CEPT Report 35

in response to the EC Permanent Mandate on the

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

Final Report on 30 October 2009 by the

CEPT ECC
Electronic Communications Committee

Electronic Communications Committee (ECC)
within the European Conference of Postal and Telecommunications Administrations (CEPT)

0 EXECUTIVE SUMMARY

This Report describes the third update of the technical annex of the EC Decision on Short Range Devices (SRD) and has been developed in 2009 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 harmonisation of the radio spectrum for use by short range-devices.

The update proposes the following changes to the annex:

- To enable audio and video signals subject to specific conditions subject to the approval of the revised version of the harmonised standard (EN300-220)
- To include the band 76 - 77 GHz for road transport and traffic telematics
- To include the band 9 - 59.75 kHz for inductive applications
- To include all bands for active medical implants and associated peripherals from annex 12 of ERC/REC 70-03

The following items for further work were identified:

- 57-66 GHz: investigate the possibility to include this band and its power level for non specific SRDs in ERC/REC 70-03 first.
- Identifying designations for SRDs above 40 GHz is an ongoing task

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1 INTRODUCTION

This Report has been developed in 2009 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 harmonisation of the 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 third update of the technical annex of the SRD Decision 2006/771/EC 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 regarding the annual update of the technical annex of the SRD Decision 2006/771/EC issued 18 December 2008 (Doc. RSCOM08-90) which is given in Annex 1 to this report.

2 BACKGROUND

The EC Decision on Short Range Devices (SRD) refers to the Commission Decision of 9 November 2006 on harmonisation of the radio spectrum for use by short-range devices (2006/771/EC). This Decision was first amended by Commission Decision of 23 May 2008 (2008/432/EC).

The purpose of the EC Decision on Short Range Devices (SRD) is to harmonise the frequency bands and the related technical parameters for the availability and efficient use of radio spectrum for short-range devices so that such devices may benefit from 'Class 1' classification under Commission Decision 2000/299/EC.

Given their pervasive use in the European Community and in the world, short-range devices are playing an increasing role in the economy and in the daily life of citizens, with different types of applications such as alarms, local communications equipment, door openers or medical implants. The development of applications based on short-range devices in the European Community could also contribute to achieving specific Community policy goals, such as completion of the internal market, promotion of innovation and research, and development of the information society.

Due to the rapid changes in technology and societal demands, new applications for short-range devices will emerge, which will require constant scrutiny of spectrum harmonisation conditions, taking into account the economic benefits of new applications and the requirements of industry and users. Member States will have to monitor these evolutions. Regular updates of this Decision will therefore be necessary to respond to new developments in the market and technology.

3 DISCUSSION

In July 2006, ECC adopted CEPT Report 14 in response to a European Commission (EC) Mandate to develop a strategy to improve the effectiveness and flexibility of spectrum availability for Short Range Devices (SRDs). In order to take full benefits from this work, CEPT/WGFM tasked the SRD/MG to review the Recommendations contained in Report 014 and to identify practical steps to implement them.

The report developed in response to this task was approved by WG FM at its meeting in Brussels in May 2008 as the "Plan for the implementation of SRD strategy given in the CEPT Report 14". As shown in the summary of this Plan which is provided in Annex 3 to this report, the annual review of the technical annex of the EC Decision on SRDs plays an important role for improving the European regulatory framework for SRDs.

The Guidance from the Commission to CEPT on the third update of the SRD Decision again requests CEPT when preparing its response to the permanent mandate to take into account a number of principles which are

generally consistent with the approach developed by CEPT for the implementation of the "SRD strategy". It emphasizes in particular that "technical parameters in the technical annex of the SRD Decision set the requirements which all short range devices to be used in these bands must at least comply with while additional requirements defined via Harmonised Standards may apply in order to meet the essential requirements defined pursuant article 3 of the R&TTE Directive". The Guidance document requests in addition CEPT to pay attention to a number of specific issues.

The outcome of CEPT investigations in view of improving existing regulatory framework for SRDs and identifying additional categories to be harmonised through the SRD Decision is presented in the following sections.

These investigations have resulted in a CEPT proposal for amendment of the technical annex of the EC Decision on SRD (see section 4 and Annex 2) and clarification of current CEPT work items for further investigations (see section 5).

3.1 General principles

The general principles for updating the annex of the EC SRD decision can be found in CEPT Report 26 in response to the permanent EC mandate on SRDs and the plan on the implementation of the SRD strategy. In addition to this the implementation of the RSC/TCAM RIG-II template is considered in this update.

It was concluded that the annex is already RIG compatible so a modification would only be a cosmetic change and not necessary. During the drafting process RIG-II compatibility is observed as a continuous process.

3.2 Review of ERC Recommendation 70-03

3.2.1 Non-specific Short Range Devices

The table below presents the frequency bands included in Annex 1 of ERC/REC 70-03 and their status with respect to the EC Decision on SRDs.

Annex 1	Non-specific Short Range Devices	Comments / Status
1a	6.765 - 6.795 MHz	Already covered by the EC Decision on SRDs.
1b	13.553 - 13.567 MHz	Already covered by the EC Decision on SRDs.
1c	26.957 - 27.283 MHz	Already covered by the EC Decision on SRDs. *Exclusion of video applications for consideration (see below)*
1d	40.660 - 40.700 MHz	Already covered by the EC Decision on SRDs. *Exclusion of video applications for consideration (see below)*
1e	138.200 - 138.450 MHz	Not planned for inclusion in the EC Decision on SRDs. Not implemented by several administrations in Europe due to the operation of defence systems.
1f	433.050 - 434.790 MHz	Already covered by the EC Decision on SRDs. *Exclusion of audio/voice signals and video applications for consideration (see below)*
1g	863 - 870 MHz	Already covered by the EC Decision on SRDs. *Exclusion of audio/voice signals and video applications for consideration (see below)*
1h	2400 - 2483.5 MHz	Already covered by the EC Decision on SRDs.
1i	5725 - 5875 MHz	Already covered by the EC Decision on SRDs.
1j	24.00 - 24.25 GHz	Band 24.15 - 24.25 GHz covered by the EC Decision on SRDs. *Ongoing compatibility studies and field tests performed within CEPT on the impact of 24 GHz SRDs on Radar Speed Meters (RSM) operated by police forces.*
1k	61.0 - 61.5 MHz	Already covered by the EC Decision on SRDs.
1l	122 - 123 GHz	Not identified as a priority for inclusion in the EC Decision on SRD. Lack of demand expressed for EU harmonisation.
1m	244 - 246 GHz	Not identified as a priority for inclusion in the EC Decision on SRD. Lack of demand expressed for EU harmonisation.

- ***Exclusion of audio/voice signals and video applications***

During the second revision of the annex of the EC decision on SRDs it was indicated that there was no justification of keeping the restrictions for audio, voice and video applications. It was however decided to keep the restrictions for audio and video in place due to the typical high usage pattern nature of the mainly analogue systems. The removal of voice restriction was approved.

At a later stage in WGFM it was indicated that more time was needed to study the subject in WGSE and SE24. This was also indicated in the report for the second revision of the annex of the EC decision on SRDs. These studies are in progress now and drafting work is available. A definition of voice and audio in terms of spectrum occupancy and duty cycle/activity factor is also expected. Removal of the restriction for true audio and video digital systems could be an intermediate solution keeping in mind that in many CEPT member states there are no such restrictions at all.

The conclusion is that the exclusion of audio and video should be kept in the bands where 100% duty cycle is allowed. Also, voice applications should be allowed with advanced mitigation techniques in these bands.

Conversely audio and video applications are allowed in frequency sub-bands where duty cycle restriction applies provided that these applications are digital, in order to ensure harmonious cohabitation with generic digital SRDs. The removal of voice (analogue or digital) restriction is proposed due to its narrowband and low usage pattern nature.

- ***Modification of DC from 0.1% to 1% in 869.7-870 MHz***

Studies in SE24 showed the possibility to increase the duty cycle in the mentioned band from 0.1 to 1 % this modification is performed in the table.

CEPT proposes to enable voice, audio and video signals subject to specific conditions and the approval of the revised harmonised standard (EN 300 220) and to increase DC from 0.1 to 1% in the band 869.7 - 870 MHz

- ***Frequency band 57 - 66 GHz***

In the second revision of the annex of the EC decision on SRDs this frequency band was included as MGWS or Wideband data transmission systems band. The question was raised to include it as a non specific short range devices band. It was then indicated that it was wise to open the band first for MGWS and as a second step also for non specific short range devices. The maximum e.i.r.p, to avoid interference to the point to point fixed service and ITS, should be investigated. It is advised to investigate first the possibility to include this band first ERC/REC 70-03 before including it in the annex of the EC SRD decision.

CEPT intends to investigate first the possibility of including the band 57-66 GHz for non specific short range devices in ERC/REC 70-03

3.2.2 Tracking, Tracing and Data Acquisition

The table below presents the frequency bands included in Annex 2 of ERC/REC 70-03 and their status with respect to the EC Decision on SRDs.

Annex 2	**Tracking, Tracing and Data Acquisition**	**Comments / Status**
2a	457 kHz	For Detection of avalanche victims. Not identified as a priority for inclusion in the EC Decision on SRD. Already “class 1” (see sub-class 49).
2b	169.4 - 169.475 MHz	For Meter Reading. Already covered by the EC Decision on the harmonisation of the 169.4-169.8125 MHz frequency band (2005/928/EC).
2c	169.4 - 169.475 MHz	For Asset Tracking and Tracing. Already covered by the EC Decision on the harmonisation of the 169.4-169.8125 MHz frequency band (2005/928/EC).

3.2.3 Wideband Data Transmission systems

The table below presents the frequency bands included in Annex 3 of ERC/REC 70-03 and their status with respect to the EC Decision on SRDs.

Annex 3	Wide Band Data Transmission Systems	Comments / Status
3a	2400 - 2483.5 MHz	Already covered by the EC Decision on SRDs.
3b	5150 - 5350 MHz	For wireless access systems including radio local area networks (WAS/RLANs). Already covered by the EC Decision on 5 GHz WAS/RLANs (2005/513/EC).
3c	5470 - 5725 MHz	
3d	17.1 - 17.3 GHz	Not identified as a priority for inclusion in the EC Decision on SRD. Lack of demand expressed for EU harmonisation. However the the respective ECC decision will be withdrawn
3e	57 - 66 GHz	Power level changed to a single power level of 40dBm e.i.r.p. and 13dBm/MHz e.i.r.p with fixed outdoor installations excluded.
3f	57 - 66 GHz	Power level changed to a single power level of 40dBm e.i.r.p. and 13dBm/MHz e.i.r.p with fixed outdoor installations excluded.

- ***Frequency band 57 - 66 GHz***

Concerns were raised in CEPT on the enforceability of two different power levels for indoor and outdoor use of apparently similar equipment in the same frequency band. CEPT concluded that a single power level which excludes fixed outdoor use is enforceable as fixed installations can be easily identified and removed from service.

"In addition following the revision of ECC Report 113 in May 2009, outdoor use at 40dBm could be authorized except for fixed outdoor installations. However, since separation distances are large in the WPAN outdoor case, the following mitigation techniques should be considered".:

- No transmissions of nomadic and mobile systems in the frequency band 63-64 GHz should be allowed, or
- Detect And Avoid (DAA) feature, in order to detect ITS and avoid collisions of MGWS and ITS transmissions.

Based on the above the regulation could be changed to have only one power limit for indoor and outdoor use, excluding only fixed outdoor installations

3.2.4 Railway applications

The table below presents the frequency bands included in Annex 4 of ERC/REC 70-03 and their status with respect to the EC Decision on SRDs.

Annex 4	Railway applications	Comments / Status
4a	2446 - 2454 MHz	Not identified as a priority for inclusion in the EC Decision on SRD. Lack of demand expressed for EU harmonisation.
4b	27.095 MHz	Not identified as a priority for inclusion in the EC Decision on SRD. Lack of demand expressed for EU harmonisation.
4c	4234 kHz	Not identified as a priority for inclusion in the EC Decision on SRD. Lack of demand expressed for EU harmonisation.
4d1	4516 kHz	Not identified as a priority for inclusion in the EC Decision on SRD. Lack of demand expressed for EU harmonisation.
4d2	11.1 - 16.0 MHz	Not identified as a priority for inclusion in the EC Decision on SRD. Lack of demand expressed for EU harmonisation.

3.2.5 Road Transport and Traffic Telematics (RTTT)

The table below presents the frequency bands included in Annex 5 of ERC/REC 70-03 and their status with respect to the EC Decision on SRDs.

Annex 5	**Road Transport & Traffic Telematics (RTTT)**	**Comments / Status**
5a	5795 - 5805 MHz	Not identified as a priority for inclusion in the EC Decision on SRD. Lack of demand expressed for EU harmonisation.
5b	5805 - 5815 MHz	Not identified as a priority for inclusion in the EC Decision on SRD. Lack of demand expressed for EU harmonisation.
5c	63 - 64 GHz	To be considered separately following adoption of the ECC Decision on 63 GHz ITS systems.
5d	76-77 GHz	For Vehicle and infrastructure radar systems Already "class 1" (see sub-class 50). See CEPT proposal for inclusion below.

- ***Frequency band 76 - 77 GHz***

This band is a class 1 band and considering the work on SRR and the EC SRR mandate it is proposed to include this band in the annex of the EC SRD decision.

CEPT proposes to include the band 76-77 GHz in the annex of the EC SRD Decision

3.2.6 Radiodetermination applications

The table below presents the frequency bands included in Annex 6 of ERC/REC 70-03 and their status with respect to the EC Decision on SRDs.

Annex 6	**Equipment for Detecting Movement and Alert**	**Comments / Status**
6a	2400 - 2483.5 MHz	Already covered by the EC Decision on SRDs
6b	9200 - 9500 MHz	Further consideration needed within CEPT. CEPT shall review first compatibility studies performed in the past for these bands and identify additional studies if needed.
6c	9500 - 9975 MHz	
6d	10.5 - 10.6 GHz	
6e	13.4 - 14.0 GHz	
6f	24.05 - 24.25 GHz	*Ongoing compatibility studies and field tests performed within CEPT on the impact of 24 GHz SRDs on Radar Speed Meters (RSM) operated by police forces.*
6g	4.5 - 7 GHz	For Tank Level Probing Radar (TLPR) Already covered by the EC Decision on SRDs
6h	8.5 - 10.6 GHz	
6i	24.05 - 27 GHz	
6j	57 - 64 GHz	
6k	75 - 85 GHz	
6l	17.1 - 17.3 GHz	Already covered by the EC Decision on SRDs for Ground Based systems only.

3.2.7 Alarms

The table below presents the frequency bands included in Annex 7 of ERC/REC 70-03 and their status with respect to the EC Decision on SRDs.

Annex 7	**Alarms**	**Comments / Status**
7a	868.6 - 868.7 MHz	Already covered by the EC Decision on SRDs
7b	869.25 - 869.3 MHz	Already covered by the EC Decision on SRDs
7c	869.65 - 869.7 MHz	Already covered by the EC Decision on SRDs
7d	869.2 - 869.25 MHz	For Social alarms Already covered by the EC Decision on SRDs
7e	869.300 – 869.400 MHz	Already covered by the EC Decision on SRDs
7f	169.4750 - 169.4875 MHz	For Social alarms Already covered by the EC Decision on the harmonisation of the 169.4-169.8125 MHz frequency band (2005/928/EC)
7g	169.5875 - 169.600 MHz	For Social alarms Already covered by the EC Decision on the harmonisation of the 169.4-169.8125 MHz frequency band (2005/928/EC)

3.2.8 Model Control

The table below presents the frequency bands included in Annex 8 of ERC/REC 70-03 and their status with respect to the EC Decision on SRDs.

Annex 8	**Model Control**	**Comments / Status**
8a	26.995, 27.045, 27.095, 27.145, 27.195 MHz	Already covered by the EC Decision on SRDs
8b	34.995 - 35.225 MHz	Not identified as a priority for inclusion in the EC Decision on SRD. Lack of demand expressed for EU harmonisation.
8c	40.665, 40.675, 40.685, 40.695 MHz	Not identified as a priority for inclusion in the EC Decision on SRD. Lack of demand expressed for EU harmonisation.

Footnote 16 is modified for not limiting the control to the movement of models.

3.2.9 Inductive applications

The table below presents the frequency bands included in Annex 9 of ERC/REC 70-03 and their status with respect to the EC Decision on SRDs.

Annex 9	Inductive Applications	Comments / Status
9aa	9 - 59.750 kHz	Frequency band 20.050 - 59.750 kHz covered by the EC Decision on SRDs
9ab	59.750 - 60.250 kHz	Already covered by the EC Decision on SRDs
9ac	60.250 - 70 kHz	Already covered by the EC Decision on SRDs
9b	70 - 119 kHz	Already covered by the EC Decision on SRDs
9c	119 - 135 kHz	Already covered by the EC Decision on SRDs, with more restrictive field strength limit within frequency band 127 - 135 kHz (42 dBµA/m instead of 66 dBµA/m under ERC/REC 70-03)
9c1	135 - 140 kHz	Already covered by the EC Decision on SRDs
9c2	140 - 148.5 kHz	Already covered by the EC Decision on SRDs
9d	6765 - 6795 kHz	Already covered by the EC Decision on SRDs
9e	7400 - 8800 kHz	Already covered by the EC Decision on SRDs
9f	13.553 - 13.567 MHz	Already covered by the EC Decision on SRDs
9f1	13.553 - 13.567 MHz	For RFID and EAS - Already covered by the EC Decision on SRDs
9g	26.957 - 27.283 MHz	Already covered by the EC Decision on SRDs
9h	10.2 - 11 MHz	Already covered by the EC Decision on SRDs
9k	3155 - 3400 kHz	Already covered by the EC Decision on SRDs
9l1	148.5 kHz - 5 MHz	Already covered by the EC Decision on SRDs
9l2	5 - 30 MHz	Already covered by the EC Decision on SRDs
9l3	400 - 600 kHz	For RFID - Already covered by the EC Decision on SRDs

- ***Frequency band 9 – 59.75 kHz***

This band is fully harmonised in CEPT therefore CEPT proposed to include this band in full in the annex of the EC SRD decision.

CEPT proposes to include the band 9-59.7 kHz in the annex of the EC SRD Decision

3.2.10 Radio microphones and Assistive Listening Devices

The table below presents the frequency bands included in Annex 10 of ERC/REC 70-03 and their status with respect to the EC Decision on SRDs.

Annex 10	Radio Microphones	Comments / Status
10a	29.7 - 47 MHz	Frequency band identified on a tuning range basis. Not planned for inclusion in the EC Decision on SRDs.
10b	173.965 - 174.015 MHz	For Aids for the hearing impaired. Low harmonisation in Europe. Not planned for inclusion in the EC Decision on SRDs due to harmonised frequencies available at 169 MHz.
10c	863 - 865 MHz	Not identified as a priority for inclusion in the EC Decision on SRD. Nearly harmonised. No difficulties expected as the band 863 – 865 MHz for wireless audio applications is already included in the EC Decision on SRDs.
10d	174 - 216 MHz	Frequency band identified on a tuning range basis. Individual license required. Not planned for inclusion in the EC Decision on SRDs.
10e	470 - 862 MHz	Frequency band identified on a tuning range basis. Individual license required. Not planned for inclusion in the EC Decision on SRDs.
10f	1785 - 1795 MHz	Not identified as a priority for inclusion in the EC Decision on SRD.
10g	1795 - 1800 MHz	Not identified as a priority for inclusion in the EC Decision on SRD.
10h1	169.4000 - 169.4750 MHz	For Aids for the hearing impaired. Already covered by the EC Decision on the harmonisation of the 169.4-169.8125 MHz frequency band (2005/928/EC).
10h2	169.4875 - 169.5875 MHz	For Aids for the hearing impaired. Already covered by the EC Decision on the harmonisation of the 169.4-169.8125 MHz frequency band (2005/928/EC).
10i	169.4 - 174.0 MHz	For Aids for the hearing impaired. Frequency band identified on a tuning range basis. Not planned for inclusion in the EC Decision on SRDs due also to harmonised frequencies available at 169 MHz.

3.2.11 Radio frequency identification applications

The table below presents the frequency bands included in Annex 11 of ERC/REC 70-03 and their status with respect to the EC Decision on SRDs.

Annex 11	RFID	Comments / Status
11a	2446 - 2454 MHz	For 100 mW e.i.r.p. already covered by the EC Decision on SRDs Not harmonised in Europe for 500mW/4W power levels. The benefit from using this band by RFID 500 mW/4W should be reassessed at the light of market developments.
11b1	865.0 - 865.6 MHz	Already covered by the EC Decision on UHF RFID (2006/804/EC)
11b2	865.6 - 867.6 MHz	
11b3	867.6 - 868.0 MHz	

3.2.12 Wireless applications in Healthcare

The table below presents the frequency bands included in Annex 12 of ERC/REC 70-03 and their status with respect to the EC Decision on SRDs.

Annex 12	Wireless applications in healthcare	Comments / Status
12a	402 - 405 MHz	Already covered by the EC Decision on SRDs
12a1	401 - 402 MHz	See CEPT proposal for inclusion below.
12a2	405 - 406 MHz	See CEPT proposal for inclusion below.
12b	9 - 315 kHz	Already covered by the EC Decision on SRDs
12c	315 - 600 kHz	See CEPT proposal for inclusion below.
12d	30 - 37.5 MHz	See CEPT proposal for inclusion below.
12e	12.5 - 20 MHz	See CEPT proposal for inclusion below.

- ***All Frequency bands in annex 12***

To ensure cross border harmonisation of these medical applications CEPT proposes to include all bands in annex 12 of ERC/REC 70-03 in the annex of the EC SRD Decision.

CEPT proposes to include all bands in annex 12 of ERC/REC 70-03 in the annex of the EC SRD Decision

3.2.13 Wireless Audio Applications

The table below presents the frequency bands included in Annex 13 of ERC/REC 70-03 and their status with respect to the EC Decision on SRDs.

Annex 13	Wireless Audio Applications	Comments / Status
13a	863 - 865 MHz	Already covered by the EC Decision on SRDs
13b	864.8 - 865 MHz	Already covered by the EC Decision on SRDs
13c	1795 - 1800 MHz	Not identified as a priority for inclusion in the EC Decision on SRD.
13d	87.5 - 108 MHz	Already covered by the EC Decision on SRDs

3.3 Specific issues

This section contains the specific issues indicated in the guidance document of the European Commission.

3.3.1 Generic power limits for SRDs above 30 MHz

A discussion took place and it was indicated that establishing a generic power limit for the whole frequency range above 30 MHz not taking into account all possible mitigation techniques , cognitive radio techniques, smart antenna techniques etc will create a worst case situation not leaving any room for SRD applications in practice. A generic limit could therefore do the opposite of what we want to accomplish. It is advised to work on a case by case way for each frequency range).

3.3.2 Non specific SRD allocations in the 863-870 MHz range

CEPT was requested to investigate the current and projected density of usage of these bands. Based on this investigation possible follow-up discussions can take place on new sharing possibilities or the need for additional spectrum. First phase of a monitoring campaign was performed in the 863-870 MHz frequency band. A second phase will start soon.

3.3.3 Exclusion of voice video and audio applications

Discussed in 3.2.1

3.3.4 Usage conditions for inductive applications

The request to review the usage conditions of inductive applications was initiated as the result of problems with a medical implant that uses inductive coupling for charging. The charging is done on a frequency of 2 MHz. The product has been designed around 2003 and since then around 3000 devices have been implanted in the EU.

Several administrations have informed the manufacturer that the charger cannot be used on their territory. Refusal to use the product is either based on the non-availability of the frequency for this purpose or because the device exceeds the regulated field strength.

It is clear that the charger frequency is chosen at a non ISM frequency that could have initially solved the mentioned problems. The charging is also not performed at the frequency where communication takes place as is common in devices without internal power supply that harvest their operating charge from the interrogation signal like inductive SRDs.
Based on this information it is found that this application cannot be classified as an inductive short range device application.

Considering that:

- The device is not produced anymore and the use of the already implanted devices is allowed as part of a special regulatory arrangement in most countries.
- For normal inductive applications the power levels needed for charging are not needed.
- Creating a regulatory basis for this type of applications could create a precedent for unwanted use of SRD spectrum by battery chargers.

The frequency band and limits are not included in the proposed update to the annex of the EC SRD decision.

If, in the future, increased power levels are needed based on requirements from ETSI for inductive applications this issue can be investigated in SRDMG and SE-24 as usual.

4 OVERVIEW OF CEPT PROPOSAL

In summary, CEPT proposes the following substantial amendments to the technical Annex of the EC Decision on SRDs:

- Removal of the exclusion of digital audio and video signals from the set of usage conditions currently given for non-specific SRDs in the bands 26.957 - 27.283 MHz, 40.660 - 40.700 MHz, 433.050 - 434.790 MHz and 863 - 870 MHz. This also resulted in some simplifications of the table that can be considered as editorial.
- Inclusion of the frequency band 76 - 77 GHz for road transport and traffic telematics.
- Inclusion of the frequency band 9 - 59.75 kHz for inductive applications. In the current (2008) annex the band 20.050 - 59.75 is included. No justification was found why the segment 9 - 20.050 kHz was omitted.
- To include all frequency bands for medical applications in healthcare from annex 12 of ERC/REC 70-03. Medical implants are typical devices that can have profit from European harmonisation.
- Introduction of a single power limit of 40dBm and 13dBm/MHz e.i.r.p for 57 - 66 GHz MGWS.

5 WORK ITEMS FOR FURTHER INVESTIGATIONS

CEPT has identified the following work items for further investigation within the frame of the permanent EC Mandate on SRDs.

- Investigate possible designations for SRDs above 40 GHz.
- 57-66 GHz: investigate the possibility to include this band and its power level for non specific SRDs.

ANNEX 1: GUIDANCE TO CEPT REGARDING THE ANNUAL UPDATE OF THE TECHNICAL ANNEX OF THE SRD DECISION 2008/432/EC

GUIDANCE TO CEPT
ON THE THIRD UPDATE OF THE SRD DECISION (2009)

1. PERMANENT MANDATE ON UPDATING THE TECHNICAL ANNEX TO THE SRD DECISION

This document provides the Commission services' guidance to CEPT for the 2009 update of the technical annex to the SRD Decision (the third update). Such guidance is foreseen in the permanent Mandate to CEPT regarding the annual update of the technical annex of the Commission Decision on harmonisation of radio spectrum for use by short range devices[1].

2. GENERAL PRINCIPLES

CEPT is requested to take the following general principles into account when preparing its 2009 response to the permanent mandate in addition to the general objectives of the Mandate.

- The **SRD Decision is a legal document** applicable to all EU Member States (and EEA countries) consequently the technical annex to the Decision must fulfil the legal standards applicable to Commission Decisions.

- The updating exercise aims to modify the SRD Decision in place. **For the 2009 update cycle the reference is the draft revised technical annex as tabled at RSC#26** (RSCOM08-89). Any changes made to the draft technical annex after RSC#26 will have to be taken into account when delivering the CEPT report for the 2009 update cycle. The CEPT proposal should follow the structure and logic of the amended SRD Decision (2008/432/EC). The relevant technical parameters should be presented in line with the RIG II template[2], where appropriate.

- The update should focus on **widening the scope** of the Decision. The usage conditions should be as least constraining and allow for as much flexibility as possible for manufacturers and users. The **removal of as many restrictions as possible** from existing and proposed allocations in the technical annex should be pursued. The RSPG Opinion adopted in November 2008 on Collective Use of Spectrum advocates that "*In the case of CUS, this means that allocations and associated regulations should be made as generic as possible and should not impose unnecessary constraints on the technologies or services that may be deployed in the band*"[3]. More constraining usage conditions for already existing entries should only be introduced in duly justified cases.

- The **EU regulatory environment for SRD spectrum usage consists of the (updated) SRD Decision and the R&TTE Directive** (1999/5/EC). When using spectrum short range devices falling within the scope of the Decision must comply with both the conditions set out in spectrum regulation and the conditions set out in the R&TTE Directive. Technical parameters in the technical annex of the SRD Decision set the requirements which all short-range devices to be used in these bands must at least comply with while additional requirements defined via Harmonised Standards may apply in order to meet the essential requirements defined pursuant article 3 of the R&TTE Directive.

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1 RSCOM06-27 Rev.

2 See document RSCOM08-23

3 RSPG Opinion on Aspects of a European Approach to 'Collective Use of Spectrum' (RSPG08-244 final, page 10).

3. SPECIFIC ISSUES

Besides the general principles mentioned above CEPT is requested to pay attention to a number of specific issues. The following list of specific issues is not exhaustive and should not limit the scope of CEPT's analysis when identifying additional allocations to be harmonised through the SRD Decision.

- CEPT should consider **inclusion of SRD allocations currently covered by recommendation 70-03**.

- The SRD Decision already contains generic limits below 30 MHz. CEPT is invited to continue to study the feasibility of **generic power limits for SRDs above 30 MHz**, as was already suggested in the previous guidance documents[4]. The recent RSPG Opinion on Collective Use of Spectrum also calls to "consider whether there is a power threshold below which devices can operate across entire frequency ranges on a CUS basis with a very low probability of causing interference to existing users (whether licensed on a primary or secondary basis)."

- In line with the general principle to remove as many restrictions as possible, the **necessity of certain usage restrictions** (for example the exclusion of 'video applications' or the exclusion of 'audio and voice signals, and video applications') should be assessed. In line with the same principle CEPT should also assess the feasibility of widening **certain specific allocations into more generic allocations**. Examples which could be assessed are the recent allocation for 'Wideband data transmission systems' in the 60 GHz range (widen the scope to 'non-specific SRD' allocations) or the 'specific allocations' in the 868-870 MHz range.

- There are a number of **'non-specific SRD' allocations in the 863-870 MHz range** used by many applications. CEPT is requested to investigate the current and projected density of usage of these bands. Based on this investigation possible follow-up discussions can take place on new sharing possibilities or the need for additional spectrum.

- In line with the views of the RSPG as expressed in its recent Opinion on Collective Use of Spectrum the CEPT is requested to study the possibility of allocations for novel radio technologies which operate above 40 GHz.

- The usage **conditions for inductive applications** set field strengths limits at 10 meters distance. For certain types of low volume applications with a low probability of causing harmful interference these conditions may be too restrictive. CEPT is invited to review these conditions and consider possible ways to increase flexibility.

- Dependent on the final version of the second update of the technical annex CEPT should consider inclusion of allocations which in the end were not be included in the second update due to the unavailability of the relevant Harmonised Standard.

4. ROADMAP FOR THE 2009 UPDATE CYCLE

- **RSC#26 (December 2008):** launch of the update cycle 2009. CEPT starts work on update proposal pursuant to the permanent Mandate and the 2009 guidance document (this document).

- **RSC#28 (July 2009):** CEPT to submit its report (subject to public consultation) pursuant to the permanent Mandate.

- **August / September 2009:** Commission services examine the CEPT proposal for amendment of the technical annex. Commission services will exchange with CEPT on a preliminary draft updated technical annex to the SRD Decision prior to its submission in RSC. Simultaneously CEPT will hold a public consultation on its report pursuant to the permanent Mandate.

- **RSC#29 (October 2009):** first discussion of Commission proposal for draft updated

- technical annex to the SRD Decision.

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4 RSCOM06-94 & RSCOM08-11 final

ANNEX 2: PROPOSED AMENDMENTS TO THE TECHNICAL ANNEX OF THE EC DECISION ON SRDS

Type of short-range device	**Frequency band**	**Power limit / field strength limit / power density limit**[5]	**Additional parameters / spectrum access and mitigation requirements**[6]	**Other usage restrictions**[7]	**Implementation deadline**
Non-specific short-range devices[8]	6765 - 6795 kHz	42 dBµA/m at 10 metres			1 October 2008
	13.553 - 13.567 MHz	42 dBµA/m at 10 metres			1 October 2008
	26.957 - 27.283 MHz	10 mW effective radiated power (e.r.p.), which corresponds to 42 dBµA/m at 10 metres		Video applications are excluded	1 June 2007
	40.660 - 40.700 MHz	10 mW e.r.p.		Video applications are excluded	1 June 2007
	433.050 - 434.040[9] MHz	1 mW e.r.p. and -13dBm/10 kHz power density for bandwidth modulation larger than 250 kHz	Voice applications allowed with advanced mitigation techniques	Audio and video applications are excluded	1 October 2010
		10 mW e.r.p.	Duty cycle[10]: < 10%	Analogue audio applications other than voice are excluded. Analogue video applications are excluded	1 October 2010
Non-specific short-range devices (cont.)	434.040 - 434.790[11] MHz	1 mW e.r.p. and -13dBm/10 kHz power density for bandwidth modulation larger than 250 kHz	Voice applications allowed with advanced mitigation techniques	Audio and video applications are excluded	1 October 2010

5 Member States must allow the usage of spectrum up to the power, field strength or power density given in this table. In conformity with Article 3(3) of Decision 2006/771/EC, they may impose less restrictive conditions, i.e. allow the use of spectrum with higher power, field strength or power density.

6 Member States may only impose these 'additional parameters / spectrum access and mitigation requirements', and may not add other parameters or spectrum access and mitigation requirements. Less restrictive conditions within the meaning of Article 3(3) of Decision 2006/771/EC mean that Member States may completely omit the parameters / spectrum access and mitigation requirements in a given cell or allow higher values.

7 Member States may only impose these 'other usage restrictions', and may not add additional usage restrictions. As less restrictive conditions may be introduced within the meaning of Article 3(3) of Decision 2006/771/EC, Member States may omit one or all of these restrictions.

8 This category is available for any type of application which fulfils the technical conditions (typical uses are telemetry, telecommand , alarms, data in general and other similar applications).

9 For this frequency band Member States must make all the alternative sets of usage conditions possible.

10 'Duty cycle' means the ratio of time during any one-hour period when equipment is actively transmitting. Less restrictive conditions within the meaning of Article 3(3) of Decision 2006/771/EC mean that Member States may allow a higher value for 'Duty cycle'.

11 Member States must allow the usage of adjacent frequency bands within this table as a single frequency band provided the specific conditions of each frequency band are met.

Type of short-range device	**Frequency band**	**Power limit / field strength limit / power density limit[5]**	**Additional parameters / spectrum access and mitigation requirements[6]**	**Other usage restrictions[7]**	**Implementation deadline**
		10 mW e.r.p.	Duty cycle[6]: ≤10%	Analogue audio applications other than voice are excluded. Analogue video applications are excluded	1 October 2010
			Duty cycle[6]: Up to 100% subject to channel spacing up to 25 kHz Voice applications allowed with advanced mitigation techniques	Audio and video applications are excluded	1 October 2010
	863.000 - 865.000[11] MHz	25 mW e.r.p.	Techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards adopted under Directive 1999/5/EC must be used. Alternatively a duty cycle[6] of ≤ 0,1% may also be used	Analogue audio applications other than voice are excluded. Analogue video applications are excluded	1 October 2010
	865.000 - 868.000[11] MHz	25 mW e.r.p.	Techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards adopted under Directive 1999/5/EC must be used. Alternatively a duty cycle[6] of ≤ 1% may also be used	Analogue audio applications other than voice are excluded. Analogue video applications are excluded	1 October 2010
	868.000 - 868.600[11] MHz	25 mW e.r.p.	Techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards adopted under Directive 1999/5/EC must be used. Alternatively a duty cycle[6] of ≤ 1% may also be used	Analogue video applications are excluded	1 October 2010
Non-specific short-range devices (cont.)	868.700 - 869.200[11] MHz	25 mW e.r.p.	Techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards adopted under Directive 1999/5/EC must be used. Alternatively a duty cycle[6] of ≤ 0,1% may also be used	Analogue video applications are excluded	1 October 2010

Type of short-range device	**Frequency band**	**Power limit / field strength limit / power density limit[5]**	**Additional parameters / spectrum access and mitigation requirements[6]**	**Other usage restrictions[7]**	**Implementation deadline**
Non-specific short-range devices (cont.)	869.400 - 869.650[11] MHz	500 mW e.r.p.	Techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards adopted under Directive 1999/5/EC must be used. Alternatively a duty cycle[6] of ≤ 10 % may also be used. Channel spacing must be 25 kHz, except that the whole band may also be used as a single channel for high-speed data transmission	Analogue video applications are excluded	1 October 2010
		25 mW e.r.p.	Techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards adopted under Directive 1999/5/EC must be used. Alternatively a duty cycle[6] of ≤ 0,1% may also be used	Analogue audio applications other than voice are excluded. Analogue video applications are excluded	1 October 2010
	869.700 - 870.000[11] MHz	5 mW e.r.p.	Voice applications allowed with advanced mitigation techniques	Audio and video applications are excluded	1 October 2010
		25 mW e.r.p.	Techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards adopted under Directive 1999/5/EC must be used. Alternatively a duty cycle[6] of ≤ 1% may also be used	Analogue audio applications other than voice are excluded. Analogue video applications are excluded	1 October 2010
	2400 - 2483.5 MHz	10 mW equivalent isotropic radiated power (e.i.r.p.)			1 June 2007
	5725 - 5875 MHz	25 mW e.i.r.p.			1 June 2007
	24.150 - 24.250 GHz	100 mW e.i.r.p.			1 October 2008
	61.0 - 61.5 GHz	100 mW e.i.r.p.			1 October 2008

Type of short-range device	**Frequency band**	**Power limit / field strength limit / power density limit[5]**	**Additional parameters / spectrum access and mitigation requirements[6]**	**Other usage restrictions[7]**	**Implementation deadline**
Wideband data transmission systems	2400 - 2483.5 MHz	100 mW e.i.r.p. and 100 mW/100 kHz 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	Techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards adopted under Directive 1999/5/EC must be used.		[1 November 2009]
	57.0 - 66.0 GHz	40 dBm e.i.r.p. and 13 dBm/MHz e.i.r.p. density	Techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards adopted under Directive 1999/5/EC must be used.	Fixed outdoor installations are excluded	1 October 2010
Alarm systems	868.600 - 868.700 MHz	10 mW e.r.p.	Channel spacing: 25 kHz The whole frequency band may also be used as a single channel for high-speed data transmission Duty cycle[6]: < 1.0%		1 October 2008
	869.250 - 869.300[11] MHz	10 mW e.r.p.	Channel spacing: 25 kHz Duty cycle[6]: < 0.1%		1 June 2007
	869.300 - 869.400[11] MHz	10 mW e.r.p.	Channel spacing: 25 kHz Duty cycle[6]: < 1.0%		1 October 2008
	869.650 - 869.700 MHz	25 mW e.r.p.	Channel spacing: 25 kHz Duty cycle[6] : < 10%		1 June 2007
Social alarms[12]	869.200 - 869.250 MHz	10 mW e.r.p.	Channel spacing: 25 kHz Duty cycle[6]: < 0.1%		1 June 2007
Inductive applications[13]	9 - 59.750[11] kHz	72 dBµA/m at 10 metres			1 October 2010
	59.750 - 60.250[11] kHz	42 dBµA/m at 10 metres			1 June 2007
	60.250 - 70.000[11] kHz	69 dBµA/m at 10 metres			1 June 2007
	70 - 119[11] kHz	42 dBµA/m at 10 metres			1 June 2007
	119 - 127[11] kHz	66 dBµA/m at 10 metres			1 June 2007
	127 - 140[11] kHz	42 dBµA/m at 10 metres			1 October 2008
Inductive	40 - 148.5[11] kHz	37.7 dBµA/m at 10 metres			1 October 2008

[12] Social alarm devices are used to assist elderly or disabled people when they are in distress.

[13] This category covers, for example, devices for car immobilisation, animal identification, alarm systems, cable detection, waste management, personal identification, wireless voice links, access control, proximity sensors, anti-theft systems, including RF anti-theft induction systems, data transfer to handheld devices, automatic article identification, wireless control systems and automatic road tolling.

Type of short-range device	Frequency band	Power limit / field strength limit / power density limit[5]	Additional parameters / spectrum access and mitigation requirements[6]	Other usage restrictions[7]	Implementation deadline
applications (cont.)	148.5 - 5000 kHz In the specific bands mentioned below, higher field strengths and additional usage restrictions apply:	-15 dBµA/m at 10 metres in any bandwidth of 10 kHz Furthermore the total field strength is -5 dBµA/m at 10 m for systems operating at bandwidths larger than 10 kHz			1 October 2008
	400 - 600 kHz	-8 dBµA/m at 10 metres		This set of usage conditions applies to RFID[14] only	1 October 2008
	3155 - 3400 kHz	13,5 dBµA/m at 10 metres			1 October 2008
	5000 - 30000 kHz In the specific bands mentioned below, higher field strengths and additional usage restrictions apply:	-20 dBµA/m at 10 metres in any bandwidth of 10 kHz Furthermore the total field strength is -5 dBµA/m at 10 m for systems operating at bandwidths larger than 10 kHz			1 October 2008
	6765 - 6795 kHz	42 dBµA/m at 10 metres			1 June 2007
	7400 - 8800 kHz	9 dBµA/m at 10 metres			1 October 2008
	10200 - 11000 kHz	9 dBµA/m at 10 metres			1 October 2008
	13553 - 13567 kHz	42 dBµA/m at 10 metres			1 June 2007
		60 dBµA/m at 10 metres		This set of usage conditions applies to RFID[9] and EAS[15] only	1 October 2008
	26957 - 27283 kHz	42 dBµA/m at 10 metres			1 October 2008
Active medical implants[16]	9 - 315 kHz	30 dBµA/m at 10m	Duty cycle[6]: < 10%		1 October 2008
	30 - 37.5 MHz	1 mW e.r.p.	Duty cycle[6]: < 10%	This set of usage conditions applies to ultra low power medical membrane implants for blood pressure measurements	1 October 2010

[14] This category covers inductive applications used for Radio Frequency Identification (RFID).

[15] This category covers inductive applications used for Electronic Article Surveillance (EAS).

[16] This category covers the radio part of active implantable medical devices, as defined in 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 and their peripherals (OJ L 189, 20.7.1990, p. 17).

Type of short-range device	**Frequency band**	**Power limit / field strength limit / power density limit[5]**	**Additional parameters / spectrum access and mitigation requirements[6]**	**Other usage restrictions[7]**	**Implementation deadline**
	402 - 405 MHz	25 µW e.r.p.	Channel spacing: 25 kHz Individual transmitters may combine adjacent channels for increased bandwidth up to 300 kHz. Other techniques to access spectrum or mitigate interference, including bandwidths greater than 300 kHz, can be used provided they result at least in an equivalent performance to the techniques described in harmonised standards adopted under Directive 1999/5/EC to ensure compatible operation with the other users and in particular with meteorological radiosondes.		[1 November 2009]
Active medical implants and associated peripherals[17]	401 - 402 MHz	25 µW e.r.p.	Channel spacing: 25 kHz Individual transmitters may combine adjacent channels for increased bandwidth up to 100 kHz. Techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards adopted under Directive 1999/5/EC must be used. Alternatively a duty cycle[6] of ≤ 0,1% may also be used		1 October 2010

[17] This category covers systems specifically for the purpose of providing non-voice digital communications between active medical implants and/or body worn devices and other devices external to the human body engaged in transferring non-time critical individual patient related physiological information.

Type of short-range device	Frequency band	Power limit / field strength limit / power density limit[5]	Additional parameters / spectrum access and mitigation requirements[6]	Other usage restrictions[7]	Implementation deadline
	405 - 406 MHz	25 µW e.r.p.	Channel spacing: 25 kHz Individual transmitters may combine adjacent channels for increased bandwidth up to 100 kHz. Techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards adopted under Directive 1999/5/EC must be used. Alternatively a duty cycle[6] of ≤ 0,1% may also be used		1 October 2010
Animal implantable devices	315 - 600 kHz	-5 dBµA/m at 10m	Duty cycle[6]: < 10%		1 October 2010
	12.5 - 20 MHz	-7 dBµA/m at 10m in a bandwidth of 10 kHz	Duty cycle[6]: < 10%	This set of usage conditions is limited to indoor applications.	1 October 2010
Wireless audio applications[18]	87.5 – 108.0 MHz	50 nW e.r.p.	Channel spacing up to 200 kHz		1 October 2008
	863 - 865 MHz	10 mW e.r.p.			1 June 2007
Radio determination applications[19]	2400 – 2483.5 MHz	25 mW e.i.r.p.			[1 November 2009]
	17.1 – 17.3 GHz	26 dBm e.i.r.p.	Techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards adopted under Directive 1999/5/EC must be used.	This set of usage conditions applies to ground based systems only	[1 November 2009]
Tank Level	4.5 – 7.0 GHz	24 dBm e.i.r.p.[21]			[1 November 2009]

[18] Applications for wireless audio systems, including: cordless loudspeakers; cordless headphones; cordless headphones for portable use, e.g. portable CD, cassette or radio devices carried on a person; cordless headphones for use in a vehicle, for example for use with a radio or mobile telephone, etc.; in-ear monitoring, for use at concerts or other stage productions.

[19] This category covers applications used for determining the position, velocity and/or other characteristics of an object, or for obtaining information relating to these parameters.

[20] Tank Level Probing Radars (TLPR) are a specific type of radiodetermination application, which are used for tank level measurements and are 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.

[21] The power limit applies inside a closed tank and corresponds with a spectral density of -41,3 dBm/MHz e.i.r.p. outside a 500 litre test tank.

Type of short-range device	**Frequency band**	**Power limit / field strength limit / power density limit[5]**	**Additional parameters / spectrum access and mitigation requirements[6]**	**Other usage restrictions[7]**	**Implementation deadline**
Probing Radar[20]	8.5 – 10.6 GHz	30 dBm e.i.r.p.[15]			[1 November 2009]
	24.05 – 27.0 GHz	43 dBm e.i.r.p.[15]			[1 November 2009]
	57.0 – 64.0 GHz	43 dBm e.i.r.p.[15]			[1 November 2009]
	75.0 – 85.0 GHz	43 dBm e.i.r.p.[15]			[1 November 2009]
Model Control[22]	26990 - 27000 kHz	100 mW e.r.p.			[1 November 2009]
	27040 - 27050 kHz	100 mW e.r.p.			[1 November 2009]
	27090 - 27100 kHz	100 mW e.r.p.			[1 November 2009]
	27140 - 27150 kHz	100 mW e.r.p.			[1 November 2009]
	27190 - 27200 kHz	100 mW e.r.p.			[1 November 2009]
Radio Frequency Identification (RFID)	2446 - 2454 MHz	100 mW e.i.r.p.			[1 November 2009]
Road Transport and Traffic Telematics	76 - 77 GHz	55dBm peak e.i.r.p and 50dBm mean e.i.r.p and 23.5dBm mean e.i.r.p for pulse radar		This set of usage conditions applies to terrestrial vehicle and infrastructure systems	1 October 2010

[22] This category covers applications used to control models (principally miniature representations of vehicles) in the air, on land or over or under the water surface.

ANNEX 3: LIST OF ABBREVIATIONS

Abbreviation	Explanation
CEPT	European Conference of Postal and Telecommunications Administrations
DAA	Detect And Avoid
e.i.r.p.	Equivalent isotropically radiated power
ECC	Electronic Communications Committee
EESS	Earth exploration-satellite service
e.r.p.	Effective Radiated Power
ETSI	European Telecommunications Standards Institute
GBSAR	Ground Based Synthetic Aperture Radar
ITU	International Telecommunication Union
LBT	Listen Before Talk
MGWS	Multiple Gigabit Wireless Systems
RFID	Radio Frequency Identification
SAR	Synthetic Aperture Radar
SRD	Short Range Device
TLPR	Tank Level Probing Radar