CEPT Report 38

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”

Final Report on 11 March 2011 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 fourth update of the technical annex of the EC Decision on Short Range Devices (SRD) and has been developed in 2010 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.

The update proposes the following changes to the annex:

- To amend existing regulatory requirements in the band 9 kHz – 135 kHz for inductive devices;
- To include the bands 122-123 and 244-246 GHz for non specific short range devices;
- To include the band 63-64 GHz for Intelligent Transport Systems (ITS);
- To include the frequency range 24.050-24.250 GHz for vehicular radar;
- To increase the power level in the band 2446-2454 MHz to 500mW e.i.r.p for RFID and add a footnote to open the possibility for a derogation.

The following items for further work were identified:

- Identifying designations for SRDs above 40 GHz is an ongoing task for future updates. A particular focus on the inclusion of the band 57-66 GHz or part of it for non specific short range devices can be seen as part of this task;
- Investigate the possibility to create generic overlay bands or bands with common spectrum access parameters;
- Investigate the possibility of sharing and the associated conditions in the 863-870 MHz band based on present available (monitoring) reports and other reports to be expected in the near future;
- Investigate the possible inclusion in the EC SRD decision of regulation for specific UWB applications for which no current EC decision exists.

Table of contents

1 INTRODUCTION

This Report has been developed in 2010 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 fourth 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 26 November 2009 (Doc. RSCOM09-80) which is given in Annex 1 to this report.

2 BACKGROUND

The EC Decision on Short Range Devices (SRD) refers to Commission Decision of 9 November 2006 on harmonisation of the radio spectrum for use by short-range devices (2006/771/EC). This Decision is subject to regular amendments.

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.

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 fixed and mobile communications equipment, e.g, 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 014 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 014”. As shown in the summary of this Plan, the periodical 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 fourth 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 practical implementations of these requirements defined via Harmonised Standards may apply in order to meet the essential requirements defined pursuant article 3 of the R&TTE Directive".

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

Some 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 RIS-ii template is considered in this update.

During the drafting of the 2009 revision of the annex it was concluded that the annex is already RIS compatible so a modification would only be a cosmetic change and not necessary. During the drafting process of this **fourth update** RIS-II compatibility is again 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. In 2009 it was decided to include UWB applications in ERC/REC 70-03 the table reflects these additions. The EC SRD decision itself doesn't cover UWB applications.

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
1d	40.660 - 40.700 MHz	Already covered by the EC Decision on SRDs
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
1g	863 - 870 MHz	Already covered by the EC Decision on SRDs
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
1k	61.0 - 61.5 GHz	Already covered by the EC Decision on SRDs
1l	122 - 123 GHz	**See CEPT proposal for inclusion below**
1m	244 - 246 GHz	**See CEPT proposal for inclusion below**
1n	3.1 - 4.8 GHz 6.0 - 9.0 GHz	Generic UWB regulation. See Decisions ECC/DEC/(06)04 and ECC/DEC/(06)12 Already covered by the EC Decision on UWB (2007/131/EC) as amended by EC Decision 2009/343/EC.

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

Ongoing work in CEPT has to make clear whether the whole band or just a portion of it (for example 59-63 GHz) could be included. It is suggested to first focus on the possibility to include the band 59-63 GHz and at a later stage to investigate the possibility to include a larger portion or the whole
57-66 GHz range.

- ***Frequency band 122 - 123 GHz and 244 - 246 GHz***

The new standard ETSI EN 305 550 was under public consultation until 4 October 2010 and is expected to be published in 2011.

This standard will cover the frequency range from 40 GHz to 246 GHz and will therefore be applicable to frequency bands 122-123 GHz and 244-246 GHz which have been incorporated in Annex 1 of ERC/REC 70-03 for many years. The implementation of these two frequency bands should not cause significant difficulties for administrations due to low usage in this frequency range.

It was also noted that recent experiments conducted in this band in Japan as presented in an article in NTT technical review Vol. 7 No. 3 Mar. 2009 show the feasibility of systems in this frequency range with comparable applications as in the 57-66 GHz band.

CEPT proposes to include the band 122-123 GHz in the annex of the EC SRD decision
CEPT proposes to include the band 244-246 GHz in the annex of the EC SRD decision

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.
3e	57 - 66 GHz	Already covered by the EC Decision on SRDs

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 SRDs. Lack of demand expressed for EU harmonisation.
4b	27.090 - 27.100 MHz	Not identified as a priority for inclusion in the EC Decision on SRDs. Lack of demand expressed for EU harmonisation.
4c	984 - 7484 kHz	Not identified as a priority for inclusion in the EC Decision on SRDs. Lack of demand expressed for EU harmonisation.
4d1	516 - 8516 kHz	Not identified as a priority for inclusion in the EC Decision on SRDs. Lack of demand expressed for EU harmonisation.
4d2	7.3 - 23.0 MHz	Not identified as a priority for inclusion in the EC Decision on SRDs. 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	**See CEPT proposal for inclusion below**
5d	76 - 77 GHz	For Vehicle and infrastructure radar systems Already "class 1" (see sub-class 50). Already covered by the EC Decision on SRDs
5e	21.65 - 26.65 GHz	For automotive Short Range Radars (SRR). See decision ECC/DEC/(04)10. Already covered by the EC Decision on 24 GHz UWB SRR systems (2005/50/EC)
5f	77 - 81 GHz	For automotive Short Range Radars (SRR). See decision ECC/DEC/(04)03. Already covered by the EC Decision on 79 GHz UWB SRR systems (2004/545/EC)
5g1	24.050 - 24.075 GHz	**See CEPT proposal for inclusion below**
5g2	24.075 - 24.150 GHz	
5g3	24.150 - 24.250 GHz	

- ***Frequency band 63-64 GHz***

Decision ECC/DEC/(09)01 "on the harmonised use of the 63 - 64 GHz frequency band for Intelligent Transport Systems (ITS) is in force since 13 March 2009. The new standard ETSI EN 302 686 is under public consultation until 25 November 2010 and is expected to be published in 2011. Based on these facts CEPT proposes to include this frequency band in the annex of the EC SRD decision on this basis.

Appropriate definition for 63 GHz ITS should be considered. The new ETSI standard covers any kind of communication from vehicle-to-vehicle, vehicle-to-infrastructure and infrastructure-to-vehicle communications.

Decides 2 of Decision ECC/DEC/(09)01 is however more restrictive:
"*that for the purpose of this Decision, Intelligent Transport Systems (ITS) mean those applications whose aim is to reduce the number of traffic fatalities and improving the efficiency of road traffic using inter vehicle or roadside to vehicle communications;*".

Consistency in the scope of applications permitted under the various regulatory deliverables relating to 63 GHz ITS should be sought. Annex 5 of ERC/REC 70-03 should also be amended consistently.

- ***Frequency band 24.050-24.250 GHz***

CEPT analysis of the potential impact of mobile vehicle radars (VR) on Radar Speed Meters (RSM) operating at 24 GHz is given in ECC Report 134. This study resulted in proposed harmonized technical parameters for the use of the frequency band 24.05 - 24.25 GHz by 24 GHz Narrow Band (NB) vehicle radars, which are presented in Annex 5 of ERC/REC 70-03. An independent study concerning the situation in the UK was also performed by UK government agencies.

Comments have been received about the complexity of the technical parameters presented in annex 5 of ERC/REC 70-03 and that they should find a place in a harmonised standard. These parameters however provide the necessary sharing conditions and are not to be subject of interpretation. To be precise dwell time is the most crucial parameter for sharing with police radar speed meters.

Considering that corresponding standard ETSI EN 302 858 on "Short range radar equipment operating in the 24.05 GHz to 24.25 GHz frequency range for automotive application" is expected to be published by early 2011, CEPT proposes to include the band 24.05 - 24.25 GHz in the technical Annex of the EC Decision on SRDs.

CEPT proposes to include the band 63-64 GHz for Intelligent Transport Systems (ITS) in the annex of the EC SRD decision
CEPT proposes to include the frequency band 24.050-24.250 GHz for vehicular radar 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	Only low level of implementation is currently feasible Further consideration may be needed within CEPT pending market demand.
6c	9500 - 9975 MHz	
6d	10.5 - 10.6 GHz	
6e	13.4 - 14.0 GHz	
6f	24.05 - 24.25 GHz	
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.
6m	30 MHz – 12.4 GHz	For Ground- and Wall- Probing Radar (GPR/WPR) imaging systems, subject to an appropriate licensing regime See Decision ECC/DEC/(06)08 Not relevant for the EC decision Decision on SRDs.
6n	2.2 – 8.0 GHz	For Building Material Analysis (BMA) devices See Decision ECC/DEC/(07)01. Partially covered by the EC Decision on UWB (2007/131/EC) as amended by EC Decision 2009/343/EC. Not relevant for the EC Decision on SRDs

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.

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
9a1	9 – 90 kHz	Already covered by the EC Decision on SRDs, with more restrictive field strength limit within frequency band 59.75 - 60.25 kHz (42 dBµA/m instead of 72 dBµA/m), 60.25 - 70 kHz (69 dBµA/m instead of 72 dBµA/m),and 70 - 90 kHz (42 dBµA/m instead of 72 dBµA/m). **See CEPT proposal for amendment below.**
9a2	90 - 119 kHz	Already covered by the EC Decision on SRDs,
9a3	119 – 135 kHz	For RFID, 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 revised ERC/REC. 70-03). **See CEPT proposal for amendment below.**
9b	135 - 140 kHz	Already covered by the EC Decision on SRDs
9c	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 9-135 kHz***

In 2009 a compatibility study performed in SE-24 led to the relaxation of inductive limits in annex 9 of ERC/REC 70-03. The definition of some protected bands was agreed on. These protected bands (particular small frequency ranges) were previously reviewed and agreed. The result of this study can be found in ECC Report 135 "Inductive limits in the frequency range 9 kHz to 148.5 kHz". CEPT is of the opinion that the possibility for national administrations to implement these more restrictive limits in order to protect standard frequency and time signals should be reflected in the SRD decisions annex in a flexible manner.

CEPT proposes to increase the power limitation below 90 kHz to 72 dBµA/m but with the condition that the maximum field strength can be reduced by administrations to 42 dBµA/m to give proper protection to radio services in the specific sub-bands 59.75 - 60.25 kHz, 74.75 - 75.25 kHz, 77.25 - 77.75 kHz and 128.6 - 129.6 kHz

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	Already covered by 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	Initially not identified as a priority for inclusion in the EC Decision on SRD. Industry request to consider inclusion.
10g	1795 - 1800 MHz	Initially not identified as a priority for inclusion in the EC Decision on SRD. Industry request to consider inclusion.
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.

- ***Frequency band 1785-1795 MHz***

This frequency band has a limited implementation in 3 ECC countries and is not implemented in 6 ECC countries. One additional CEPT country did not implement this band. The level of implementation suggests that inclusion will not be possible at this moment

- ***Frequency band 1795-1800 MHz***

This frequency band has a limited implementation in 3 ECC countries and is not implemented in 7 ECC countries. Two additional CEPT countries did not implement this band. The level of implementation suggests that inclusion will not be possible at this moment.

CEPT proposes not to include the band 1785-1795 MHz and 1795-1800 MHz for radio microphones and assistive listening devices in the annex of the EC SRD decision at this moment. Further review of the need of effective spectrum harmonisation at 1.8 GHz should be carried in the context of ongoing CEPT assessment of spectrum requirements for Programme Making and Special Event (PMSE) applications.

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	

- ***Frequency band 2446-2454 MHz***

Band 11a 2446 - 2454 MHz is already covered by the EC Decision on SRDs. For 100 mW e.i.r.p. but not harmonised in Europe for 500 mW/4 W power levels. In this band there is a clear distinction in power levels for active and passive tags. The 500 mW power level opens the band also for a wider use of passive tags. For this band there may be a compatibility issue with the military service in one country for the 500 mW case and in two countries for the 4 W case. We suggest to include the band with a power of 500 mW and add a footnote to open the possibility for a derogation for the respective countries with compatibility issues.

CEPT proposes to increase the power level in the band 2446-2454 MHz to 500mW e.i.r.p and add a footnote to open the possibility for a derogation

3.2.12 Active Medical Implants and their associated peripherals

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	Already covered by the EC Decision on SRDs
12a2	405 - 406 MHz	Already covered by the EC Decision on SRDs
12b	9 - 315 kHz	Already covered by the EC Decision on SRDs
12c	315 - 600 kHz	Already covered by the EC Decision on SRDs
12d	30 - 37.5 MHz	Already covered by the EC Decision on SRDs
12e	12.5 - 20 MHz	Already covered by the EC Decision on SRDs

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	Initially not identified as a priority for inclusion in the EC Decision on SRD. Industry request to consider inclusion.
13d	87.5 - 108 MHz	Already covered by the EC Decision on SRDs

- ***Frequency band 1795-1800 MHz***

This frequency band has a limited implementation in 1 ECC country and is not implemented in 9 ECC countries. Two additional CEPT countries did not implement this band. The level of implementation suggests that inclusion will not be possible at this moment.

CEPT proposes to not include the band 1785 - 1795 MHz for wireless audio applications in the annex of the EC SRD decision at this moment. Further review of the need for effective spectrum harmonisation at 1.8 GHz should be carried in the context of ongoing CEPT assessment of spectrum requirements for Programme Making and Special Event (PMSE) applications

3.3 Specific issues

This section contains the specific issues indicated in the guidance document of the European Commission not already dealt with in section 3.2.

3.3.1 Generic power limits for SRDs above 30 MHz

The SRD Decision already contains generic limits below 30 MHz. CEPT is invited to continue to study generic power limits for SRDs above 30 MHz. These investigations should be carried out on a case by case basis and for separate frequency ranges in line with the suggestion in CEPT Report 35.

Currently SE-24 is running WI23 “maximising spectrum efficiency”. A number of suggestions has been done to make spectrum access more generic and not application based/restricted. Spectrum utilisation is well defined in ITU-R SM.1046-2 “Definition of spectrum use and efficiency of a radio system.” It is defined as the product of the frequency bandwidth, the geometric (geographic) space, and the time denied to other potential users. For SRD’s there are practical limitations to this approach based on the physical limits of receivers in relation to the balance of power and for example the resulting hidden node problem in specific frequency bands and for specific applications.

At this moment discussions are going on to determine the relevance of these problems and their associated limits and the possibility to overcome them partly or in whole by defining border conditions like a fair balance of power in certain frequency segments. Until it is clear if the suggested limitations are real or can be overcome, we suggest not identifying a generic power limit or spectrum utilisation factor yet.

3.3.2 Use of SRD allocations in the 863 - 870 MHz range

CEPT was requested to investigate the current and projected density of usage of current SRD bands, especially the allocations in the 863-870 MHz range. Based on these investigations follow-up discussions could take place on new sharing possibilities or the need for additional spectrum.

CEPT/WGFM Project Team FM-22 has performed a monitoring campaign in the 863-870 MHz band for three distinctive reasons. The first reason is to gain experience with SRD monitoring as a new monitoring task. The second reason is to verify the prediction that the occupancy of the SRD band 863-870 MHz is increasing,

eventually leading to congestion and rendering the bands useless in certain area's. The third reason was to investigate sharing possibilities in the existing frequency allocations in the 863-870 MHz Band. Based on this study and reports to be expected in the future, additional sharing scenario's may be considered.

CEPT also issued in October 2010 a questionnaire addressed primarily to SRD industry aiming to review in detail the relevance of existing regulatory requirements for SRD operating in the 863-870 MHz frequency band. CEPT seeks a minimum SRD regulation that meets the evolution of technology while ensuring an efficient use of the spectrum.

4 OVERVIEW OF CEPT PROPOSAL

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

- To amend existing regulatory requirements in the band 9 kHz – 135 kHz for inductive devices;
- To include the bands 122-123 GHz and 244-246 GHz for non specific short range devices;
- To include the band 63-64 GHz for Intelligent Transport Systems (ITS);
- To include the frequency range 24.050-24.250 GHz for vehicular radar ;
- To increase the power level in the band 2446-2454 MHz to 500mW e.i.r.p for RFID and add a footnote to open the possibility for a derogation.

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:

- Identifying designations for SRDs above 40 GHz is an ongoing task for future updates. A particular focus on the inclusion of the band 57-66 GHz or part of it for non specific short range devices can be seen as part of this task;
- Investigate the possibility to create generic overlay bands or bands with common spectrum access parameters;
- Investigate the possibility of sharing and the associated conditions in the 863-870 MHz band based on present available (monitoring) reports and other reports to be expected in the near future;
- Investigate the possible inclusion in the EC SRD decision of regulation for specific UWB applications for which no current EC decision exists.

ANNEX 1: GUIDANCE TO CEPT REGARDING THE ANNUAL UPDATE OF THE TECHNICAL ANNEX OF THE SRD DECISION 2010/368/EC

GUIDANCE TO CEPT
ON THE FOURTH UPDATE OF THE SRD DECISION

PERMANENT MANDATE ON UPDATING THE TECHNICAL ANNEX TO THE SRD DECISION

This document provides the Commission services' guidance to CEPT for the fourth update of the technical annex to the SRD Decision. 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].

GENERAL PRINCIPLES

In line with previous updates CEPT is requested to take the following general principles into account when preparing its response to the permanent mandate (in addition to the general objectives of the Mandate):

- The **SRD Decision is a legal document** and must fulfil the legal standards applicable to Commission Decisions.
- The updating exercise aims to modify the SRD Decision in place. The relevant technical parameters should be presented in a manner compatible with the RIG II template[2], where appropriate.
- The update should focus on **widening the scope** of the Decision with least constraining usage conditions 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. More constraining usage conditions for already existing entries should be avoided (they can only be introduced in duly justified cases).
- The **EU regulatory environment for SRD spectrum usage consists of the (updated) SRD Decision, the R&TTE Directive** and the **Regulatory framework for Electronic Communications**.

SPECIFIC ISSUES

On top of the general principles mentioned in section 2 CEPT is requested to pay attention to a number of specific issues (the list of specific issues is not exhaustive and should not limit the scope of CEPT's analysis):

- The SRD Decision already contains generic limits below 30 MHz. CEPT is invited to continue to study **generic power limits for SRDs above 30 MHz**. In line with CEPT Report 35 this should be done on a case by case basis for separate frequency ranges.
- CEPT should consider further **inclusion of new SRD allocations** in the technical annex of the SRD Decision.
- In line with the principles of technology and service neutrality agreed in the revised Framework Directive and with the general principle to remove as many restrictions as possible CEPT should investigate the removal of **unnecessary usage restrictions** (for example the exclusion of 'analogue video applications' or the exclusion of 'analogue audio and video applications') as well as studying the **broadening of specific allocations into more generic allocations** (for example when the 'channel access and occupation rules' already exclude certain types of usage).
- CEPT is requested to investigate the current and projected density of usage of current SRD bands, especially the allocations in the 863 - 870 MHz range. Based on these investigations follow-up discussions can take place on new sharing possibilities or the need for additional spectrum.

[1] RSCOM06-27 Rev.

[2] See document RSCOM08-23

ROADMAP FOR THE 2009 UPDATE CYCLE

- **RSC#30 (December 2009):** launch of the fourth update cycle. CEPT starts work on the update proposal pursuant to the permanent Mandate and this guidance document.
- **RSC#34 (December 2010):** CEPT to submit its report (subject to public consultation) pursuant to the permanent Mandate.
- **Early 2011:** 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#35 (April 2011):** CEPT submits final CEPT report and the Commission services present a draft Commission Decision updating the technical annex to the SRD Decision.

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

Harmonised frequency bands and technical parameters for short-range devices

Type of short-range device	Frequency band[3]	Transmit power limit / field strength limit / power density limit[4]	Additional parameters (channelling and/or channel access and occupation rules)[5]	Other usage restrictions[6]	Implementation deadline
Non-specific short-range devices[7]	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
Non-specific short-range devices (cont.)	433.050 - 434.040[8] 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 November 2010
		10 mW e.r.p.	Duty cycle limit[9]: 10%	Analogue audio applications other than voice are excluded. Analogue video applications are excluded	1 November 2010
	434.040 - 434.790[8] 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 November 2010
		10 mW e.r.p.	Duty cycle limit[9]: 10%	Analogue audio applications other than voice are excluded. Analogue video applications are excluded	1 November 2010

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

[4] Member States must allow the usage of spectrum up to the transmit 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 transmit power, field strength or power density.

[5] Member States may only impose these 'additional parameters (channelling and/or channel access and occupation rules)', 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 'additional parameters (channelling and/or channel access and occupation rules)' in a given cell or allow higher values.

[6] 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.

[7] 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).

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

[9] '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'.

			Duty cycle limit[9]: 100% subject to channel spacing up to 25 kHz Voice applications allowed with advanced mitigation techniques	Audio and video applications are excluded	1 November 2010
Non-specific short-range devices (cont.)	863.000 - 865.000 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 limit[9] of 0.1% may also be used	Analogue audio applications other than voice are excluded. Analogue video applications are excluded	1 November 2010
	865.000 - 868.000 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 limit[9] of 1% may also be used	Analogue audio applications other than voice are excluded. Analogue video applications are excluded	1 November 2010
	868.000 - 868.600 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 limit[9] of 1% may also be used	Analogue video applications are excluded	1 November 2010
	868.700 - 869.200 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 limit[9] of 0.1% may also be used	Analogue video applications are excluded	1 November 2010
Non-specific short-range devices (cont.)	869.400 - 869.650[8] 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 limit[9] 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 November 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 limit[9] of 0.1% may also be used	Analogue audio applications other than voice are excluded. Analogue video applications are excluded	1 November 2010
	869.700 - 870.000[8] MHz	5 mW e.r.p.	Voice applications allowed with advanced mitigation techniques	Audio and video applications are excluded	1 June 2007
		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 limit[9] of 1% may also be used	Analogue audio applications other than voice are excluded. Analogue video applications are excluded	1 November 2010
Non-specific short-range devices (cont.)	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
	122 - 123 GHz	100 mW e.i.r.p.			[1 October 2011]
	244-246 GHz	100 mW e.i.r.p.			[1 October 2011]
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 November 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 limit[9]: 1.0%		1 October 2008
	869.250 - 869.300 MHz	10 mW e.r.p.	Channel spacing: 25 kHz Duty cycle limit[9]: 0.1%		1 June 2007
	869.300 - 869.400 MHz	10 mW e.r.p.	Channel spacing: 25 kHz Duty cycle limit[9]: 1.0%		1 October 2008

	869.650 - 869.700 MHz	25 mW e.r.p.	Channel spacing: 25 kHz Duty cycle limit[9] : 10%		1 June 2007
Social alarms[10]	869.200 - 869.250 MHz	10 mW e.r.p.	Channel spacing: 25 kHz Duty cycle limit[9]: 0.1%		1 June 2007
Inductive applications[11]	9 - 90kHz[12]	72 dBµA/m at 10 metres			[1 October 2011]
	90 - 119 kHz	42 dBµA/m at 10 metres			1 June 2007
	119 - 135 kHz[12]	66 dBµA/m at 10 metres			[1 October 2011]
	135 - 140 kHz	42 dBµA/m at 10 metres			1 October 2008
	140 - 148.5 kHz	37.7 dBµA/m at 10 metres			1 October 2008
	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
Inductive applications (cont.)	400 - 600 kHz	-8 dBµA/m at 10 metres		This set of usage conditions applies to RFID[13] 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

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

[11] 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.

[12] Member states may reduce the permitted field strength limit to 42 dBµA/m at 10 metres to protect the Standard Frequency and Time signal and power control signal transmitters , in the frequency bands 59.75 - 60.25 kHz, 74.75 - 75.25 kHz, 77.25 - 77.75 kHz and 128.6 - 129.6 kHz

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

Inductive applications (cont.)	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[13] and EAS[14] only	1 October 2008
	26957 - 27283 kHz	42 dBµA/m at 10 metres			1 October 2008
Active medical implants[15]	9 - 315 kHz	30 dBµA/m at 10m	Duty cycle limit[9]: 10%		1 October 2008
	30.0 - 37.5 MHz	1 mW e.r.p.	Duty cycle limit[9]: 10%	This set of usage conditions applies to ultra low power medical membrane implants for blood pressure measurements only	1 November 2010
	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

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

[15] 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).

Active medical implants and associated peripherals[16]	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 limit[9] of 0,1% may also be used		1 November 2010
	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 limit[9] of 0,1% may also be used		1 November 2010
Animal implantable devices[17]	315 - 600 kHz	-5 dBµA/m at 10m	Duty cycle limit[9]: 10%		1 November 2010
	12.5 - 20.0 MHz	-7 dBµA/m at 10m in a bandwidth of 10 kHz	Duty cycle limit[9]: 10%	This set of usage conditions applies to indoor applications only	1 November 2010
Low power FM transmitters[18]	87.5 - 108.0 MHz	50 nW e.r.p.	Channel spacing up to 200 kHz		1 November 2010
Wireless audio applications[19]	863 - 865 MHz	10 mW e.r.p.			1 November 2010

[16] This category covers systems specifically designed for the purpose of providing non-voice digital communications between active medical implants, as defined in footnote 15, and/or body worn devices and other devices external to the human body used for transferring non-time critical individual patient related physiological information.

[17] This category covers transmitting devices which are placed inside the body of an animal for the purpose of performing diagnostic functions and/or delivery of therapeutic treatment.

[18] This category includes applications which connect personal audio devices, including mobile phones, and the automotive or home entertainment system.

[19] Applications for wireless audio systems, including: wireless microphones, 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 and wireless microphones for use at concerts or other stage productions.

Radio determination applications[20]	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 Probing Radar[21]	4.5 - 7.0 GHz	24 dBm e.i.r.p.[22]			1 November 2009
	8.5 - 10.6 GHz	30 dBm e.i.r.p.[22]			1 November 2009
	24.05 - 27.0 GHz	43 dBm e.i.r.p.[22]			1 November 2009
	57.0 - 64.0 GHz	43 dBm e.i.r.p.[22]			1 November 2009
	75.0 – 85.0 GHz	43 dBm e.i.r.p.[22]			1 November 2009
Model Control[23]	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)[24]	2446 - 2454 MHz	500 mW e.i.r.p. [24]			[1 October 2011]

[20] 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.

[21] 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.

[22] 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.

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

[24] Member states may reduce/maintain the permitted power to 100mW in order to protect systems of public interest such as the military service.

Road Transport and Traffic Telematics (RTTT)	24.050 - 24.075 GHz	100 mW e.i.r.p.		This set of usage conditions applies to vehicular radar	[1 October 2011]
	24.075 - 24.150 GHz	0.1 mW e.i.r.p.			
	24.075 - 24.150 GHz	100 mW e.i.r.p.	≤ 4μs/40 kHz dwell time every 3ms if mounted behind a bumper and Frequency modulation range >250 kHz or instantaneous BW >250 kHz		
	24.075 - 24.150 GHz	100 mW e.i.r.p.	≤ 3μs/40kHz dwell time every 3 ms if not mounted behind a bumper and Frequency modulation range >250 kHz or instantaneous BW >250 kHz		
	24.075 - 24.150 GHz	100 mW e.i.r.p.	≤ 1ms/40 kHz dwell time every 40 ms if not mounted behind a bumper and Frequency modulation range >250 kHz or instantaneous BW >250 kHz		
	24.150 - 24.250 GHz	100 mW e.i.r.p.			
	63 - 64 GHz	40 dBm e.i.r.p.		This set of usage conditions applies to Intelligent Transport Systems (ITS)[25], vehicle-to-vehicle, vehicle-to-infrastructure and infrastructure-to-vehicle	[1 October 2011]
	76 - 77 GHz	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		This set of usage conditions applies to terrestrial vehicle and infrastructure systems only	1November 2010

[25] ITS (Intelligent Transport Systems) as defined in 2008/671/EC include cooperative systems based on vehicle-to vehicle, vehicle-to-infrastructure and infrastructure-to-vehicle communications for the real time transfer of information. Those systems potentially offer major improvements in transport system efficiency, in safety for all road users and in mobility comfort.

ANNEX 3: LIST OF ABBREVIATIONS

Abbreviation	Explanation
BW	BandWidth
CEPT	European Conference of Postal and Telecommunications Administrations
DAA	Detect And Avoid
EAS	Electronic Article surveillance
e.i.r.p.	Equivalent isotropically radiated power
ECC	Electronic Communications Committee of CEPT
EESS	Earth Exploration Satellite Service
e.r.p.	Effective Radiated Power
ETSI	European Telecommunications Standards Institute
ITS	Intelligent Transport Systems
ITU	International Telecommunication Union
LBT	Listen Before Talk
MGWS	Multiple Gigabit Wireless Systems
NB	Narrow Band
PMSE	Programme Making and Special Event
RFID	Radio Frequency Identification
RIS	Radio Interface Specifications
RSM	Radar Speed Meters
RTTT	Road Transport and Traffic Telematics
SAR	Synthetic Aperture Radar
SRD	Short Range Devices
SRR	Short Range Radars
TLPR	Tank Level Probing Radar
UWB	UltraWide Band
VR	Vehicular Radars
WAS	Wireless Access Systems