



CEPT Report 85

In response to the EC Permanent Mandate on the

“Annual update of the technical annex of the Commission Decision on the technical harmonisation of radio spectrum for use by short range devices”

approved 8 March 2024

0 EXECUTIVE SUMMARY

This Report describes the proposed ninth update of the technical annex to the EC Decisions on the technical harmonisation of radio spectrum for use by Short Range Devices (SRD) and has been developed in the 2022-2024 timeframe by the European Conference of Postal and Telecommunications Administrations (CEPT) in response to the Permanent Mandate to CEPT regarding the annual update of the technical annex of the Commission Decision on the technical harmonisation of radio spectrum for use by short range devices.

As part of the ninth update, the changes being proposed to the technical annex are presented in Annex 3 and Annex 4:

Task a. Consider the bands recently added or currently under discussion for addition to ERC Recommendation 70-03 [1] with a potential for EU harmonisation and for potential inclusion in the next update of the SRD Decision 2006/771/EC [7]

For the SRD Decision 2006/771/EC (as amended), it is proposed:

- to reinstate the two entries related to animal implants below 20 MHz;
- to add two new entries in the frequency range 69.8-79.9 GHz and 76.5-80.5 GHz for security scanners;
- to add a new entry in the frequency range 76-77 GHz for HD-GBSAR in accordance with ECC Decision (21)02 [24] and to add a definition for GBSAR systems.

For the Decision (EU) 2018/1538 [9] (as amended), it is proposed:

- to extend the harmonisation of 25 mW non-specific SRD in data networks down to 916.1 MHz;
- to extend the harmonisation of 25 mW wideband data transmission devices down to 916.4 MHz.

Task b. Review terminology and definitions contained in both SRD Decisions 2006/771/EC and (EU) 2018/1538 (as amended) with the aim to closely align, as appropriate, with the terminology used in ERC Recommendation 70-03 and to provide more clarity, as appropriate, with respect to the use of the relevant technical terms used in the SRD legislative framework

This includes re-assessing the technical parameters, in particular related to 'other usage restrictions' of the relevant SRD categories in both SRD Decisions 2006/771/EC (as amended) and (EU) 2018/1538 (as amended).

For the SRD Decision 2006/771/EC (as amended), it is proposed:

- to align, correct, simplify or clarify the presentation of the technical conditions throughout the entries (e.g. channel spacing requirement replaced by bandwidth requirement where appropriate, "may also be used" replaced by "applies", etc.);
- to complement the technical conditions for entry 17 on inductive RFID in 400-600 kHz, with elements which have been overlooked;
- to correct the technical conditions for entry 59 related to active medical implants in 2483.5-2500 MHz;
- to withdraw the power density requirement for entry 44a in 433.05-434.79 MHz, and the specific provisions related to voice and video applications in the 433 MHz frequency range (entries 44a and 45c) and in the 869.7-870 MHz frequency range (entry 56a);
- to replace the category "high duty cycle / continuous transmission devices" by the new category "Audio PMSE devices";
- to create three entries for audio PMSE devices in the 800 MHz and 1800 MHz MFCN duplex gaps, while withdrawing Decision 2014/641/EU which would become obsolete;
- to withdraw the channel spacing requirement, which has become obsolete, for ALD in entries 37a, 39a and 82;
- to move entry 36 on low power FM transmitters into the "Non-specific SRD" category;
- to replace the category "low duty cycle / high reliability devices" by the new category "Reliable alarm devices".

Task c. Investigate, as appropriate, the development of basic solutions for spectrum sharing and relevant mitigation techniques (e.g. duty cycle mechanisms, channelling and/or channel access and occupational rules), in a technology neutral way, in order to address relevant requirements of both SRD Decisions 2006/771/EC and (EU) 2018/1538 (as amended)

Some contributions for further work under task c) had been received and these proposals were discussed and reviewed, but no agreement could be reached on any future work, especially in relation to having a focus on the 2400-2483.5 MHz band.

CEPT proposes to the European Commission not to include any further requests related to this task in the next guidance letter. This would not prevent CEPT from making proposals would there be new developments on this subject.

Task d. Investigate opportunities for cognitive-radio enabled SRD where rewarding principles could be introduced taking, as appropriate, into account relevant requests from stakeholders

No contribution for further work under task d) has been received since several updates of the EC Decision on SRD. CEPT proposes to the European Commission not to include any further requests related to this task in the next guidance letter. This would not prevent CEPT from making proposals would there be new developments on this subject.

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LIST OF ABBREVIATIONS

Abbreviation	Explanation
AFA	Adaptive Frequency Agility
ALD	Assistive Listening Device
CEPT	European Conference of Postal and Telecommunications Administrations
DC	Duty Cycle
EC	European Commission
ECC	Electronic Communications Committee
e.i.r.p.	Equivalent isotropically radiated power
e.r.p.	Effective radiated power
EN	European Standard
ERC	European Radiocommunications Committee
ETSI	European Telecommunications Standards Institute
EU	European Union
FHSS	Frequency Hopping Spread Spectrum
FM	Frequency Modulation
GBSAR	Ground Based Synthetic Aperture Radar
HD-GBSAR	High Definition GBSAR
ITS	Intelligent Transport Systems
LBT	Listen Before Talk
NAP	Network Access Point
RED	Directive 2014/53/EU - Radio Equipment Directive
RFID	Radio Frequency Identification
SRD	Short Range Devices
ULP-AID	Ultra-Low Power - Animal Implant Devices
ULP-AMI	Ultra-Low Power - Active Medical Implants
WG FM	Working Group Frequency Management

1 INTRODUCTION

This Report has been developed in 2022-2024 by the European Conference of Postal and Telecommunications Administrations (CEPT) in response to the Permanent Mandate to CEPT regarding the annual update of the technical annex of the Commission Decision on the technical harmonisation of radio spectrum for use by short range devices.

Pursuant to Article 4 of the Radio Spectrum Decision, the Commission may issue mandates to the CEPT for the development of technical implementing measures with a view to ensuring harmonised conditions for the availability and efficient use of radio spectrum; such mandates shall set the task to be performed and the timetable thereof.

This Report for the ninth update of the technical annex of the SRD Decision 2006/771/EC [7] and of the technical annex of the SRD Decision (EU) 2018/1538 [9] has been developed within SRD/MG and approved by WG FM and the ECC with contributions from administrations, ETSI and industry. It was submitted to the European Commission in accordance with the timescales of the Guidance to CEPT (see Annex 2).

2 GENERAL PRINCIPLES

This Report takes into account a number of general principles. Most of these principles are set out in ECC Reports or previous CEPT Reports on updates of the technical annex of the EC SRD Decision. References to the relevant reports are made to avoid copying of material.

SRD strategy: the SRD strategy is described in CEPT Report 14 [3], and a detailed explanation is in CEPT Report 26, section 3.1 [4]. One important element from the strategy is not to create new application specific frequency designations, i.e. use existing SRD bands on the basis of equal access to spectrum (no exclusive access to spectrum) as much as possible. In addition to this, ERC Recommendation 70-03, appendix 1 [1] provides an indication of the level of harmonisation of frequency bands for usage by SRD within CEPT countries. The terminology “soft harmonisation” refers to situations when considering the removal of as many as possible of the national barriers within existing SRD designations whilst ensuring the protection of the radio services. This means the inclusion in ERC Recommendation 70-03 first and then achieves the status of “harmonised” or “nearly harmonised”. The same applies for the introduction of “new” (application neutral) frequency ranges.

Application and technology neutrality: The debate on application and technology neutrality for SRD is set out in CEPT Report 44 [5] and ECC Report 181 [6]. The consensus is that application neutrality in ERC Recommendation 70-03 should be strived for as much as possible, but technology neutrality is in conflict with spectrum efficiency. This should, besides the need for protection of primary services, be the main argument to have technology specific requirements for different frequency ranges.

Predictable sharing environment: For intra-SRD sharing, this is the minimum set of technical regulatory parameters with which the Harmonised European Standard addresses the sharing question. ECC compatibility studies in combination with the required technical application performance provide the technical base for this regulation. Traditionally, the definition of an application category was used for this; nowadays CEPT works more towards a technical spectrum access definition. CEPT Report 44, section 5, provides a detailed explanation.

Requirements and technical parameters: CEPT will provide the Commission with only those requirements and technical parameters considered essential to meet the objectives of equitable and efficient sharing of spectrum by SRD as formulated in the Radio Equipment Directive [2].

Spectrum efficiency for SRD as a goal: Spectrum efficiency for SRD is inter-alia described in ECC Report 181. ECC Report 181 outlines how to achieve good group spectrum efficiency by describing the sharing environment with a minimum set of technical parameters. The EC SRD Decision and ERC Recommendation 70-03 traditionally have their main focus on the physical layer, leaving the rest to be described in Harmonised European Standards. As described in CEPT Report 14, intra-SRD sharing is addressed in Harmonised European Standards while the regulation has to ensure an equal access to the spectrum.

3 BANDS RECENTLY REVIEWED OR ADDED OR CURRENTLY UNDER DISCUSSION FOR ADDITION TO ERC RECOMMENDATION 70-03

3.1 ACTIVE ANIMAL IMPLANTS BELOW 20 MHZ

This proposal relates to the SRD Decision 2006/771/EC (as amended) [7] [8].

The entries dealing with animal implants were deleted following CEPT Report 59 [12] since it was understood that animal implants were compliant with entries 15 and 21. Later ETSI alerted CEPT that technical conditions of these two entries did not allow to place on the market these products. The actual bandwidth used by animal implants was narrower than what had been assumed at the time of writing CEPT Report 59, meaning that the products did not fulfil the power density limit of entries 15 and 21.

Hence CEPT proposes to reinstate the entries which had been withdrawn with the same technical conditions and the same band numbers.

Table 1: Regulatory parameters for animal implants as per ERC Recommendation 70-03, annex 12

Frequency Band	Power / Magnetic Field	Spectrum access and mitigation requirements	Modulation / occupied bandwidth	Notes	
e	315-600 kHz	-5 dBµA/m at 10m	≤ 10% duty cycle	Not specified	For animal implants The frequency band is also identified in Annex 9.
f	12.5-20 MHz	-7 dBµA/m at 10m per 10 kHz	≤ 10% duty cycle	Not specified	For Ultra Low Power active Animal Implants Devices (ULP-AID), limited to indoor use only The frequency band is also identified in Annex 9.

3.2 SRD IN DATA NETWORKS IN 915-919.4 MHZ

This proposal relates to the SRD Decision (EU) 2018/1538 (as amended) [9] [10].

3.2.1 25 mW non-specific SRD in data networks

CEPT proposes to extend the EU harmonisation of 25 mW non-specific SRD in data networks (entry 5) down to 916.1 MHz with the same technical conditions, in order to ensure a safe harbour for these devices.

3.2.2 Wideband data transmission SRD in data networks

CEPT proposes to extend the EU harmonisation of 25 mW wideband data transmission devices in data networks (entry 2) down to 916.4 MHz with the same technical conditions, in order to ensure a safe harbour for these devices. These devices will benefit from an additional channel of 1 MHz.

3.3 SECURITY SCANNERS IN 60-82 GHZ

This proposal relates to the SRD Decision 2006/771/EC (as amended) [7] [8].

The possible EU harmonisation of this application follows technical studies in ECC Report 344. CEPT proposes to create two new entries 97 and 99 to harmonise this application at EU level under the category “Radio determination devices” and to introduce a new definition [I] for security scanners.

3.4 HD-GBSAR IN 76-77 GHZ

This proposal relates to the SRD Decision 2006/771/EC (as amended) [7] [8]. The possible EU harmonisation of this application was identified as a possible follow-up of CEPT Report 77 [17].

Following the publication of ECC Decision (21)02 [24] on HD-GBSAR in 76-77 GHz, CEPT proposes to create a new entry 98 to harmonise this application at EU level under the category "Radio determination devices" as for entry 65, which deals with GBSAR applications.

3.5 RADIODETERMINATION APPLICATIONS IN 116-260 GHZ

A separate CEPT Report proposes the EU harmonisation of radiodetermination applications in the 116-260 GHz frequency range under the permanent Mandate on the annual update of the EC Decision on SRD (see CEPT Report 86).

4 REVIEW TERMINOLOGY AND DEFINITIONS AND RE-ASSESS THE TECHNICAL PARAMETERS

4.1 ALIGNMENT OF THE PRESENTATION OF THE TECHNICAL CONDITIONS BETWEEN ENTRIES

This proposal relates to the SRD Decision 2006/771/EC (as amended) [7] [8].

Throughout the technical annex of the two SRD Decisions, some editorial amendments are proposed in order to harmonise the presentation of the technical conditions. For instance, for the bandwidth requirements, “up to” or “max” are replaced by “≤” and, for the inductive field requirements, “m” is replaced by “metres”.

Redundant text for active medical implant devices is deleted.

In entry 79b, exclusion zones around radio astronomy sites were overlooked and are now added (as per ECC Decision (16)01 [20]), since there are already mentioned in entries 63, 67 and 78a (as per ECC Decision (11)02 [21]).

4.2 INDUCTIVE RFID IN 400-600 KHZ

This proposal relates to entry 17 in the SRD Decision 2006/771/EC (as amended) [7] [8].

CEPT noted that entry 17 in the EC Decision does not include all the technical parameters set out in ERC Recommendation 70-03, annex 9 entry ‘d’ [1]. They are limited to “-8 dBμA/m at 10m” since its inclusion in the SRD Decision in 2007. CEPT understands this has been overlooked at that time.

As suggested by the guidance letter on the 9th update, CEPT proposes to align entry 17 with ERC Recommendation 70-03, annex 9 entry ‘d’.

Considering that the ETSI harmonised standard (ETSI EN 300 330, Table J.2 [15]) includes all parameters from ERC Recommendation 70-03, no new constraint is actually added.

Table 1: Regulatory parameters for animal implants as per ERC Recommendation 70-03, annex 9

Frequency Band	Power / Magnetic Field	Spectrum access and mitigation requirements	Modulation / occupied bandwidth	Notes
d 400-600 kHz	-5 dBμA/m at 10m in total -8 dBμA/m at 10m per 10 kHz	No requirement	Not specified	For RFID only. In case of external antennas only loop coil antennas may be employed.

4.3 NON-SPECIFIC SRD IN 169.4-169.475 MHZ

This proposal relates to entry 37c in the SRD Decision 2006/771/EC (as amended) [7] [8].

Following a review of the 169.4 MHz band, CEPT proposes to withdraw the channel spacing requirement for non-specific SRD in entry 37c, since it has no useful regulatory purpose.

4.4 NON-SPECIFIC SRD IN 863-870 MHZ

This proposal relates to entries 46a, 47, 48, 50, 54 and 56b in the SRD Decision 2006/771/EC (as amended) [7] [8].

For these entries, CEPT proposes to replace “may also be used” by “applies” in order to be compliant with ERC Recommendation 70-03, annex 1 [1] where the duty cycle applies when LBT+AFA is not used. This is not an additional constraint since these changes are already part of the ETSI Harmonised Standard EN 300 220-2 [14]. These technical conditions are intended to guarantee coexistence between SRD applications in those bands.

4.5 ACTIVE MEDICAL IMPLANT DEVICES IN 401-406 MHZ

This proposal relates to entries 41, 42 and 43 in the SRD Decision 2006/771/EC (as amended) [7] [8].

As for the entries in 863-870 MHz, CEPT proposes to replace “may also be used” by “applies” for entries 41 and 43. This is compliant with ETSI Harmonised Standard EN 302 537 [16] (referenced in ERC Decision (01)17 [13]); thus, it is not an additional constraint. These technical conditions are intended to guarantee coexistence between SRD applications in those bands.

Furthermore, CEPT proposes to simplify the channel spacing and bandwidth requirements for entries 41, 42 and 43. This change has no impact on the ETSI EN 302 537 [16] and ETSI EN 301 839 [22] and maintains technology neutrality.

4.6 ACTIVE MEDICAL IMPLANTS IN 2483.5-2500 MHZ

This proposal relates to entry 59 in the SRD Decision 2006/771/EC (as amended) [7] [8].

The requirements in ERC Recommendation 70-03, annex 12 [1], the EC Decision on SRD and the ETSI EN 301 559 [19] are not sufficiently aligned: confusion between channel spacing and bandwidth, lack of clarity about the use of the whole band for maintenance of the communications session.

CEPT proposes the following corrections and clarifications: “channel spacing” is replaced by “bandwidth”; the circumstances when the whole frequency band may be used is clarified; the duty cycle limit is actually applicable only to peripherals. These changes have no impact on the ETSI EN 301 559 and maintains technology neutrality.

4.7 NON-SPECIFIC SRD IN 433.05-434.79 MHZ

This proposal relates to entries 44a and 45c in the SRD Decision 2006/771/EC (as amended) [7] [8]. The review of this band was identified as a possible follow-up of CEPT Report 77 [17].

Following consultation with ETSI, the following elements appeared to have become obsolete:

- in entry 44a, the power density requirement has no more added value and can be withdrawn;
- the specific provisions related to voice and video applications were related to analogue systems which have disappeared, meaning they can be withdrawn from entries 44a and 45c.

4.8 NON-SPECIFIC SRD IN 869.7-870 MHZ

This proposal relates to entry 56a in the SRD Decision 2006/771/EC (as amended) [7] [8].

Entry 56a shares the same provisions related to voice and video applications as entries 44a and 45c. The review done for the 433 MHz showed that these provisions are no longer needed and can be withdrawn. The same reasoning and conclusion apply to the 869.7-870 MHz band.

4.9 BETTER ALIGNMENT WITH ERC RECOMMENDATION 70-03

In its guidance letter, the European Commission invites CEPT to “*review terminology and definitions contained in both SRD Decisions 2006/771/EC and (EU) 2018/1538 (as amended) with the aim to closely align, as*

appropriate, with the terminology used in ERC Recommendation 70-03 and to provide more clarity, as appropriate, with respect to the use of the relevant technical terms used in the SRD legislative framework”.

ERC Recommendation 70-03 is organised in annexes, each of them targeted to specific radio applications or use cases. When developing both SRD Decisions 2006/771/EC and (EU) 2018/1538 (as amended), the principle was to reflect this approach by defining “categories of short-range devices”. But two categories do not fulfil this principle: “high duty cycle / continuous transmission devices” and “low duty cycle / high reliability devices”.

4.9.1 ALD, radio microphones and streaming devices

This proposal relates to entries 36, 37a, 39a, 82 and 46b in the SRD Decision 2006/771/EC (as amended) [7] [8] and to Decision 2014/641/EU [11] on wireless audio programme making and special events equipment in 823-832 MHz and 1785-1805 MHz on a “non-interference and non-protection basis”.

First, ERC Recommendation 70-03, annex 10 [1] has been simplified:

- simplification of the technical conditions for radio microphones in the bands 821-832 MHz (entries ‘f3’ and ‘f4’), 863-865 MHz (entry ‘g’) and 1785-1805 MHz (entry ‘j’);
- review and streamlining of terminology resulting in the withdrawal of the term “wireless audio and multimedia streaming systems”;
- withdrawal of the channel spacing requirements for assistive listening devices (ALD).

Second, the category “high duty cycle / continuous transmission devices” is not well defined: only examples are provided in the Table 1 of the technical annex of the SRD Decision 2006/771/EC (as amended). These examples correspond to the applications other than ALD listed in ERC Recommendation 70-03, annex 10. In the Decision 2014/641/EU dealing with audio PMSE equipment, including radio microphones, in-ear monitor systems and audio links (see Article 2(1)), there is no mention of “high duty cycle / continuous transmission” characteristics.

Last, ALD and low power FM transmitters are not part of the PMSE applications.

In order to enhance the alignment with ERC Recommendation 70-03 and a more readable SRD Decision, CEPT proposes:

- to replace the category “high duty cycle / continuous transmission devices” by the new category “Audio PMSE devices”;
- to amend accordingly entry 46b;
- to create entries 94 for 821.5-826 MHz, 95 for 826-832 MHz and 96 for 1785-1804.8 MHz under this new category with technical conditions as per ERC Recommendation 70-03, annex 10, and consequently withdraw Decision 2014/641/EU which would become obsolete;
- withdraw for entries 37a, 39a and 82 related to ALD the channel spacing requirement, which has become obsolete;
- to move entry 36 on low power FM transmitters into the “Non-specific SRD” category, and to replace “channel spacing” by “bandwidth”, which has always been corresponding to the actual use as per the ETSI EN 301 357 [18].

These amendments maintain technology neutrality: the technical conditions do not preclude any technology which could be used by the concerned audio applications.

If required, Article 3(2) of Decision 2014/641/EU, where Member States shall designate and make available at least 30 MHz of additional spectrum for wireless audio PMSE, can be replicated as a new Article in the SRD Decision 2006/771/EC (as amended).

4.9.2 Alarms

This proposal relates to entries 49, 51, 52, 53 and 55 in the SRD Decision 2006/771/EC (as amended) [7] [8].

The following points have been considered:

- The category “low duty cycle / high reliability devices” is not well defined: only examples are provided in the Table 1 of the technical annex of the SRD Decision 2006/771/EC (as amended). These examples correspond to alarms as listed in ERC Recommendation 70-03, annex 7 [1];
- Alarms are also listed among the typical uses of non-specific SRD in ERC Recommendation 70-03, annex 1;
- ETSI clarified to CEPT that fire alarms and social alarms do still need dedicated frequency bands with their specific technical conditions to ensure their duty;
- The current category name and description highlight that “highly reliable spectrum access and transmissions” are sought.

Based on the above mentioned elements, it is concluded that the category “low duty cycle / high reliability devices” in the EC Decision on SRD is not relevant. In order to enhance the alignment with ERC Recommendation 70-03 and have a more readable EC Decision on SRD, CEPT proposes:

- to replace the category “low duty cycle / high reliability devices” by the new category “Reliable alarm devices”, whose definition is based on current note [e];
- to amend accordingly entries 49, 51, 52, 53 and 55.

These amendments maintain technology neutrality and have no technical impact on the ETSI EN 300 220-3-1 and ETSI EN 300 220-3-2. This concludes the follow-up actions identified in CEPT Reports 44 and 59.

4.10 NON-SAFETY ITS IN 5855-5875 MHZ

This proposal relates to entries 88 and 89 in the SRD Decision 2006/771/EC (as amended) [7] [8].

Following the editorial update of ECC Recommendation (08)01 [23] on non-safety ITS in 5855-5875 MHz related to power control requirements on ITS devices, the same changes are proposed for entries 88 and 89.

5 INVESTIGATE, AS APPROPRIATE, THE DEVELOPMENT OF BASIC SOLUTIONS FOR SPECTRUM SHARING AND RELEVANT MITIGATION TECHNIQUES

Some contributions for further work under task c) had been received and these proposals were discussed and reviewed, but no agreement could be reached on any future work, especially in relation to having a focus on the 2400-2483.5 MHz band.

CEPT proposes to the European Commission not to include any further requests related to this task in the next guidance letter. This would not prevent CEPT from making proposals would there be new developments on this subject.

6 INVESTIGATE OPPORTUNITIES FOR COGNITIVE-RADIO ENABLED SRD WHERE REWARDING PRINCIPLES COULD BE INTRODUCED TAKING, AS APPROPRIATE, INTO ACCOUNT RELEVANT REQUESTS FROM STAKEHOLDERS

No contribution for further work under task d) has been received since several updates of the EC Decision on SRD. CEPT proposes to the European Commission not to include any further requests related to this task in the next guidance letter. This would not prevent CEPT from making proposals would there be new developments on this subject.

7 OVERVIEW OF CEPT PROPOSAL

As part of the ninth update, the changes being proposed to the technical annex are presented in Annex 3 and Annex 4:

Task a. Consider the bands recently added or currently under discussion for addition to ERC Recommendation 70-03 [1] with a potential for EU harmonisation and for potential inclusion in the next update of the SRD Decision 2006/771/EC [7]

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- to reinstate the two entries related to animal implants below 20 MHz;
- to add a new entry in the frequency range 76-77 GHz for HD-GBSAR in accordance with ECC Decision (21)02 [24] and to add a definition for GBSAR systems;
- To add two new entries in the frequency range 69.8-79.9 GHz and 76.5-80.5 GHz for security scanners.

For the Decision (EU) 2018/1538 (as amended), it is proposed:

- to extend the harmonisation of 25 mW non-specific SRD in data networks down to 916.1 MHz;
- to extend the harmonisation of 25 mW wideband data transmission devices down to 916.4 MHz.

Task b. Review terminology and definitions contained in both SRD Decisions 2006/771/EC and (EU) 2018/1538 [9] (as amended) with the aim to closely align, as appropriate, with the terminology used in ERC Recommendation 70-03 and to provide more clarity, as appropriate, with respect to the use of the relevant technical terms used in the SRD legislative framework

This includes re-assessing the technical parameters, in particular related to 'other usage restrictions' of the relevant SRD categories in both SRD Decisions 2006/771/EC (as amended) and (EU) 2018/1538 (as amended).

For the SRD Decision 2006/771/EC (as amended), it is proposed:

- to align, correct, simplify or clarify the presentation of the technical conditions throughout the entries (e.g. channel spacing requirement replaced by bandwidth requirement where appropriate, "may also be used" replaced by "applies", etc.);
- to complement the technical conditions for entry 17 on inductive RFID in 400-600 kHz, with elements which have been overlooked;
- to correct the technical conditions for entry 59 related to active medical implants in 2483.5-2500 MHz;
- to withdraw the power density requirement for entry 44a in 433.05-434.79 MHz, and the specific provisions related to voice and video applications in the 433 MHz frequency range (entries 44a and 45c) and in the 869.7-870 MHz frequency range (entry 56a);
- to replace the category "high duty cycle / continuous transmission devices" by the new category "Audio PMSE devices";
- to create three entries for audio PMSE devices in the 800 MHz and 1800 MHz MFCN duplex gaps, while withdrawing Decision 2014/641/EU which would become obsolete;
- to withdraw the channel spacing requirement, which has become obsolete, for ALD in entries 37a, 39a and 82;
- to move entry 36 on low power FM transmitters into the "Non-specific SRD" category;
- to replace the category "low duty cycle / high reliability devices" by the new category "Reliable alarm devices".

Task c. Investigate, as appropriate, the development of basic solutions for spectrum sharing and relevant mitigation techniques (e.g. duty cycle mechanisms, channelling and/or channel access and occupational rules), in a technology neutral way, in order to address relevant requirements of both SRD Decisions 2006/771/EC and (EU) 2018/1538 (as amended)

Some contributions for further work under task c) had been received and these proposals were discussed and reviewed, but no agreement could be reached on any future work, especially in relation to having a focus on the 2400-2483.5 MHz band.

CEPT proposes to the European Commission not to include any further requests related to this task in the next guidance letter. This would not prevent CEPT from making proposals would there be new developments on this subject.

Task d. Investigate opportunities for cognitive-radio enabled SRD where rewarding principles could be introduced taking, as appropriate, into account relevant requests from stakeholders

No contribution for further work under task d) has been received since several updates of the EC Decision on SRD. CEPT proposes to the European Commission not to include any further requests related to this task in the next guidance letter. This would not prevent CEPT from making proposals would there be new developments on this subject.

8 WORK ITEMS FOR FURTHER INVESTIGATIONS (TENTH UPDATE)

The following items for possible work items that may be included as part of the Tenth Update:

- Grandfathering and obsolete entries
 - Some entries in ERC Recommendation 70-03 and in the EC Decision on SRD may become obsolete at some point in time. CEPT has started to develop a new Annex B to ERC Recommendation 70-03 which would contain references to legacy bands that have been removed from the Annexes 1 to 13 of ERC Recommendation 70-03. Once done, CEPT will investigate how to deal with grandfathering in the EC Decision on SRD.
 - The first entries that may be concerned are non-specific SRD in 434.04-434.79 MHz (entry 45c) and ALD at 169.4 MHz (entries 37a and 39a).

ANNEX 1: GUIDANCE TO CEPT ON THE NEXT UPDATE OF THE SRD DECISIONS

A1.1 PERMANENT MANDATE ON UPDATING THE TECHNICAL ANNEX TO SRD DECISIONS (DECISION 2006/771/EC, DECISION (EU) 2018/1538)

This document provides the Commission services' guidance to CEPT for the next update of the technical annex to the Short Range Devices (SRD) Decisions – Decision 2006/771/EC and Decision 2018/1538/EU. Both Decisions are jointly referred to as the SRD Decisions. Such guidance is foreseen in the permanent Mandate to CEPT regarding the annual update of the technical annex of the Commission Decision 2006/771/EC on harmonisation of radio spectrum for use by short range devices¹. As guiding principles, the proposed evolution of the European regulatory framework for short-range devices should take into due consideration backward compatibility with current SRD systems in harmonised bands and relevant incumbent non-SRD usage, as well as efficient use of spectrum and spectrum sharing. The current guidance takes into account recommendations for further work under the next update which were formulated in the CEPT² Report 77.

A1.2 RECOMMENDED FOCUS FOR THE NEXT UPDATE

The CEPT regularly adds new entries to the ERC Recommendation 70-03 based on new spectrum demands expressed in the ETSI System Reference documents (SRdocs) and assessed in compatibility studies. The non-mandatory, flexible harmonisation at CEPT level within ERC Recommendation 70-03 is a beneficial source for potential future EU harmonisation. When CEPT identifies potential elements for EU harmonisation and is making proposals accordingly in response to this permanent SRD mandate, relevant entries from ERC 70-03 may be included, as appropriate, into the CEPT report which will be the basis for updating the SRD Decisions. This should lead to legally binding implementations across the EU in view of allowing manufacturers and users of SRDs reaping the benefits of the Digital Single Market.

The Commission invites CEPT to:

- a. *Consider the bands recently added or currently under discussion for addition to ERC Recommendation 70-03 with a potential for EU harmonisation and for potential inclusion in the next update of the SRD Decision 2006/771/EC;*

A comprehensive review of terminology and definitions should be undertaken with the aim to improve their clarity. As suggested by CEPT Report 77, this work item should be considered as a broader and more general follow-up on task b) from the 8th update. The above task is focussing on re-assessing the technical parameters, in particular related to 'other usage restrictions' of the relevant SRD categories in both SRD Decisions 2006/771/EC (as amended) and (EU) 2018/1538 (as amended).

The Commission invites CEPT to:

- b. *Review terminology and definitions contained in both SRD Decisions 2006/771/EC and (EU) 2018/1538 (as amended) with the aim to closely align, as appropriate, with the terminology used in ERC Recommendation 70-03 and to provide more clarity, as appropriate, with respect to the use of the relevant technical terms used in the SRD legislative framework;*

Radio spectrum resources are scarce and need to be used efficiently. Spectrum sharing is important in achieving this goal. Spectrum usage rules, i.e. radio interface specifications including spectrum sharing rules, fall under the competence of the spectrum managers. In the interest of promoting regulatory certainty, the technical

¹ RSCOM06-27 Rev (5 July 2006)

² CEPT Report 77 in response to the EC Permanent Mandate on the "Annual update of the technical annex of the Commission Decision on the technical harmonisation of radio spectrum for use by short-range devices, <https://docdb.cept.org/download/139> and RSCOM21-07.

conditions for spectrum sharing, resulting from CEPT studies should provide a clear framework for the development of harmonised standards by ETSI in order to implement the essential requirements of the equipment regulation, notably Article 3.2 of the Radio Equipment Directive.

The Commission invites CEPT to:

- c. Investigate, as appropriate, the development of basic solutions for spectrum sharing and relevant mitigation techniques (e.g. duty cycle mechanisms, channelling and/or channel access and occupational rules), in a technology neutral way, in order to address relevant requirements of both SRD Decisions 2006/771/EC and (EU) 2018/1538 (as amended);*

Radio spectrum resources can be shared in frequency, time and space. Cognitive techniques³, can be considered as a separate and specific category of sharing solutions, allowing for more efficient use of spectrum by sharing along all three above dimensions. In this context, cognitive-radio enabled SRDs could open new frequency bands for SRDs in the future. CEPT Report 59 contains an initial analysis of cognitive techniques for SRDs and concludes that such an approach to spectrum usage could be further encouraged by rewarding principles (e.g., increased duty cycle allowances when certain cognitive techniques are applied).

The Commission invites CEPT to:

- d. Investigate opportunities for cognitive-radio enabled SRDs where rewarding principles could be introduced taking, as appropriate, into account relevant requests from stakeholders;*

Concerning the various above tasks relating to Implementing Decision (EU) 2018/1538 (as amended), CEPT should take due consideration of the harmonised use of Railway Mobile Radio (RMR) in the paired frequency bands 874.4-880.0 MHz and 919.4-925.0 MHz subject to Commission Implementing Decision (EU) 2021/1730. When addressing these tasks, the coexistence and regulatory status, where relevant, between SRDs in the 874-874,4 MHz and 917,4-919,4 MHz frequency bands and RMR in the adjacent frequency bands 874.4-880.0 MHz and 919.4-925.0 MHz as well as the incumbent use in the bands covered by Implementing Decision (EU) 2018/1538 (as amended) shall be considered.

A1.3 ROADMAP FOR THE NEXT UPDATE CYCLE

1. ECC (November 2021): launch of the next update cycle. CEPT to start work on the update proposal pursuant to the permanent Mandate and the current guidance document.
2. ECC (June 2023): Approval for public consultation of the draft CEPT report.
3. RSC (July 2023): CEPT to submit its draft report (subject to public consultation) pursuant to the permanent Mandate. Commission services to examine the CEPT proposal for the amendment of the technical annex to the SRD Decisions.
4. RSC (March 2024): CEPT to submit its final report to function as basis of any subsequent draft Commission Implementing Decision updating the technical annex to Decision 2006/771/EC and draft Commission Implementing Decision updating the technical annex to Decision (EU) 2018/1538.

³ The terms "cognitive techniques" and "cognitive radio" are often understood as limited to sensing of other use only. In this context they are used with a broad meaning and further include other approaches such as geo-location databases, without prejudice to any specific solution.

ANNEX 2: PERMANENT MANDATE TO CEPT REGARDING THE ANNUAL UPDATE OF THE TECHNICAL ANNEX OF THE COMMISSION DECISION ON THE TECHNICAL HARMONISATION OF RADIO SPECTRUM FOR USE BY SHORT RANGE DEVICES

Title

Permanent Mandate to CEPT regarding the annual update of the technical annex of the Commission Decision on the technical harmonisation of radio spectrum for use by short range devices⁴.

Purpose

Pursuant to Article 4 of the Radio Spectrum Decision, the Commission may issue mandates to the CEPT for the development of technical implementing measures with a view to ensuring harmonised conditions for the availability and efficient use of radio spectrum; such mandates shall set the task to be performed and the timetable therefor.

Pursuant to this permanent Mandate, CEPT shall provide the Commission with a yearly report on needs for revising the technical annex of the Commission Decision on the technical harmonisation of radio spectrum for use by short range devices (SRDs).

The yearly proposal will serve as a basis for an amendment, when needed, of the technical annex of the Commission Decision on SRDs.

Justification

The Commission Decision for SRDs foresees a regular update of the list of frequencies, as well as their associated conditions of use. This update should be performed on a regular basis in order to take due account of the rapid technological and market developments prevailing in this area. This permanent Mandate to CEPT is to formalise the preparation of the yearly proposal by CEPT for updating the technical annex of Commission Decision on SRDs.

Objectives

In addition to the core objectives of the Decision itself, the aim of this permanent mandate is to provide relevant technical information necessary to:

- a) Modify, whenever appropriate, the technical conditions of use of the frequency bands included in the technical annex;
- b) Identify new frequency bands and/or new applications (types of SRDs) which should be added to the list included in the technical annex of the Decision in order to further the “Class I” equipment category and providing such equipment with legal certainty on EU level, thereby consolidating the Single Market through spectrum harmonisation;
- c) Remove frequency bands (and hence types of SRDs) from the list included in the technical annex, when required and duly justified (e.g. in case a particular use has become obsolete);
- d) Continuously improve the presentation of the technical annex to reflect best practices.

The European Commission may provide, on a yearly basis, input and orientation to CEPT reflecting EU policy priorities requiring special attention in the context of spectrum usage by SRDs. This input and orientation,

⁴ Commission Decision 2006/XX/EC on the technical harmonisation of radio spectrum for use by short range radio devices.

which aims at focussing the CEPT analysis, would be delivered in time to allow to be taken into account by CEPT when preparing the annual report with proposals for revising the technical annex.

The Commission, with the assistance of the Radio Spectrum Committee (RSC) pursuant to the Radio Spectrum Decision, may consider applying the results of this permanent Mandate in the European Union.

Order and Schedule

1. CEPT is hereby mandated to undertake all relevant work to meet the objectives stated above.
2. The CEPT is mandated to produce a yearly report to the European Commission including the proposed revision of the technical annex of the Commission Decision on SRDs. This report shall take into account the input and orientation given by the Commission if provided. The CEPT report shall be delivered in July of each year.
3. An indicative schedule of the process is given in table 1.
In implementing this mandate, the CEPT shall, where relevant, take the utmost account of Community law applicable, notably the RTTE Directive, 1999/5/EC, and to support the principles of technological neutrality, non-discrimination and proportionality.

Table 1 – **Schedule for review of SRD Decision** (revolving cycle)

The reference date of the annual cycle of revision of the technical annex of the Commission Decision on SRDs is July of each year at which time CEPT is expected to deliver its annual report containing the proposal for revising the technical annex of the Commission Decision on SRDs.

Year Y-1

November-December	Optional: input and orientation presented by the Commission to the RSC in view of formal transmission to CEPT by the end of year Y-1
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Year Y

July	CEPT to finalise the response to the Mandate for year Y and submit formally a report to the Commission.
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ANNEX 3: PROPOSED AMENDMENTS TO THE TECHNICAL ANNEX OF THE SRD DECISION 2006/771/EC

Frequency bands with corresponding harmonised technical conditions and implementation deadlines for short-range devices

Table 1 defines the scope of different categories of short-range devices (defined in Article 2(3)) to which this Decision applies. Table 2 specifies different combinations of frequency band and category of short-range devices, and the harmonised technical conditions for spectrum access and implementation deadlines applicable thereto.

General technical conditions applicable to all bands and short-range devices that fall within the scope of this Decision:

- Member States shall allow adjacent frequency bands set out in Table 2 to be used as a single frequency band provided the specific conditions of each of these adjacent frequency bands are met.
- Member States shall allow the usage of spectrum up to the **transmit power, field strength or power density** set out in Table 2. Pursuant to Article 3(3), they may impose less restrictive conditions, that is to say allow the use of spectrum with higher transmit power, field strength or power density, provided it does not reduce or compromise the appropriate coexistence between short-range devices in bands harmonised by this Decision.
- Member States may only impose the **additional parameters** (channelling and/or channel access and occupation rules) set out in Table 2, and shall not add other parameters or spectrum access and mitigation requirements. Less restrictive conditions pursuant to Article 3(3), means that Member States may completely omit these additional parameters in a given cell or allow higher values, provided that the appropriate sharing environment in the harmonised band is not compromised.
- Member States may only impose the **other usage restrictions** set out in Table 2 and shall not add additional usage restrictions. Since less restrictive conditions may be applied pursuant to Article 3(3), Member States may omit one or all of these restrictions, provided that the appropriate sharing environment in the harmonised band is not compromised.
- Less restrictive conditions pursuant to Article 3(3) shall apply without prejudice to Directive 2014/53/EU.

For the purposes of this Annex, the following **duty cycle** definition applies:

'**duty cycle**' means the ratio, expressed as a percentage, of $\Sigma(T_{on})/(T_{obs})$ where T_{on} is the "on" time of a single transmitter device and T_{obs} is the observation period. T_{on} is measured in an observation frequency band (F_{obs}). Unless otherwise specified in this technical annex, T_{obs} is a continuous one hour period and F_{obs} is the applicable frequency band in this technical annex. Less restrictive conditions within the meaning of Article 3(3), mean that Member States may allow a higher value for 'duty cycle'.

Table 1

Categories of short-range devices pursuant to Article 2(3) and their scope

Category of short-range devices	Scope
Non-specific short-range devices (SRD)	Covers all kinds of radio devices, regardless of the application or their purpose, which fulfil the technical conditions as specified for a given frequency band. Typical uses include telemetry, telecommand, alarms, data transmissions in general and other applications.
Active medical implant devices	Covers the radio part of active implantable medical devices that are intended to be fully or partially introduced, surgically or medically, into the human body or that of an animal, and where applicable their peripherals. Active implantable medical devices are defined in Council Directive 90/385/EEC ⁵ .
Assistive listening devices (ALD)	Covers radio communications systems that allow persons with hearing impairment to increase their listening capability. Typical system installations include one or more radio transmitters and one or more radio receivers.
Audio PMSE devices	Covers radio devices used for transmission of analogue or digital audio signals between a limited number of transmitters and receivers, such as radio microphones, in-ear monitors or audio links, used mainly for the production of broadcast programmes or private or public social or cultural events.
Inductive devices	Covers radio devices that use magnetic fields with inductive loop systems for near field communications and determination applications. This typically includes devices for car immobilisation, animal identification, alarm systems, cable detection, waste management, personal identification, wireless voice links, access control, proximity and metal sensors, anti-theft systems as well as RF anti-theft induction systems, data transfer to hand-held devices, automatic article identification, wireless control systems and automatic road tolling.
Reliable alarm devices	Covers radio devices that use radio communication support for indicating an alert to a system or a person, as a main functionality, at a distant location when a problem or a specific situation occurs. Radio alarms include social alarms and alarms for security and safety.

⁵ Council Directive 90/385/EEC of 20 June 1990 on the approximation of the laws of the Member States relating to active implantable medical devices (OJ L 189, 20.7.1990, p. 17).

Medical data acquisition devices	Covers the transmission of non-voice data to and from non-implantable medical devices in order to monitor, diagnose and treat patients in healthcare facilities or in their homes as prescribed by duly authorised healthcare professionals.
PMR446 devices	Covers hand portable equipment (without base station or repeater use) carried on a person or manually operated, which uses integral antennas only in order to maximise sharing and minimise interference. PMR 446 equipment operates in short-range peer-to-peer mode and shall not be used as a part of infrastructure network nor as a repeater.
Radio determination devices	Covers radio devices used for determining the position, velocity and/or other characteristics of an object, or for obtaining information relating to these parameters. Radio determination equipment typically conducts measurements to obtain such characteristics. Radio determination devices exclude any kind of point-to-point or point-to-multipoint radio communications.
Radio frequency identification (RFID) devices	Covers tag/interrogator based radio communications systems, consisting of (i) radio devices (tags) attached to animate or inanimate items and (ii) transmitter/receiver units (interrogators) which activate the tags and receive data back. Typical applications include the tracking and identification of items, for instance for the purpose of electronic article surveillance (EAS), and collecting and transmitting data relating to the items to which tags are attached, which may be either battery-less, battery assisted or battery powered. The responses from a tag are validated by its interrogator and passed to its host system.
Transport and traffic telematics devices	Covers radio devices that are used in the fields of transport (road, rail, water or air, depending on the relevant technical restrictions), traffic management, navigation, mobility management and in intelligent transport systems (ITS). Typical applications include interfaces between different modes of transport, communication between vehicles (e.g. car to car), between vehicles and fixed locations (e.g. car to infrastructure) as well as communication from and to users.
Wideband data transmission devices	Covers radio devices that use wideband modulation techniques to access the spectrum. Typical uses include wireless access systems such as radio local area networks (WAS/RLAN) or wideband SRD in data networks.

Table 2

Frequency bands with corresponding harmonised technical conditions and implementation deadlines for short-range devices

Band no	Frequency band	Category of short-range devices	Transmit power limit/ field strength limit/power density limit	Additional parameters (channelling and/or channel access and occupation rules)	Other usage restrictions
1	9-59.750 kHz	Inductive devices	72 dB μ A/m at 10 metres		
90	9-148 kHz	Radio determination devices	46 dB μ A/m at 10 metres at a reference of 100 Hz, outside the Nuclear Magnetic Resonance (NMR) device. Magnetic field strength descending 10 dB/decade above 100 Hz.		For enclosed Nuclear Magnetic Resonance (NMR) applications [1].
2	9-315 kHz	Active medical implant devices	30 dB μ A/m at 10 metres	Duty cycle \leq 10 %	
3	59.750-60.250 kHz	Inductive devices	42 dB μ A/m at 10 metres		
4	60.250-74.750 kHz	Inductive devices	72 dB μ A/m at 10 metres		
5	74.750-75.250 kHz	Inductive devices	42 dB μ A/m at 10 metres		
6	75.250-77.250 kHz	Inductive devices	72 dB μ A/m at 10 metres		
7	77.250-77.750 kHz	Inductive devices	42 dB μ A/m at 10 metres		
8	77.750-90 kHz	Inductive devices	72 dB μ A/m at 10 metres		
9	90-119 kHz	Inductive devices	42 dB μ A/m at 10 metres		
10	119-128.6 kHz	Inductive devices	66 dB μ A/m at 10 metres		

11	128.6-129.6 kHz	Inductive devices	42 dB μ A/m at 10 metres		
12	129.6-135 kHz	Inductive devices	66 dB μ A/m at 10 metres		
13	135-140 kHz	Inductive devices	42 dB μ A/m at 10 metres		
14	140-148.5 kHz	Inductive devices	37.7 dB μ A/m at 10 metres		
15	148.5-5 000 kHz [1]	Inductive devices	-15 dB μ A/m at 10 metres in any bandwidth of 10 kHz. Furthermore the total field strength is -5 dB μ A/m at 10 metres for systems operating at bandwidths larger than 10 kHz.		
91	148-5 000 kHz	Radio determination devices	-15 dB μ A/m at 10 metres outside the Nuclear Magnetic Resonance (NMR) device.		For enclosed Nuclear Magnetic Resonance (NMR) applications [j].
16	315-600 kHz	Active medical implant devices	-5 dB μ A/m at 10 metres	Duty cycle \leq 10 %	This set of usage conditions is only available for animal implant devices.
17	400-600 kHz	Radio Frequency Identification (RFID) devices	-8 dB μ A/m at 10 metres in any bandwidth of 10 kHz. Furthermore the total field strength is -5 dB μ A/m at 10 metres for systems operating at bandwidths larger than 10 kHz.	Bandwidth \geq 30 kHz	
85	442.2-450.0 kHz	Non-specific short-range devices	7 dB μ A/m at 10 metres	Channel spacing \geq 150 Hz	This set of usage conditions is only available for person

					detection and collision avoidance devices.
18	456.9-457.1 kHz	Non-specific short-range devices	7 dB μ A/m at 10 metres		This set of usage conditions is only available for emergency detections of buried victims and valuable items devices.
19	984-7484 kHz	Transport and Traffic Telematics devices	9 dB μ A/m at 10 metres	Duty cycle \leq 1 %	This set of usage conditions is only available for Eurobalise transmissions in the presence of trains using the 27 090-27 100 kHz band for telepowering pursuant to the conditions set for band 29.
20	3 155-3400 kHz	Inductive devices	13.5 dB μ A/m at 10 metres		
21	5 000-30 000 kHz [2]	Inductive devices	-20 dB μ A/m at 10 metres in any bandwidth of 10 kHz. Furthermore the total field strength is -5 dB μ A/m at 10 metres for systems operating at bandwidths larger than 10 kHz.		
92	5 000-30 000 kHz	Radio determination devices	-5 dB μ A/m at 10metres outside the Nuclear Magnetic Resonance (NMR) device.		For enclosed Nuclear Magnetic Resonance (NMR) applications [j].
22	6 765-6 795 kHz	Inductive devices	42 dB μ A/m at 10 metres		
23	7 300-23 000 kHz	Transport and Traffic Telematics devices	-7 dB μ A/m at 10 metres	Antenna requirements apply [8].	This set of usage conditions is only available for Eurobalise transmissions in the presence

					of trains using the 27 090-27 100 kHz band for telepowering pursuant to the conditions set for band 29.
24	7 400-8 800 kHz	Inductive devices	9 dB μ A/m at 10 metres		
25	10 200-11 000 kHz	Inductive devices	9 dB μ A/m at 10 metres		
26	12 500-20 000 kHz	Active medical implant devices	-7 dB μ A/m at 10 metres in any bandwidth of 10 kHz	Duty cycle \leq 10 %	This set of usage conditions is only available for indoor use by animal implant devices.
27a	13 553-13 567 kHz	Inductive devices	42 dB μ A/m at 10 metres	Transmission mask and antenna requirements for all combined frequency segments apply [8], [9].	
27b	13 553-13 567 kHz	Radio Frequency Identification (RFID) devices	60 dB μ A/m at 10 metres	Transmission mask and antenna requirements for all combined frequency segments apply [8], [9].	
27c	13 553-13 567 kHz	Non-specific short-range devices	10 mW e.r.p.		
28	26 957-27 283 kHz	Non-specific short-range devices	10 mW e.r.p.		
29	26 990-27 000 kHz	Non-specific short-range devices	100 mW e.r.p.	Duty cycle \leq 0.1 % Model control devices [d] may operate without duty cycle restrictions.	
30	27 040-27 050 kHz	Non-specific short-range devices	100 mW e.r.p.	Duty cycle \leq 0.1 % Model control devices [d] may operate without duty cycle restrictions.	

31	27 090-27 100 kHz	Non-specific short-range devices	100 mW e.r.p.	Duty cycle \leq 0.1 % Model control devices [d] may operate without duty cycle restrictions.	
32	27 140-27 150 kHz	Non-specific short-range devices	100 mW e.r.p.	Duty cycle \leq 0.1 % Model control devices [d] may operate without duty cycle restrictions.	
33	27 190-27 200 kHz	Non-specific short-range devices	100 mW e.r.p.	Duty cycle \leq 0.1 % Model control devices [d] may operate without duty cycle restrictions.	
34	30-37.5 MHz	Active medical implant devices	1 mW e.r.p.	Duty cycle \leq 10 %	This set of usage conditions is only available for ultra-low power medical membrane implants for blood pressure measurements.
93	30-130 MHz	Radio determination devices	-36 dBm e.r.p. outside the Nuclear Magnetic Resonance (NMR) device.		For enclosed Nuclear Magnetic Resonance (NMR) applications [j].
35	40.66-40.7 MHz	Non-specific short-range devices	10 mW e.r.p.		
36	87.5-108 MHz	Non-specific short-range devices	50 nW e.r.p.	Bandwidth \leq 200 kHz	This set of usage conditions is only available for audio transmitters with analogue frequency modulation (FM).
37a	169.4-169.475 MHz	Assistive Listening Devices (ALD)	500 mW e.r.p.		

37c	169.4-169.475 MHz	Non-specific short-range devices	500 mW e.r.p.	Duty cycle $\leq 1\%$ For metering devices [a], the duty cycle $\leq 10\%$.	
38	169.4-169.4875 MHz	Non-specific short-range devices	10 mW e.r.p.	Duty cycle $\leq 0.1\%$	
39a	169.4875-169.5875 MHz	Assistive Listening Devices (ALD)	500 mW e.r.p.		
39b	169.4875-169.5875 MHz	Non-specific short-range devices	10 mW e.r.p.	Duty cycle $\leq 0.001\%$ Between 00:00h and 06:00h local time a duty cycle $\leq 0.1\%$ may be used.	
40	169.5875-169.8125 MHz	Non-specific short-range devices	10 mW e.r.p.	Duty cycle $\leq 0.1\%$	
82	173.965-216 MHz	Assistive Listening Devices (ALD)	10 mW e.r.p.	On a tuning range basis [5]. A threshold of 35 dB μ V/m is required to ensure the protection of a DAB receiver located at 1.5 metres from the ALD device, subject to DAB signal strength measurements taken around the ALD operating site. The ALD device should operate under all circumstances at least 300 kHz away from the channel edge of	

				<p>an occupied DAB channel.</p> <p>Requirements on techniques to access spectrum and mitigate interference apply [7].</p>	
41	401-402 MHz	Active medical implant devices	25 μ W e.r.p.	<p>Bandwidth \leq 100 kHz</p> <p>Requirements on techniques to access spectrum and mitigate interference apply [7].</p> <p>Alternatively, a duty cycle limit of 0.1 % applies.</p>	<p>This set of usage conditions is only available for systems specifically designed for the purpose of providing non-voice digital communications between active implantable medical devices and/or body-worn devices and other devices external to the human body used for transferring non-time critical individual patient-related physiological information.</p>
42	402-405 MHz	Active medical implant devices	25 μ W e.r.p.	<p>Bandwidth \leq 300 kHz</p> <p>Other techniques to access spectrum or mitigate interference, including bandwidths greater than 300 kHz, can be used provided they ensure compatible operation with the other users and in particular with meteorological radiosondes [7].</p>	
43	405-406 MHz	Active medical implant devices	25 μ W e.r.p.	Bandwidth \leq 100 kHz	<p>This set of usage conditions is only available for systems</p>

				Requirements on techniques to access spectrum and mitigate interference apply [7]. Alternatively a duty cycle limit of 0,1 % applies.	specifically designed for the purpose of providing non-voice digital communications between active implantable medical devices and/or body-worn devices and other devices external to the human body used for transferring non-time critical individual patient-related physiological information.
86	430-440 MHz	Medical data acquisition devices	-50 dBm/100kHz e.r.p. density but not exceeding a total power of -40 dBm/10MHz (both limits are intended for measurement outside of the patient's body)		The set of usage conditions is only available for Ultra-Low Power Wireless Medical Capsule Endoscopy (ULP-WMCE) applications [h].
44a	433.05-434.79 MHz	Non-specific short-range devices	1 mW e.r.p.		
44b	433.05-434.79 MHz	Non-specific short-range devices	10 mW e.r.p.	Duty cycle \leq 10 %	
45c	434.04-434.79 MHz	Non-specific short-range devices	10 mW e.r.p.	Duty cycle \leq 100 % subject to bandwidth \leq 25 kHz.	
83	446.0-446.2 MHz	PMR446	500 mW e.r.p.	Requirements on techniques to access spectrum and mitigate interference apply [7].	
94	821.5-826 MHz	Audio PMSE devices	100 mW e.i.r.p. for body-worn devices		

			20 mW e.i.r.p. for other devices		
95	826-832 MHz	Audio PMSE devices	100 mW e.i.r.p.		
87	862-863 MHz	Non-specific short-range devices	25 mW e.r.p.	Duty cycle $\leq 0.1\%$ Bandwidth ≤ 350 kHz	
46a	863-865 MHz	Non-specific short-range devices	25 mW e.r.p.	Requirements on techniques to access spectrum and mitigate interference apply [7]. Alternatively, a duty cycle $\leq 0.1\%$ applies.	
46b	863-865 MHz	Audio PMSE devices	10 mW e.r.p.		This set of usage conditions is also available for personal cordless audio devices.
84	863-868 MHz	Wideband data transmission devices	25 mW e.r.p.	Requirements on techniques to access spectrum and mitigate interference apply [7]. Bandwidth: > 600 kHz and ≤ 1 MHz Duty cycle $\leq 10\%$ for network access points [g] Duty cycle $\leq 2.8\%$ otherwise	This set of usage conditions is only available for wideband SRD in data networks [g].
47	865-868 MHz	Non-specific short-range devices	25 mW e.r.p.	Requirements on techniques to access spectrum and mitigate interference apply [7]. Alternatively, a duty cycle $\leq 1\%$ applies.	

47a	865-868 MHz [6]	Radio Frequency Identification (RFID) devices	<p>Interrogator transmissions at 2 W e.r.p. only permitted within the channels centred at 865.7 MHz, 866.3 MHz, 866.9 MHz and 867.5 MHz</p> <p>RFID interrogator devices placed on the market before the repeal date of EC Decision 2006/804/EC are 'grandfathered', i.e. they are continuously permitted to be used in line with the provisions set out in EC Decision 2006/804/EC before the repeal date.</p>	<p>Requirements on techniques to access spectrum and mitigate interference apply [7].</p> <p>Bandwidth \leq 200 kHz</p>	
47b	865-868 MHz	Non-specific short-range devices	<p>500 mW e.r.p.</p> <p>Transmissions only permitted within the frequency ranges 865.6-865.8 MHz, 866.2-866.4 MHz, 866.8-867.0 MHz and 867.4-867.6 MHz.</p> <p>Adaptive Power Control (APC) required.</p> <p>Alternatively other mitigation technique with at least an equivalent level of spectrum compatibility.</p>	<p>Requirements on techniques to access spectrum and mitigate interference apply [7].</p> <p>Bandwidth \leq 200 kHz</p> <p>Duty cycle \leq 10 % for network access points [g]</p> <p>Duty cycle \leq 2.5 % otherwise</p>	<p>This set of usage conditions is only available for data networks [g].</p>
48	868-868.6 MHz	Non-specific short-range devices	25 mW e.r.p.	Requirements on techniques to access	

				spectrum and mitigate interference apply [7]. Alternatively, a duty cycle $\leq 1\%$ applies.	
49	868.6-868.7 MHz	Reliable alarm devices	10 mW e.r.p.	Bandwidth ≤ 25 kHz. The whole frequency band may also be used as a single channel. Duty cycle $\leq 1\%$	
50	868.7-869.2 MHz	Non-specific short-range devices	25 mW e.r.p.	Requirements on techniques to access spectrum and mitigate interference apply [7]. Alternatively a duty cycle $\leq 0,1\%$ applies.	
51	869.2-869.25 MHz	Reliable alarm devices	10 mW e.r.p.	Channel spacing: 25 kHz Duty cycle $\leq 0.1\%$	This set of usage conditions is only available for social alarm devices [b].
52	869.25-869.3 MHz	Reliable alarm devices	10 mW e.r.p.	Bandwidth ≤ 25 kHz Duty cycle $\leq 0.1\%$	
53	869.3-869.4 MHz	Reliable alarm devices	10 mW e.r.p.	Bandwidth ≤ 25 kHz Duty cycle $\leq 1\%$	
54	869.4-869.65 MHz	Non-specific short-range devices	500 mW e.r.p.	Requirements on techniques to access spectrum and mitigate interference apply [7]. Alternatively, a duty cycle $\leq 10\%$ applies.	
55	869.65-869.7 MHz	Reliable alarm devices	25 mW e.r.p.	Bandwidth ≤ 25 kHz	

				Duty cycle \leq 10 %	
56a	869.7-870 MHz	Non-specific short-range devices	5 mW e.i.r.p.		
56b	869.7-870 MHz	Non-specific short-range devices	25 mW e.i.r.p.	Requirements on techniques to access spectrum and mitigate interference apply [7]. Alternatively, a duty cycle \leq 1 % applies.	
96	1 785-1 804.8 MHz	Audio PMSE devices	50 mW e.i.r.p. for body-worn devices or devices implementing Spectrum Scanning Procedure (SSP) 20 mW e.i.r.p. for other devices		
57a	2 400-2 483.5 MHz	Non-specific short-range devices	10 mW e.i.r.p.		
57b	2 400-2 483.5 MHz	Radio determination devices	25 mW e.i.r.p.		
57c	2 400-2 483.5 MHz	Wideband data transmission devices	100 mW e.i.r.p. and 100 mW/100kHz e.i.r.p. density applies when frequency hopping modulation is used 10 mW/MHz e.i.r.p. density applies when other types of modulation are used	Requirements on techniques to access spectrum and mitigate interference apply [7].	
58	2 446-2 454 MHz	Radio Frequency Identification (RFID) devices	500 mW e.i.r.p.	Requirements on techniques to access spectrum and mitigate interference apply [7].	

59	2483.5-2500 MHz	Active medical implant devices	10 mW e.i.r.p.	<p>Requirements on techniques to access spectrum and mitigate interference apply [7].</p> <p>Bandwidth \leq 1 MHz. The whole frequency band may also be used dynamically as a single channel to maintain a communications session.</p> <p>Duty cycle \leq 10 % for peripherals</p>	Peripheral master units are for indoor use only.
59a	2483.5-2500 MHz	Medical data acquisition devices	1 mW e.i.r.p.	<p>Requirements on techniques to access spectrum and mitigate interference apply [7].</p> <p>Bandwidth \leq 3 MHz</p> <p>Duty cycle \leq 10 %</p>	The set of usage conditions is only available for medical body area network system (MBANS) [f] for indoor use within healthcare facilities.
59b	2483.5-2500 MHz	Medical data acquisition devices	10 mW e.i.r.p.	<p>Requirements on techniques to access spectrum and mitigate interference apply [7].</p> <p>Bandwidth \leq 3 MHz</p> <p>Duty cycle \leq 2 %</p>	The set of usage conditions is only available for medical body area network system (MBANS) [f] for indoor use within the patient's home.
60	4500-7000 MHz	Radio determination devices	24 dBm e.i.r.p. [3]	Requirements on techniques to access spectrum and mitigate interference apply [7].	This set of usage conditions is only available for Tank Level Probing Radar [c].
61	5725-5875 MHz	Non-specific short-range devices	25 mW e.i.r.p.		
62	5795-5815 MHz	Transport and Traffic Telematics devices	2 W e.i.r.p.	Requirements on techniques to access spectrum and mitigate interference apply [7].	This set of usage conditions applies only to road tolling applications and smart tachograph, weight and dimension applications [i].

88	5 855-5 865 MHz	Transport and Traffic Telematics devices	33 dBm e.i.r.p., 23 dBm/MHz e.i.r.p. density and a Transmit Power Control (TPC) able to reduce the total power from its maximum to 3 dBm e.i.r.p.	Requirements on techniques to access spectrum and mitigate interference apply [7].	This set of usage conditions is only available for vehicle-to-vehicle, vehicle-to-infrastructure and infrastructure-to-vehicle systems.
89	5 865-5 875 MHz	Transport and Traffic Telematics devices	33 dBm e.i.r.p., 23 dBm/MHz e.i.r.p. density and a Transmit Power Control (TPC) able to reduce the total power from its maximum to 3 dBm e.i.r.p.	Requirements on techniques to access spectrum and mitigate interference apply [7].	This set of usage conditions is only available for vehicle-to-vehicle, vehicle-to-infrastructure and infrastructure-to-vehicle systems.
63	6 000-8 500 MHz	Radio determination devices	7 dBm/50MHz peak e.i.r.p. and -33 dBm/MHz mean e.i.r.p.	Automatic power control and antenna requirements as well as requirements on techniques to access spectrum and mitigate interference apply [7], [8] [10].	This set of usage conditions is only available for Level Probing Radar. Exclusion zones around radio astronomy sites shall apply.
64	8 500-10 600 MHz	Radio determination devices	30 dBm e.i.r.p. [3]	Requirements on techniques to access spectrum and mitigate interference apply [7].	This set of usage conditions is only available for Tank Level Probing Radar [c].
65	17.1-17.3 GHz	Radio determination devices	26 dBm e.i.r.p.	Requirements on techniques to access spectrum and mitigate interference apply [7].	This set of usage conditions is only available for ground-based SAR systems [k].
66	24.05-24.075 GHz	Transport and Traffic Telematics devices	100 mW e.i.r.p.		
67	24.05-26.5 GHz	Radio determination devices	26 dBm/50MHz peak e.i.r.p. and -14 dBm/MHz mean e.i.r.p.	Automatic power control and antenna requirements as well as requirements on	This set of usage conditions is only available for Level Probing Radar.

				techniques to access spectrum and mitigate interference apply [7]. [8], [10]	Exclusion zones around radio astronomy sites shall apply.
68	24.05-27 GHz	Radio determination devices	43 dBm e.i.r.p. [3]	Requirements on techniques to access spectrum and mitigate interference apply [7].	This set of usage conditions is only available for Tank Level Probing Radar [c].
69a	24.075-24.15 GHz	Transport and Traffic Telematics devices	100 mW e.i.r.p.	Requirements on techniques to access spectrum and mitigate interference apply [7].	This set of usage conditions is only available for ground-based vehicle radars.
69b	24.075-24.15 GHz	Transport and Traffic Telematics devices	0.1 mW e.i.r.p.		
70a	24.15-24.25 GHz	Non-specific short-range devices	100 mW e.i.r.p.		
70b	24.15-24.25 GHz	Transport and Traffic Telematics devices	100 mW e.i.r.p.		
74a	57-64 GHz	Non-specific short-range devices	100 mW e.i.r.p. and a maximum transmit power of 10 dBm		
74b	57-64 GHz	Radio determination devices	43 dBm e.i.r.p. [3]	Requirements on techniques to access spectrum and mitigate interference apply [7].	This set of usage conditions is only available for Tank Level Probing Radar [c].
74c	57-64 GHz	Radio determination devices	35 dBm/50MHz peak e.i.r.p. and -2 dBm/MHz mean e.i.r.p.	Automatic power control and antenna requirements as well as requirements on techniques to access spectrum and mitigate interference apply [7] [8], [10].	This set of usage conditions is only available for Level Probing Radar.

75	57-71 GHz	Wideband data transmission devices	40 dBm e.i.r.p. and 23 dBm/MHz e.i.r.p. density	Requirements on techniques to access spectrum and mitigate interference apply [7].	Fixed outdoor installations are excluded.
75a	57-71 GHz	Wideband data transmission devices	40 dBm e.i.r.p., 23 dBm/MHz e.i.r.p. density and maximum transmit power of 27 dBm at the antenna port or ports	Requirements on techniques to access spectrum and mitigate interference apply [7].	
75b	57-71 GHz	Wideband data transmission devices	55 dBm e.i.r.p., 38 dBm/MHz e.i.r.p. density and a transmit antenna gain ≥ 30 dBi	Requirements on techniques to access spectrum and mitigate interference apply [7].	This set of usage conditions is only available for fixed outdoor installations.
76	61-61.5 GHz	Non-specific short-range devices	100 mW e.i.r.p.		
77	63.72-65.88 GHz	Transport and Traffic Telematics devices	40 dBm e.i.r.p.	TTT devices placed on the market before the 1 January 2020 are 'grandfathered', i.e. they are permitted to use the previous frequency range 63-64 GHz, and otherwise the same conditions apply.	This set of usage conditions is only available to vehicle-to-vehicle, vehicle-to-infrastructure and infrastructure-to-vehicle systems.
97	69.8-79.9 GHz	Radio determination devices	7 dBm e.i.r.p.		This set of usage conditions is only available for security scanners [I] operated indoors.
78a	75-85 GHz	Radio determination devices	34 dBm/50MHz peak e.i.r.p. and -3 dBm/MHz mean e.i.r.p.	Automatic power control and antenna requirements as well as requirements on techniques to access spectrum and mitigate interference apply [7], [8], [10].	This set of usage conditions is only available for Level Probing Radar. Exclusion zones around radio astronomy sites shall apply.

78b	75-85 GHz	Radio determination devices	43 dBm e.i.r.p. [3]	Requirements on techniques to access spectrum and mitigate interference apply [7].	This set of usage conditions is only available for Tank Level Probing Radar [c].
79a	76-77 GHz	Transport and Traffic Telematics devices	55 dBm peak e.i.r.p. and 50 dBm mean e.i.r.p. and 23.5 dBm mean e.i.r.p. for pulse radars	Requirements on techniques to access spectrum and mitigate interference apply [7]. Fixed transportation infrastructure radars have to be of a scanning nature in order to limit the illumination time and ensure a minimum silent time to achieve coexistence with automotive radar systems.	This set of usage conditions is only available for ground-based vehicle and infrastructure systems.
79b	76-77 GHz	Transport and Traffic Telematics devices	30 dBm peak e.i.r.p. and 3 dBm/MHz average e.i.r.p. density	Duty cycle $\leq 56\%$	This set of usage conditions is only available for obstacle detection systems for rotorcraft use [4]. Exclusion zones around radio astronomy sites shall apply.
98	76-77 GHz	Radio determination devices	48 dBm mean e.i.r.p. and 18 dBm/MHz mean e.i.r.p. density	Requirements on techniques to access spectrum and mitigate interference apply [7].	This set of usage conditions is only available for ground-based SAR systems [k]. Exclusion zones around radio astronomy sites shall apply.
99	76.5-80.5 GHz	Radio determination devices	19 dBm peak e.i.r.p.	At least 23 dB out-of-band attenuation relative to the maximum allowed peak e.i.r.p. is required	This set of usage conditions is only available for security scanners [l] operated indoors.
80a	122-122.25 GHz	Non-specific short-range devices	10 dBm/250MHz e.i.r.p. and		

			-48 dBm/MHz at 30° elevation		
80b	122.25-123 GHz	Non-specific short-range devices	100 mW e.i.r.p.		
81	244-246 GHz	Non-specific short-range devices	100 mW e.i.r.p.		

Applications and devices referred to in Table 2:

- [a] 'Metering devices' means radio devices that are part of bidirectional radio communications systems which allow remote monitoring, measuring and transmission of data in smart grid infrastructures, such as electricity, gas and water.
- [b] 'Social alarm devices' means radio communications systems that allow reliable communication in a given area for a person in distress to initiate a call for assistance. Typical uses of social alarm are to assist elderly or disabled people.
- [c] 'Tank Level Probing Radar' (TLPR) means a specific type of radiodetermination application, which is used for tank level measurements and is installed in metallic or reinforced concrete tanks, or similar structures made of material with comparable attenuation characteristics. The purpose of the tank is to contain a substance.
- [d] 'Model control devices' means a specific kind of telecommand and telemetry radio equipment that is used to remotely control the movement of models (principally miniature representations of vehicles) in the air, on land or over or under the water surface.
- [f] Medical Body Area Network Systems (MBANSs) are used for medical data acquisition and are intended for low-power wireless networking of a plurality of body-worn sensors and/or actuators as well as of a hub device placed on/around the human body.
- [g] A network access point in a data network is a fixed terrestrial short-range device that acts as a connection point for the other short-range devices in the data network to service platforms located outside of that data network. The term data network refers to several short-range devices, including the network access point, as network components and to the wireless connections between them.
- [h] Wireless medical capsule endoscopy is used for medical data acquisition designed for use in medical doctor-patient scenarios with the aim of acquiring images of human digestive tract.
- [i] Smart tachograph, weight and dimension applications are defined as remote enforcement of the tachograph in Appendix 14 of Commission Implementing Regulation 2016/799⁶ and for the weights and dimensions enforcement in Article 10d of Directive 2015/719⁷.

⁶ Commission Implementing Regulation (EU) 2016/799 of 18 March 2016 implementing Regulation (EU) No 165/2014 of the European Parliament and of the Council laying down the requirements for the construction, testing, installation, operation and repair of tachographs and their components (Text with EEA relevance) (OJ L 139, 26.5.2016, p. 1).

⁷ Directive (EU) 2015/719 of the European Parliament and of the Council of 29 April 2015 amending Council Directive 96/53/EC laying down for certain road vehicles circulating within the Community the maximum authorised dimensions in national and international traffic and the maximum authorised weights in international traffic (Text with EEA relevance) (OJ L 115, 6.5.2015, p. 1)."

- [j] Enclosed NMR sensors are devices where the material/object under investigation is put inside the enclosure of the NMR device. NMR techniques use nuclear magnetic resonance excitation and magnetic field strength response of a material/object under test to get information about material properties based on resonance frequency responses of isotopes of atoms. Nuclear magnetic resonance imaging and magnetic resonance tomography systems are not included in this scope.
- [k] Ground-based Synthetic Aperture Radar (SAR) systems are intended for deformation monitoring of terrain and natural or man-made structures, performed by interferometry radar.
- [l] Security scanners are a specific type of radio determination applications, which are used to detect objects carried by a person or on a person's body for security screening purposes, without making any physical contact.

Other technical requirements and clarifications referred to in Table 2:

- [1] In band 20, higher field strengths and additional usage restrictions apply for inductive applications.
- [2] In bands 22, 24, 25, 27a, and 28, higher field strengths and additional usage restrictions apply for inductive applications.
- [3] The power limit applies inside a closed tank and corresponds to a spectral density of -41,3 dBm/MHz e.i.r.p. outside a 500 litre test tank.
- [4] Member States can specify exclusion zones or equivalent measures in which the obstacle detection application for rotorcraft use shall not be used for the protection of the radioastronomy service or other national use. Rotorcraft is defined as EASA CS-27 and CS-29 (resp. JAR-27 and JAR-29 for former certifications).
- [5] Devices shall implement the whole frequency range on a tuning range basis.
- [6] RFID tags respond at a very low power level (-20 dBm e.r.p.) in a frequency range around the RFID interrogator channels and shall comply with the essential requirements of Directive 2014/53/EU.
- [7] Techniques to access spectrum and mitigate interference that provide an appropriate level of performance to comply with the essential requirements of Directive 2014/53/EU shall be used. If relevant techniques are described in harmonised standards or parts thereof the references of which have been published in the Official Journal of the European Union under Directive 2014/53/EU, performance at least equivalent to these techniques shall be ensured.
- [8] Antenna requirements that provide an appropriate level of performance to comply with the essential requirements of Directive 2014/53/EU shall be used. If relevant restrictions are described in harmonised standards or parts thereof the references of which have been published in the Official Journal of the European Union under Directive 2014/53/EU, performance at least equivalent to these restrictions shall be ensured.
- [9] Transmission mask that provides an appropriate level of performance to comply with the essential requirements of Directive 2014/53/EU shall be used. If relevant restrictions are described in harmonised standards or parts thereof the references of which have been published in the Official Journal of the European Union under Directive 2014/53/EU, performance at least equivalent to these restrictions shall be ensured.
- [10] Automatic power control that provides an appropriate level of performance to comply with the essential requirements of Directive 2014/53/EU shall be used. If relevant restrictions are described in harmonised standards or parts thereof the references of which have been published in the Official Journal of the European Union under Directive 2014/53/EU, performance at least equivalent to these restrictions shall be ensured.'

ANNEX 4: PROPOSED AMENDMENTS TO THE TECHNICAL ANNEX OF THE SRD DECISION (EU) 2018/1538

Frequency bands with corresponding harmonised technical conditions and implementation deadlines for short-range devices

The following table specifies different combinations of frequency band and category of short-range devices (as defined in Article 2(6)), and the harmonised technical conditions for spectrum access and implementation deadlines applicable thereto.

General technical conditions applicable to all bands and short-range devices that fall in the scope of this Decision:

- Member States must allow the usage of spectrum up to the **transmit power, field strength or power density** given in this table. In accordance with Article 3(3), they may impose less restrictive conditions, i.e. allow the use of spectrum with higher transmit power, field strength or power density, provided that this does not reduce or compromise the appropriate coexistence between short-range devices in bands harmonised by this Decision;
- Member States may only impose the '**additional parameters** (channelling and/or channel access and occupation rules)' identified in the table, and shall not add other parameters or spectrum access and mitigation requirements. Less restrictive conditions within the meaning of Article 3(3), mean that Member States may completely omit the 'additional parameters (channelling and/or channel access and occupation rules)' in a given cell or allow higher values, provided that the appropriate sharing environment in the harmonised band is not compromised.
- Member States may only impose the '**other usage restrictions**' identified in the table and shall not add additional usage restrictions unless the conditions mentioned in Article 3(2) apply. As less restrictive conditions may be introduced within the meaning of Article 3(3), Member States may omit one or all of these restrictions, provided that the appropriate sharing environment in the harmonised band is not compromised.

Terms used:

'**Duty cycle**' is defined as the ratio, expressed as a percentage, of $\Sigma(T_{on})/(T_{obs})$ where T_{on} is the "on" time of a single transmitter device and T_{obs} is the observation period. T_{on} is measured in an observation frequency band (F_{obs}). Unless otherwise specified in this technical annex, T_{obs} is a continuous one hour period and F_{obs} is the applicable frequency band in this Annex. Less restrictive conditions within the meaning of Article 3(3), mean that Member States may allow a higher value for 'duty cycle'.

Band no	Frequency band	Category of short-range devices	Transmit power limit/ field strength limit/power density limit	Additional parameters (channelling and/or channel access and occupation rules)	Other usage restrictions
1	874-874.4 MHz [8]	Non-specific short-range devices [1]	500 mW e.r.p. Adaptive Power Control (APC) required, alternatively other mitigation techniques which achieve at least an equivalent level of spectrum compatibility	<p>Techniques to access spectrum and mitigate interference that provide an appropriate level of performance to comply with the essential requirements of Directive 2014/53/EU shall be used. If relevant techniques are described in harmonised standards or parts thereof the references of which have been published in the Official Journal of the European Union under Directive 2014/53/EU, performance at least equivalent to these techniques shall be ensured.</p> <p>Bandwidth \leq 200 kHz Duty cycle \leq 10% for network access points [4] Duty cycle: 2.5% otherwise</p>	<p>This set of usage conditions is only available for data networks</p> <p>All nomadic and mobile devices within the data network shall be controlled by a master network access point [4, 5, 6, 7]</p>

2	916.4-919.4 MHz [9]	Wideband data transmission devices [3]	25 mW e.r.p.	<p>Techniques to access spectrum and mitigate interference that provide an appropriate level of performance to comply with the essential requirements of Directive 2014/53/EU shall be used. If relevant techniques are described in harmonised standards or parts thereof the references of which have been published in the Official Journal of the European Union under Directive 2014/53/EU, performance at least equivalent to these techniques shall be ensured.</p> <p>Bandwidth: > 600 kHz and ≤ 1 MHz</p> <p>Duty cycle ≤ 10% for network access points [4]</p> <p>Duty cycle ≤ 2.8% otherwise</p>	<p>This set of usage conditions is only available for wideband short-range devices in data networks</p> <p>All nomadic and mobile devices within the data network shall be controlled by a master network access point [4, 5, 6]</p>
3	916.1-918.9 MHz [10]	Radio Frequency Identification (RFID) devices [2]	Interrogator transmissions at 4 W e.r.p. only permitted at the centre frequencies 916.3 MHz, 917.5 MHz, 918.7 MHz	Techniques to access spectrum and mitigate interference that provide an appropriate level of performance to comply with the essential requirements of Directive 2014/53/EU	[5,6,7]

				<p>shall be used. If relevant techniques are described in harmonised standards or parts thereof the references of which have been published in the Official Journal of the European Union under Directive 2014/53/EU, performance at least equivalent to these techniques shall be ensured.</p> <p>Bandwidth \leq 400 kHz</p>	
4	917.3-918.9 MHz	Non-specific short-range devices [1]	<p>500 mW e.r.p. Transmissions only permitted within the frequency ranges 917.3-917.7 MHz, 918.5-918.9 MHz Adaptive Power Control (APC) required, alternatively other mitigation techniques which achieve at least an equivalent level of spectrum compatibility</p>	<p>Techniques to access spectrum and mitigate interference that provide an appropriate level of performance to comply with the essential requirements of Directive 2014/53/EU shall be used. If relevant techniques are described in harmonised standards or parts thereof the references of which have been published in the Official Journal of the European Union under Directive 2014/53/EU, performance at least equivalent to these</p>	<p>This set of usage conditions is only available for data networks All nomadic and mobile devices within the data network shall be controlled by a master network access point [4, 5, 6, 7]</p>

				<p>techniques shall be ensured.</p> <p>Bandwidth \leq 200 kHz</p> <p>Duty cycle \leq 10% for network access points [4]</p> <p>Duty cycle \leq 2.5% otherwise</p>	
5	916.1-919.4 MHz [9]	Non-specific short-range devices [1]	25 mW e.r.p.	<p>Techniques to access spectrum and mitigate interference that provide an appropriate level of performance to comply with the essential requirements of Directive 2014/53/EU shall be used. If relevant techniques are described in harmonised standards or parts thereof the references of which have been published in the Official Journal of the European Union under Directive 2014/53/EU, performance at least equivalent to these techniques shall be ensured.</p> <p>Bandwidth \leq 600 kHz</p> <p>Duty cycle \leq 1%</p>	<p>This set of usage conditions is only available for short-range device in data networks</p> <p>All nomadic and mobile devices within the data network shall be controlled by a master network access point [4, 5, 6]</p>

[1] The non-specific short-range device category covers all kinds of radio devices, regardless of the application or the purpose, which fulfil the technical conditions as specified for a given frequency band. Typical uses include telemetry, telecommand, alarms, data transmissions in general and other applications.

[2] The radio frequency identification (RFID) device category covers tag/interrogator based radio communications systems, consisting of radio devices (tags) attached to animate or inanimate items and of transmitter/receiver units (interrogators) which activate the tags and receive data back. Typical uses include the tracking and identification of items, such as for electronic article surveillance (EAS), and collecting and transmitting data relating to the items to which tags are attached, which may be either battery-less, battery assisted or battery powered. The responses from a tag are validated by its interrogator and passed to its host system.

[3] The wideband data transmission device category covers radio devices that use wideband modulation techniques to access the spectrum. Typical uses include wireless access systems such as radio local area networks (WAS/RLANs) or wideband short-range devices in data networks.

[4] A network access point in a data network is a fixed terrestrial short range device that acts as a connection point for the other short range devices in the data network to service platforms located outside of that data network. The term data network refers to several short range devices, including the network access point, as network components and to the wireless connections between them.'

[5] According to Article 3(1) the frequency bands shall be designated and made available on a non-exclusive and shared basis. The harmonised technical conditions shall make it possible for most short-range devices in most Member States to be operated subject to a general authorisation regime under national law. This is without prejudice to Articles 46 and 51 of Directive (EU) 2018/1972 and to Articles 3(2) and 7 of Directive 2014/53/EU. Member States may limit usage of this entry such that installation and operation are performed only by professional users and may consider individual authorisation, e.g. to administer geographical sharing and/or the application of mitigation techniques to ensure protection of radio services.

[6] In Member States where parts or all of this frequency range are used for public order and public security purposes and defence and coordination is not possible, Member States may decide not to implement this entry partially or entirely, in accordance with Article 1(4) of Decision 676/2002/EC and Article 3(2) of this Decision.

[7] National rules, such as local coordination, may also be needed in order to avoid interference to radio services operating in the adjacent bands, for example due to intermodulation or blocking.

[8] This frequency range 874-874.4 MHz is the harmonised minimum core band.

[9] This frequency range 917.4-919.4 MHz is the harmonised minimum core band.

[10] RFID tags respond at a very low power level (-10 dBm e.r.p.) in a frequency range around the RFID interrogator channels and must comply with the essential requirements of Directive 2014/53/EU.

ANNEX 5: LIST OF REFERENCES

- [1] [ERC Recommendation 70-03](#): “Relating to the use of Short Range Devices (SRD)”, approved October 1997, latest amended March 2024
- [2] Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC
- [3] [CEPT Report 14](#): “Develop a strategy to improve the effectiveness and flexibility of spectrum availability for Short Range Devices”, approved July 2006
- [4] [CEPT Report 26](#): “Annual update of the technical annex of the Commission Decision on the technical harmonisation of radio spectrum for use by short-range devices”, approved March 2009
- [5] [CEPT Report 44](#): “Annual update of the technical annex of the Commission Decision on the technical harmonisation of radio spectrum for use by short-range devices”, approved March 2013
- [6] [ECC Report 181](#): “Improving spectrum efficiency in the SRD bands”, approved September 2012
- [7] Commission Decision 2006/771/EC of 9 November 2006 on the harmonisation of the radio spectrum for use by short-range devices
- [8] Commission Implementing Decision (EU) 2022/180 of 8 February 2022 amending Decision 2006/771/EC as regards the update of harmonised technical conditions in the area of radio spectrum use for short-range devices
- [9] Commission Implementing Decision (EU) 2018/1538 of 11 October 2018 on the harmonisation of radio spectrum for use by short-range devices within the 874-876 and 915-921 MHz frequency bands
- [10] Commission Implementing Decision (EU) 2022/172 of 7 February 2022 amending Implementing Decision (EU) 2018/1538 on the harmonisation of radio spectrum for use by short-range devices within the 874-876 and 915-921 MHz frequency bands
- [11] Commission Implementing Decision 2014/641/EU of 1 September 2014 on harmonised technical conditions of radio spectrum use by wireless audio programme making and special events equipment in the Union
- [12] [CEPT Report 59](#): “Annual update of the technical annex of the Commission Decision on the technical harmonisation of radio spectrum for use by short-range devices”, approved June 2016
- [13] [ERC Decision \(01\)17](#): “Harmonised frequencies, technical characteristics and exemption from individual licensing of Ultra Low Power Active Medical Implant (ULP-AMI) communication systems operating in the frequency band 401 - 406 MHz on a secondary basis”, approved March 200, latest updated on 10 June 2022
- [14] ETSI EN 300 220: “Short Range Devices (SRD) operating in the frequency range 25 MHz to 1 000 MHz”
- [15] ETSI EN 300 330: “Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz”
- [16] ETSI EN 302 537: “Ultra Low Power Medical Data Service Systems operating in the frequency range 401 MHz to 402 MHz and 405 MHz to 406 MHz”
- [17] [CEPT Report 77](#): “Annual update of the technical annex of the Commission Decision on the technical harmonisation of radio spectrum for use by short range devices”, approved March 2021
- [18] ETSI EN 301 357: “Cordless audio devices in the range 25 MHz to 2 000 MHz; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU”
- [19] ETSI EN 301 559: “Low Power Active Medical Implants (LP-AMI) and associated Peripherals (LP-AMI-P) operating in the frequency range 2 483,5 MHz to 2 500 MHz; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU”
- [20] [ECC Decision \(16\)01](#): “The harmonised frequency band 76-77 GHz, technical characteristics, exemption from individual licensing and free carriage and use of obstacle detection radars for rotorcraft use”, approved March, corrected November 2016
- [21] [ECC Decision \(11\)02](#): “Industrial Level Probing Radars (LPR) operating in frequency bands 6-8.5 GHz, 24.05-26.5 GHz, 57-64 GHz and 75-85 GHz”, approved March 2011 and latest amended July 2019
- [22] ETSI EN 301 839: “Ultra Low Power Active Medical Implants (ULP-AMI) and associated Peripherals (ULP-AMI-P) operating in the frequency range 402 MHz to 405 MHz; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU”

- [23] [ECC Recommendation \(08\)01](#): “Use of the band 5855-5875 MHz for Intelligent Transport Systems (ITS)”, approved February 2008 latest updated November 2022
- [24] [ECC Decision \(21\)02](#): “The harmonised frequency band 76-77 GHz, technical characteristics, exemption from individual licensing and free circulation and use of High Definition Ground Based Synthetic Aperture Radar (HD-GBSAR)”, approved November 2021, updated July 2022
- [25] [ECC Report 344](#): “Sharing and compatibility studies of Security Scanners (SSCs) within frequency range 60-82 GHz”, approved October 2022