, including satellite services, and carry out studies without limit of frequency range on the basis of which Recommendations are adopted.

The regulatory and policy functions of the Radiocommunication Sector are performed by World and Regional Radiocommunication Conferences and Radiocommunication Assemblies supported by Study Groups.

## Policy on Intellectual Property Right (IPR)

ITU-R policy on IPR is described in the Common Patent Policy for ITU-T/ITU-R/ISO/IEC referenced in Annex 1 of Resolution ITU-R 1. Forms to be used for the submission of patent statements and licensing declarations by patent holders are available from <http://www.itu.int/ITU-R/go/patents/en> where the Guidelines for Implementation of the Common Patent Policy for ITU-T/ITU-R/ISO/IEC and the ITU-R patent information database can also be found.

### Series of ITU-R Recommendations

(Also available online at <http://www.itu.int/publ/R-REC/en>)

Series	Title
<b>BO</b>	Satellite delivery
<b>BR</b>	Recording for production, archival and play-out; film for television
<b>BS</b>	Broadcasting service (sound)
<b>BT</b>	Broadcasting service (television)
<b>F</b>	Fixed service
<b>M</b>	Mobile, radiodetermination, amateur and related satellite services
<b>P</b>	Radiowave propagation
<b>RA</b>	Radio astronomy
<b>RS</b>	Remote sensing systems
<b>S</b>	Fixed-satellite service
<b>SA</b>	Space applications and meteorology
<b>SF</b>	Frequency sharing and coordination between fixed-satellite and fixed service systems
<b>SM</b>	<b>Spectrum management</b>
<b>SNG</b>	Satellite news gathering
<b>TF</b>	Time signals and frequency standards emissions
<b>V</b>	Vocabulary and related subjects

*Note: This ITU-R Recommendation was approved in English under the procedure detailed in Resolution ITU-R 1.*

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## RECOMMENDATION ITU-R SM.2103-0

**Global harmonization of short-range devices categories**

(2017)

**Scope**

This Recommendation contains guidelines for the categories recommended for short-range devices (SRDs) requiring operation on a globally harmonized basis.

**Keywords**

Short range devices, Categories, Harmonization

**Abbreviations**

AIMD:	Active implantable medical device
EAS:	Electronic article surveillance
ID:	Identification
ISM:	Industrial, scientific and medical
ISO:	International Organization for Standardization
ITS:	Intelligent transport system
NFC:	Near field communication
RFID:	Radio frequency identification
SRD:	Short range device
ULP-AMI:	Ultra low power active medical implant
UWB:	Ultra-wideband

The ITU Radiocommunication Assembly,

*considering*

- a)* that the Radiocommunication Assembly 2015 approved Resolution ITU-R 54-2 – Studies to achieve harmonization for short-range devices;
- b)* that there is an increasing demand for and use of SRDs for a wide variety of applications throughout the world;
- c)* that SRD applications are not a defined radio service and do not require any specific frequency attribution to be able to operate;
- d)* that SRDs are not industrial, scientific and medical (ISM) applications as defined in No. **1.15** of the Radio Regulations (RR);
- e)* that by their nature, SRDs are being used on a worldwide basis, either as an independent device or as an integral part of other systems, and are often carried and used across national borders;
- f)* that some SRD categories, used in different regions of the world with different names, may refer to the same SRD equipment;
- g)* that some SRD categories are commonly used in many countries, while some other categories are used only regionally or individually in some countries;

- h)* that there are some regional efforts to harmonize the SRD categories which have similar technical characteristics and usage cases;
- i)* that SRD applications are increasing rapidly, which may result in many new and non-coordinated SRD categories,

*further considering*

that SRDs can be carried and used by individuals across national boundaries with non-recognizable SRD categories, which may cause difficulties in some countries,

*noting*

- a)* that the ITU Workshop on SRD/UWB, held on 3 June 2014, recognized the importance of ITU-R activities for further development of classifications of SRD applications in order to facilitate the global harmonization process;
- b)* that the responses to the questionnaire, developed by the ITU Workshop on SRD/UWB, indicated that it is beneficial to create an ITU-R Recommendation on the harmonization of the SRD categories, and that the result of this would enable a better regional and global harmonization of the frequency use and mutual recognition of standards for SRD applications in a further step;
- c)* that Resolution ITU-R 54-2 states that the ITU-R should continue its studies to enable implementation of advanced technologies for SRDs, thereby in particular focusing on a strategy for the future;
- d)* that frequency ranges for global or regional harmonization of SRDs are included in Recommendation ITU-R SM.1896;
- e)* that frequency ranges, power levels and other technical and operating parameters commonly used by SRDs are listed in Report ITU-R SM.2153 – Technical and operating parameters and spectrum use for short-range radiocommunication devices,

*recognizing*

- a)* that there are a number of benefits of global harmonization of SRD categories for end users, manufacturers and regulators, such as:
- a broader manufacturing base and increased volume of devices, resulting in economies of scale and equipment availability;
  - improved equipment standardisation;
- b)* that the harmonized categorisation of the SRD applications could help for a better global identification of frequency ranges of the SRD equipment;
- c)* that administrations will also continue to have requirements for SRDs that do not require operation on a global harmonized basis;
- d)* that in addition to any harmonized SRD applications, administrations continue to develop non-harmonized regulations appropriate to their specific SRD requirements,

*recommends*

- 1** that for SRDs requiring operation on a global harmonized basis, the categories as specified in Annex 1 may be considered, if appropriate;
- 2** that SRDs falling into the categories specified may also be implemented by administrations on a non-harmonized basis as appropriate.

## Annex 1

### SRD Categories for global harmonization

#### 1 Introduction

Many SRD applications and the frequency bands in which they are deployed are described in Report ITU-R SM.2153 – Technical and operating parameters and spectrum use for short-range radiocommunication devices. Report ITU-R SM.2153 also refers to SRD categories. However, these categories are not descriptive but rather informative. It is indicated in Chapter 3 of the report that:

“Due to the many different applications provided by these devices, no description can be exhaustive, however, the following categories are amongst those regarded SRDs:

- Telecommand.
- Telemetry.
- Voice and video.
- Equipment for detecting avalanche victims.
- Broadband radio local area networks.
- Railway applications.
- Automatic vehicle identification.
- Road transport and traffic telematics.
- Equipment for detecting movement and equipment for alert.
- Alarms.
- Model control.
- Inductive applications.
- Radio microphones.
- RF identification systems.
- Ultra low power active medical implant.
- Wireless audio applications
- RF (radar) level gauges.

In addition, other applications may include amongst others SRDs using ultra-wideband technology that can be used for communications, measurement, location determination, imaging, surveillance and medical systems; near-field communications; white space devices; home automation; metering and devices for smart and sustainable cities.

These categories are not harmonized and therefore further studies may need to be undertaken in ITU-R to determine whether global or regional harmonization of these categories is feasible, given that there are many SRD applications (such as those operating across national borders) that would benefit from worldwide harmonization.

Following applications of such SRDs, operating across borders, could be mentioned amongst others: Medical applications; SRD applications used inside and outside aircrafts; SRDs for supporting ID cards; some Intelligent Transport System (ITS) applications; RFID applications for luggage handling systems in airports, item management, logistics, livestock, electronic article surveillance (EAS) and near field communication (NFC). ISO and other international standardization bodies have developed standards for many of these applications.

There is no decision within ITU-R yet on how to categorize these SRD applications on a global basis and the differences in spectrum access conditions and technical rules for the devices which could be covered by the same category may increase the costs to consumers of SRDs. Common SRD categories, as well as common frequency bands and technical rules for the devices in the same category, should be developed in ITU-R Recommendations and Reports as guidance for national administrations.

## 2 SRD Categories for global harmonization

SRD Category	Definition	Implementation issues
Non-specific SRD applications	Category open to any SRD applications	Non-specific SRD applications can avoid fragmentation of spectrum use and foster innovation
SRD for transport and traffic telematics purposes	SRD applications used in the field of transport and traffic telematics (road, rail, water and air, depending on the relevant technical restrictions), traffic management, navigation and mobility management. Typical applications are used for interfaces between different modes of transport, communication between vehicles (e.g. car-to-car), between vehicles and fixed locations (e.g. car-to-infrastructure), communication from and to users as well as radar system installations	Sharing studies normally considered the compatibility of ground based applications only
SRD for radio determination purposes	SRD radiodetermination applications including equipment for detecting movement and alert. Radiodetermination is defined as the determination of the position, velocity and/or other characteristics of an object, or the obtaining of information relating to these parameters	SRD radiodetermination equipment typically conducts measurements to obtain such characteristics. Any kind of point-to-point or point-to-multipoint radio communications are outside of this definition
SRD for wireless alarms	SRD applications for wireless alarms including alarms for security and safety	An alarm system is a device which uses radio communication to alert to a system or a person, as a main functionality, at a distant location when a problem or a specific situation occurs
SRD for model control	SRD application of model control equipment, which is solely for the purpose of controlling the movement of the model, in the air, on land or over or under the water surface.	National regulations normally include weight and height above ground limits for flying models

SRD Category	Definition	Implementation issues
Radio microphone applications, audio applications including aids for the hearing impaired under licence-exempt regulation	Radio microphone applications (also referred to as wireless microphones or cordless microphones) including aids for the hearing impaired (also referred to as assistive listening devices). Radio microphones are small, low power (typically 50 mW or less) transmitters designed to be worn on the body, or hand held, for the transmission of sound. The receivers are more tailored to specific uses and may range from small and portable to rack mounted modules as part of a multichannel system. They may cover professional and consumer radio microphones, both hand-held and body-worn, and aids for the hearing impaired. Because of the difficulty in determining harmonized frequency bands for radio microphones, frequency band limits should be regarded as tuning ranges within which a device can be designated to operate.	Individual authorizations may be required for radio microphone applications with higher emission levels
Radio Frequency Identification applications (RFID)	Radio frequency identification (RFID) applications include for example automatic article identification, asset tracking, alarm systems, waste management, personal identification, access control, proximity sensors, anti-theft systems, location systems, data transfer to handheld devices and wireless control systems.  The RFID technology enables all kinds of networked application fields and scenarios, often also described as the “internet of things” or “machine-to-machine communications” and is application neutral.  RFID systems are typically used to track, identify and collect/carry data relating to animate or inanimate objects to which tags are attached. The tags may be either battery-less, or battery assisted or battery powered. The responses from the tags are validated by its interrogator and passed to its host system.	It is suggested to keep the RFID definition as broad as possible which includes all kind of tag/interrogator based systems

<b>SRD Category</b>	<b>Definition</b>	<b>Implementation issues</b>
Ultra low power active medical implant	<p>SRD applications for ultra low power active medical implant (ULP-AMI) are the radio part of active implantable medical device (AIMD). And AIMD is any active medical device which is intended to be totally or partially introduced, surgically, into the human body or by medical invention into a natural orifice, and which is intended to remain after procedure.</p> <p>ULP-AMI is typically used to support and improve the quality of people's lives. Active implants perform an expanding variety of therapeutic functions: regulating heart rates (via pacing and/or defibrillation), controlling pain, administering pharmaceuticals, controlling incontinence, and treating neurological tremors to name just a few.</p>	<p>ULP-AMI are inherently portable. Patients travel around the world and can be far from their primary physician when an emergency arises and the need for device communication occurs.</p>

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