STATUS
of
ERC RECOMMENDATION 70-03

RELATING TO THE USE OF SHORT RANGE DEVICES (SRD)
Including Appendixes and Annexes
at
September 2000

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ERC RECOMMENDATION 70-03 (Tromsø 1997 and subsequent amendments*)

RELATING TO THE USE OF SHORT RANGE DEVICES (SRD)

Recommendation adopted by the Frequency Management, Radio Regulatory and Spectrum Engineering Working Groups

Foreword

This Recommendation sets out the general position on common spectrum allocations for Short Range Devices (SRDs) for countries within the CEPT. It is also intended that it can be used as a reference document by the CEPT member countries when preparing their national regulations in order to keep in line with the provisions of the R&TTE Directive.

In using this Recommendation it should be remembered that it represents the most widely accepted position within the CEPT but it should not be assumed that all allocations are available in all countries. An indication of where allocations are not available or where deviations from the CEPT position occur is to be found in Appendix 3.

It should also be remembered that the pattern of radio use is not static. It is continuously evolving to reflect the many changes that are taking place in the radio environment; particularly in the field of technology. Spectrum allocations must reflect these changes and the position set out in this Recommendation is therefore subject to continuous review.

Moreover, many administrations still have national allocations that do not conform to the CEPT position set out in this Recommendation.

For these reasons, those wishing to develop or market SRDs based on this Recommendation are advised to contact the relevant national administration to verify that the position set out herein still applies.

When selecting parameters for new SRDs, which may have inherent safety of human life implications, manufacturers and users should pay particular attention to the potential for interference from other systems operating in the same or adjacent bands. Manufacturers should advice users on the risks of potential interference and its consequences

INTRODUCTION

The CEPT has adopted Recommendations to deal with low power devices, and specific short range devices. The European Telecommunications Standards Institute (ETSI) has now developed harmonised standards and standards for the majority of these devices. Other standards or technical specifications might be applicable within the framework of the R&TTE Directive.

The term "Short Range Device" (SRD) is intended to cover the radio transmitters which provide either uni-directional or bi-directional communication and which have low capability of causing interference to other radio equipment. SRDs use either integral, dedicated or external antennas and all modes of modulation can be permitted subject to relevant standards. Due to the many different services provided by these devices, no description can be exhaustive, however, the following categories are amongst those covered:

Telecommand and Telecontrol
Telemetry
Alarms
Speech and Video.

* See cover sheet for current status of Recommendation.

This Recommendation describes the spectrum management requirements for SRDs relating to allocated frequency bands, maximum power levels, equipment antenna, channel spacing, duty cycle, licensing and free circulation. In addition for CEPT countries which have not implemented the R&TTE Directive it also sets out the conformity assessment and marking requirements. However, for CEPT countries that have implemented the R&TTE Directive, art.12 (CE-marking) which states that " any other marking may be affixed to the equipment provided that the visibility and legibility of the CE-marking is not hereby reduced" and art. 7.2 which states that "member states may restrict the putting into service of radio equipment only for reasons related to the effective and appropriate use of the radio spectrum, avoidance of harmful interference or matters relating to public health" apply.

Appendix 1 Table 1 lists the applications covered by this Recommendation. Tables 2 to 7 in Appendix 1 list parameters relevant to these applications. In Table 6 only the last line is applicable in countries implementing the R&TTE Directive. The Tables in the following annexes give the possible combinations which may be utilised for different applications. For example, in Annex 1 for the frequency band 40.660-40.700 MHz as mentioned in the fourth row of the first column, equipment may operate with maximum radiated power level 8 (i.e., 10 mW e.r.p.). Equipment in the frequency band 61.0-61.5 GHz may operate with maximum radiated power level 11 (i.e., 100 mW e.i.r.p.). In neither case are individual licences required and both antenna type 1 (integral antenna) and type 2 (dedicated antenna) may be applied. The same allotment applies to channel spacing, duty cycle, and for countries which have not implemented the R&TTE directive conformity assessment, marking and free circulation.

Relevant ERC Decisions and standards produced by ETSI are mentioned in Appendix 2 of this Recommendation for information purposes. Relevant ETSI Standards are also mentioned by their relevant (ETS/EN) number in the corresponding annexes. However, this list is not necessarily exhaustive and other standards or technical specifications may be applicable. For countries having implemented the R&TTE Directive its art. 10 procedures will then be applied for conformity assessment where either harmonised standards or with the involvement of a Notified Body also other standards and specifications may be applicable. Further details can be found on the relevant EC and the ERO web sites (www.ero.dk).

"The European Conference of Postal and Telecommunications Administrations,

considering

a) that SRDs in general operate in shared bands and are not permitted to cause harmful interference to other radio services;

b) that in general SRDs cannot claim protection from other radio services;

c) that due to the increasing interest in the use of SRDs for a growing number of applications it is necessary to harmonise frequencies and regulations for these devices;

d) that there is a need to distinguish between different applications;

e) that additional applications and associated annexes will be added as necessary;

f) that the list of applications currently covered by this Recommendation is shown in Appendix 1, Table 1;

g) that, for countries that have not implemented the R&TTE Directive, the conformity assessment, type approval (if applicable), marking and free circulation (i.e. carrying) requirements within this Recommendation are applicable to SRDs;

h) that maintenance of Appendices 2 and 3 and also the related cross-references in the Annexes may be undertaken by the ERO based on information from Administrations,

i) that information about placing SRD equipment on the market and its use can be obtained by contacting individual administrations, especially with regard to equipment operating in frequencies or frequency bands that may be designated for SRDs by administrations in addition to those covered in this recommendation;

j) that for those countries implementing the provisions of this Recommendation, national restrictions in respect of the annexes can be found in Appendix 3;

k) that the CEPT should amend or abrogate relevant parts of CEPT Recommendations where indicated in the annexes but equipment marketed before the adoption of this ERC Recommendation marked with abbreviations defined in the CEPT Recommendations to be abrogated should be allowed continuation of free circulation (i.e., carrying) and use.

recommends

1) that CEPT Administrations implement the parameters listed in Appendix 1 (Applications and Parameter Tables) in accordance with the indications mentioned in the annexes, except for CEPT countries that have implemented the R&TTE Directive where, in lieu of Table 6 of Appendix 1, the provisions of Article 12.1 of the Directive are applied,

2) that technical parameter limits should not be exceeded by any function of the equipment;

3) that, for CEPT countries that have not implemented the R&TTE Directive, whenever there are ERC Decisions harmonising the radio parameters and adopting European standards the ERC Decision ERC/DEC/(97)10 is applicable. CEPT Administrations that have not implemented the R&TTE Directive should accept the conformity assessment performed by bodies in other CEPT member countries without requiring national conformity assessment;

4) that, for CEPT countries that have not implemented the R&TTE Directive, whenever recommends (3) cannot be applied but there is an ETSI standard mentioned in the Annexes, those Administrations should accept the test results reached by an accredited test laboratory in another country in accordance with ERC Recommendation CEPT/ERC/REC 01-06 (Brussels 1994) (Procedure for mutual recognition of type testing and type-approval for radio equipment);

5) that in cases not covered by recommends 3 and 4, CEPT Administrations that have not implemented the R&TTE Directive should introduce national conformity assessment based on national type testing;

6) that CEPT Administrations should allow visitors from other countries to carry and use their equipment temporarily without any further formalities whenever free circulation and the use of the equipment is indicated in the annexes, unless there are national restrictions as shown in Appendix 3."

Note:
Please check the ERO web site (www.ero.dk) under "Documentation / Implementation" for the up to date position on the implementation of this and other ERC Decisions.

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Appendix 1

Applications and Parameter Tables.

Table 1: Applications

Annex	Application
1	Non-specific Short Range Devices
2	Equipment for Detecting Avalanche Victims
3	Local Area Networks, RLANs and HIPERLANs
4	Automatic Vehicle Identification for Railways (AVI)
5	Road Transport & Traffic Telematics (RTTT)
6	Equipment for Detecting Movement and Equipment for Alert
7	Alarms
8	Model Control
9	Inductive Applications
10	Radio Microphones
11	RF Identification Systems *
12	Ultra Low Power Active Medical Implants
13	Wireless Audio Applications

* Annex in preparation

Table 2: Radiated Power or Magnetic Field Strength

	Maximum power level
1.	7 dBµA/m at 10 metres
2.	42 dBµA/m at 10 metres
3.	72 dBµA/m at 10 metres (at 30 kHz descending 3 dB/octave)
4.	38 dBµA/m at 10 metres (at 135 kHz descending 3 dB/octave to 4.78 MHz)
5.	9 dBµA/m at 10 metres
5a.	25 µW [1]
6.	1 mW [1]
7.	2 mW [1]
7a.	5 mW [1]
8.	10 mW [1]
9.	25 mW [1]
10.	50 mW [1]
11.	100 mW [1]
11a.	200 mW [1]
12.	500 mW [1]
13.	1 W [1]
14.	2 W [1]
15.	8 W [1]
16.	*To be determined (t.b.d.)* [1]
17.	55 dBm peak power[1] 50 dBm average power[1] 23.5 dBm average power[1 2]
18.	Power requirements defined in relevant annex.

[1] Levels are either effective radiated power (e.r.p.) or equivalent isotropically radiated power (e.i.r.p.) as indicated in the relevant annex.

[2] Pulsed radar only.

Table 3: Transmitter antenna source[1]

	Type of transmitter antenna
1.	Integral (no external antenna socket)
2.	Dedicated (type approved with the equipment)
3.	External (equipment type approved without an antenna)

Table 4. Channel spacing permitted

	Channel spacing
1.	5 kHz
2.	6.25 kHz
3.	10 kHz
4.	12.5 kHz
5.	20 kHz
6.	25 kHz
7.	50 kHz
8.	75 kHz
9.	100 kHz
10.	150 kHz
11.	200 kHz
12.	Other channel spacing - see specific annex
13.	No channel spacing – whole stated frequency band may be used

In the frequency bands where channel spacing is defined the centre frequency of the first channel is at a distance of *channel spacing/2* from the lower frequency band edge.

[1] In specific cases the antenna information is an essential requirement to facilitate sharing

Table 5: Licensing requirements

	Individual licence
1.	Required [1]
2.	Not required

Table 6: Conformity assessment, marking requirements and free circulation[2]

	Conformity assessment	Marking	Free circulation and use
1.	Mutual recognition of conformity assessment ERC/DEC/(97)10	Rxxxx SRD Aa[3]	Yes[4]
2.	Mutual recognition of test results (CEPT/ERC/REC 01-06 (Brussels 1994))	CEPT SRD Aa Y[3]	Yes[4]
3.	National conformity assessment[5]	National marking	No
4.	R&TTED Article 10	R&TTED Article 12	R&TTED Article 7.2

[1] A licence may not be necessary in certain CEPT countries.

[2] This whole Table 6 has an informative nature and together with entries in the Annexes for conformity assessment it gives options foreseen possible in each case. The inclusion of this Table does not intend to recommend selection of any of these option because the availability of these options in a particular country is bound by the implementation of the R&TTE directive in that country. Even if the markings defined in this Table cannot be any more required in countries implementing the R&TTE Directive and are neither any more seen necessary by market surveillance authorities even in other CEPT countries, manufacturers are encouraged to use the SRD Aa code to identify the Radio Interfaces in voluntary marking and/or documentation accompanying the equipment.

[3] 'xxxx' is the identification number of the responsible conformity assessment body. The updated list of these identification numbers will be available from the ERO.
'A' is the number of the relevant Annex associated with this recommendation.
'a' is the letter of the leftmost column in the Annexes defining the frequency band alternative. 'a' may be more than one letter in the case of multi-band equipment. All frequency bands in which equipment is intended to operate must be specified.
'Y' is the symbol for the country which issued the type approval.

[4] There are restrictions as defined in Appendix 3

[5] National conformity assessment may also be based on mutual recognition of test results (CEPT/ERC/REC 01-06).

Table 7: Duty cycle categories

For the purposes of this Recommendation the duty cycle is defined as the ratio, expressed as a percentage, of the maximum transmitter “on” time on one or more carrier frequencies, relative to a one hour period.

Where an acknowledgement message is required, the additional transmitter “on” time shall be included.

For pre-programmed devices the maximum transmitter “on” time and minimum “off” time are given in the following table.[1]

	Name	Transmitting time/Full cycle[1]	Maximum transmitter "on" time[2] (seconds)	Minimum transmitter “off” time[2] (seconds)	Explanation
1	Very Low	<0.1%	0.72	0.72	For example, 5 transmissions of 0.72 seconds within one hour.
2	Low	<1.0%	3.6	1.8	For example, 10 transmissions of 3.6 seconds within one hour.
3	High	<10%	36	3.6	For example, 10 transmissions of 36 seconds within one hour
4	Very High	Up to 100%	-	-	Typically continuous transmissions but also those with a duty cycle greater than 10%

[1] The ETSI standard EN 300 220-1 gives a further guide in section 8.9 for the definition, the declaration and the rationale to define duty cycle categories using pre-programmed or software controlled devices. In case of manual operated equipment.
[2] These limits are advisory with a view to facilitating sharing between systems in the same frequency band.

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Appendix 2

List of relevant ERC Decisions, Recommendations and ETSI Standards

ERC Decisions

ERC/DEC/(92)02	On the frequency bands to be designated for the coordinated introduction of Road Transport Telematics Systems.
ERC/DEC/(95)01	On the free circulation of radio equipment in CEPT member countries.
ERC/DEC/(96)03	On the harmonised frequency band to be designated for the introduction of High Performance Radio Local Area Networks (HIPERLANs).
ERC/DEC/(96)15	On the adoption of approval regulations for radio equipment to be used for wireless microphones in the 25 MHz to 3 GHz frequency range to be used in the mobile service based on the Interim European Telecommunications Standard (I-ETS) 300 422.
ERC/DEC/(96)16	On the adoption of approval regulations for radio equipment to be used for wide band audio links in the frequency range 25 MHz to 3 GHz based on the European Telecommunications Standard (ETS) 300 454.
ERC/DEC/(96)17	On the adoption of approval regulations for radio equipment to be used for wide band data transmission operating in the frequency range 2.4 GHz to 2.4835 GHz and using spread spectrum modulation techniques based on the European Telecom-munications Standard (ETS) 300 328.
ERC/DEC(97)06	On the harmonised frequency band to be designated for Social Alarm Systems.
ERC/DEC/(97)10	On the mutual recognition of conformity assessment procedures including marking of radio equipment and radio terminal equipment.
ERC/DEC/(98)05	On adoption of national type approval regulations for short range devices operating in the frequency range 25 to 1000 MHz with power levels of up to 500mW based on the European Standard (Telecommunications Series) EN 300 220-1.
ERC/DEC/(98)30	ERC Decision of 23 November 1998 on the adoption of approval regulations for Automatic Vehicle Identification (AVI) for railways based on the European Standard (Telecommunications series) EN 300 761 V1.1.1 (1998-01) (operating in the 2.45 GHz ISM band).
ERC/DEC/(99)07	ERC Decision of 10 March 1999 on the adoption of approval regulations for short range devices operating in the frequency range 1 GHz to 25 GHz based on the Interim European Telecommunications Standard (I-ETS) 300 440
ERC/DEC(99)23	ERC Decision of 29 November 1999 on the harmonised frequency bands to be designated for the introduction of High Performance Radio Local Area Networks (HIPERLANs)

ERC Recommendations

CEPT/ERC/REC 01-06	Procedure for mutual recognition of type testing and type-approval for radio equipment.

ETSI Standards

Generic standards

EN 300 220-1	Radio Equipment and Systems (RES); Short range devices; Technical characteristics and test methods for radio equipment to be used in the 25 MHz to 1000 MHz frequency range with power levels ranging up to 500 mW.
EN 300 330	Radio Equipment and Systems (RES); Short range devices (SRDs); Technical characteristics and test methods for radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz.
I-ETS 300 440	Radio Equipment and Systems (RES); Short range devices; Technical characteristics and test methods for radio equipment to be used in the 1 GHz to 25 GHz frequency range.

Specific standards

ETS 300 328	Radio Equipment and Systems (RES); Wideband transmission systems; Technical characteristics and test conditions for data transmission equipment operating in the 2.4 GHz ISM band and using spread spectrum modulation techniques.
EN 300 422	Radio Equipment and Systems (RES); Technical characteristics and test methods for wireless microphones in the 25 MHz to 3 GHz frequency range.
ETS 300 454	Radio Equipment and Systems (RES); Wide band audio links; Technical characteristics and test methods.
ETS 300 836-1	Radio Equipment and Systems (RES); HIgh PErformance Radio Local Area Network (HIPERLAN) Type 1 Conformance Testing Specification**.**
EN 300 674	Road Transport and Traffic Telematics (RTTT); Technical characteristics and test methods for Dedicated Short Range Communication (DSRC) transmission equipment (500 kbit/s / 250 kbit/s)
ETS 300 718	Radio Equipment and Systems (RES); Avalanche beacons; Transmitter-receiver systems.
EN 300 761	Radio Equipment and Systems (RES); Automatic Vehicle Identification (AVI) for Railways.
EN 301 091	Radio Equipment and Systems (RES); Automotive radar systems in the 76-77 GHz frequency band.
EN 301 357	Technical characteristics and test methods for analogue cordless wideband audio devices using integral antennas operating in the CEPT recommended 863 MHz to 865 MHz frequency range.

Annex	Country	Restriction	Reason/remark
All Annexes			
	France	France does not recognise the former marking CEPT SRD Aa Y and CEPT RLAN Y recommended by T/R 01-04 and T/R 10-01 respectively. The free circulation and use of products bearing these old markings must then be confined to existing equipments and to countries which have already adopted these markings. The marking CEPT SRD Aa Y proposed by T/R 70-03 will not be recognised in France. In any case in France marking issues are in line with the R&TTE Directive.	
	Germany		Clarification of the terms contained in the table with reference to the German Telecommunications Act of 25 July 1996: The use of frequencies or frequency bands for the operation of transmitting equipment reuires "frequency assignment". There are two types of frequency assignments: individual frequency assignments are granted upon application and correspond to "individual licence required" within the meaning of CEPT/ERC/REC 70-03 (Appendix 1,Table 5, No 1.); general frequency assignments are granted ex officio by administrative act, published in the Regulatory Authority Official Gazette and correspond to "individual licence not required" within the the meaning of CEPT/ERC/REC 70-03 (Appendix 1,Table 5, No. 2) A "licence" is required for the operation of transmission lines used to offer specified telecommunications services for the public and/or for voice telephony. A licence does not include the right to operate a radio system.
	Italy	Present legislation requires that use of SRD is subject to licence. Only door openers and radio-toys are excluded from this provision. Free circulation is not allowed. Legislative provisions will be provided in order to take into account the R&TTE Directive.	
	Lithuania	Individual licence for operation is required	Present legislation requires that use of any transmitter is subject to licence
	Moldova	Telecommunication equipment and cables are imported commercialized only on basis of conformity certificates issued by the Telecommunication Products Certification Body of Moldova and must be marked in Moldova. It is not permitted to ustilise non-certificated and non-marked telecommunication equipment and cables. Subject to the above all SRD frequency bands with technical parameters indicated in ERC REC 70-03 are permitted on secondary basis.	In accordance with Law of Telecommunications of Republic of Moldova.

Appendix 3

Annex	Country	Restriction	Reason/remark
	Portugal	Portugal is not in a position to commit to the ERC/DEC(97)10 on the mutual recognition of conformity assessment procedures including marking of radio equipment and radio terminal equipment. In accordance with the national legal framework Portugal is unable to utilise the mark as specified in Annex 2 of ERC/DEC/(97)10 aimed at the placing of these types of equipment on the market. The present legislation requires that only equipment marked with the CE mark or, in its absence, with a national mark can be placed on the market. Concerning free circulation, and in accordance with the present legislation, Portugal is not in a position to support and allow the free circulation of these types of equipment. The current legislation is being reviewed and is taking into account the R&TTE	
	Russia	In accordance with the current National Frequency Allocation Table, different communication services, including special applications operate in frequency bands designated for SRD applications. All radiocommunication systems require individual license and authorization for using certain radio frequencies, which is granted after conformity assessment procedures. All types of radio equipment requires national approval based on the national standard system (GOST) and issue of conformity certificate. Only equipment with national mark can be placed on the market in Russia.	
Annex 1 Band A			
Non Specific Short Range			
6765-6795 kHz			
	Bulgaria	Not implemented	
	Latvia	Not implemented	Under study
	Romania	Secondary basis - individual licence	
	United Kingdom	Not implemented	see annex 9
Annex 1 Band B			
Non Specific Short Range			
13.553-13.567 MHz			
	Bulgaria	Not implemented	
	Latvia	Not implemented	Under study
	Romania	Secondary basis - individual licence	
	United Kingdom	Not implemented	See annex 9

Annex	Country	Restriction	Reason/remark
Annex 1 Band C			
Non Specific Short Range			
26.957-27.283 MHz			
	Finland	Only 26.995, 27.045, 27.095, 27.145, 27.195, 27.255 MHz @10 kHz	To keep non-voice applications out of CB/PR27 channels/ Voice, Audio and video only on frequencies above 2.4
	Italy	None	Add channels: 27.515, 27.525, 27.535, 27.545, 27.555, 27.565, 27.575, 27.585 MHz and 29.815, 29.825, 29.835, 29.845, 29.855, 29.865, 29.875 and 29,885 MHz max 5mW erp, 10 kHz channel spacing and duty cycle <10 %. 29.7 MHz (radio-toys) additional channel with 10 mW e.r.p., no ch spacing. 30.8625, 30.8750, 30.8875, 30.9, 30.9125, 30.9250, 30.9375, 30.95 MHz additional ch with e.r.p. 5 mW, ch spacing 12.5 kHz and duty cycle <10%
	Latvia	Only 26.995, 27.045, 27.095, 27.145 MHz; ERP<10 mW	
	Luxembourg	Not on CB channels. Only 26.995, 27.045, 27.145 and 27.195 MHz	
	Norway	Only 26.995, 27.045, 27095, 27.145 and 27.195 MHz allowed	
	Romania	Secondary basis - individual licence	
	Sweden	None	100 mW is allowed
	United Kingdom	Only 26.995, 27.045, 27.095, 27.145, 27.195 MHz @10 kHz, e.r.p 1mW	
Annex 1 Band D			
Non Specific Short Range			
40.660-40.700 MHz			
	Finland	Only 40.665, 40.675, 40.685, 50.695 MHz @10 kHz	Voice, Audio and video only on frequencies above 2.4 GHz
	Latvia	Only 40.670, 40.675, 40.680, 40.685, 40.690, 40.695 MHz; channel spacing 5 kHz	
	Norway	Channel spacing 10 kHz	
	Romania	Secondary basis - individual licence	
	Sweden	None	100 mW is allowed
Annex 1 Band R			
Non Specific Short Range			
138.2-138.45 MHz			
	Bulgaria	Not implemented	
	Croatia	Not implemented	
	Estonia	Not implemented	Will not be implemented due to possible interference to aeronautical services
	France	Not implemented	Exclusive military band
	Germany	Not implemented	Military band
	Hungary	Not implemented	
	Ireland	Speech/music or other continuous or near continuous transmission not permitted.	
	Italy	Not implemented	Military applications
	Latvia	Not implemented	
	Norway	Not implemented	
	Portugal	Not implemented	

Annex	Country	Restriction	Reason/remark
	Romania	Not implemented	Not available
	Slovenia	Not implemented	Not available
	Switzerland	Not implemented	Exclusive Military band
	The Netherlands	Not implemented	
	Turkey	Not implemented	

Annex 1 Band E

Non Specific Short Range

433.050-434.790 MHz

Denmark	Audio and voice only if e.r.p is below 100 uW	
Finland	Audio and voice not allowed	Voice, Audio and video only on frequencies above 2.4 GHz
France	None	No dutycycle limit
Hungary	Two way speech not allowed	
Italy	Limited to 433.05-433.575 MHz for audio signals with 12.5 or 25 kHz channel spacing. Audio and voice signals not allowed	Military applications
Latvia	Voice, audio, video not allowed	
Luxembourg	Audio and voice not allowed	
Sweden	None	25 mW is allowed. No duty cycle limitation
The Netherlands	None	No duty cycle limit
United Kingdom	Voice not allowed	

Annex 1 Band F

Non Specific Short Range

868.000-868.600 MHz

Bulgaria	Not implemented	
Estonia	Not implemented	
Latvia	ERC < 10 mW	
Poland	Not implemented	Implementation planned. WLL usage
Portugal	License required	Implementation planned

Annex 1 Band G

Non Specific Short Range

868.700-869.200 MHz

Bulgaria	Not implemented	
Italy	None	Additional band 869.3-869.4 MHz 25 mW erp ch sp 25 kHz
Latvia	ERP < 10 mW	
Poland	Not implemented	WLL usage. Implementation planned
Portugal	Licence required	Implementation planned

Annex	Country	Restriction	Reason/remark
Annex 1 Band H			
Non Specific Short Range			
869.300-869.400 MHz			
	Austria	Not allocated	
	Bulgaria	Not allocated	
	Finland	Not allocated	
	Germany	Not yet allocated	Maximum power level and duty cycle t.b.d.
	Italy	Not allocated	Exclusive military band
	Latvia	ERP < 10 mW	
	Portugal	Not allocated	
	Sweden	Not allocated	
Annex 1 Band I			
Non Specific Short Range			
869.400-869.650			
	Bulgaria	Not implemented	
	Estonia	Voice, Audio and video only on frequencies above 2.4 GHz	
	Italy	Max 25 mW erp	Military applications
	Latvia	ERP < 10 mW	
	Poland	Not implemented	WLL usage. Implementation planned
	Portugal	Licence required	Implementation planned
Annex 1 Band K			
Non Specific Short Range			
869.700-870.000 MHz			
	Bulgaria	Not implemented	
	Finland	Audio and voice not allowed	Voice, Audio and video only on frequencies above 2.4 GHz
	Latvia	ERP < 10 mW	
	Poland	Not implemented	WLL usage. Implementation planned
	Portugal	Licence required	Implementation planned
Annex 1 Band L			
Non Specific Short Range			
2400-2483.5 MHz			
	France	2400-2446 MHz excluded 2454-2483.5 MHz limited to indoor video applications	Military band
	Romania	Secondary basis - individual licence	
	Sweden	None	25 mW is allowed
	United Kingdom	Channel spacing > 20 MHz on where justified by the modulation	

Annex	Country	Restriction	Reason/remark
Annex 1 Band M			
Non Specific Short Range			
5725-5875 MHz			
	Latvia	Not implemented	Under study
	Poland	Not implemented	Fixed Service. Implementation planned
	Romania	Secondary basis - individual licence	
	Sweden	Licence required	Implementation planned
	The Netherlands	Limited to 5725-5850 MHz 5850-5875 MHz implementation	5850-5875 MHz planned. Requires sec. Legislation change
Annex 1 Band N			
Non Specific Short Range			
24.0-24.25 GHz			
	France	Not implemented	
	Latvia	Not implemented	Under study
	Luxembourg	Limited to 24.05-24.25 GHz	24.0-24.05 for amateur use only
	Poland	Not implemented	Implementation planned
	Sweden	None	500 mW allowed
	United Kingdom	Only 24.150-24.250 GHz	
Annex 1 Band O			
Non Specific Short Range			
61.0-61.5 GHz			
	Austria	Not implemented	Awaiting ETSI standard
	Bulgaria	Not implemented	
	Croatia	License required	
	Denmark	Not implemented	No national interface
	France	Not implemented	
	Ireland	Not implemented	Under study
	Latvia	Not implemented	Under study
	Poland	Not implemented	Implementation planned
	United Kingdom	Not implemented	Under review
Annex 1 Band P			
Non Specific Short Range			
122-123 GHz			
	Austria	Not implemented	Awaiting ETSI standard
	Croatia	License required	
	Denmark	Not implemented	No national interface
	France	Not implemented	
	Ireland	Not implemented	Under study
	Latvia	Not implemented	Under study
	Poland	Not implemented	Implementation planned
	United Kingdom	Not implemented	Under review

Annex	Country	Restriction	Reason/remark
Annex 1 Band Q			
Non Specific Short Range			
244-246 GHz			
	Austria	Not implemented	Awaiting ETSI standard
	Croatia	License required	
	Denmark	Not implemented	No national interface
	France	Not implemented	
	Ireland	Not implemented	Under study
	Latvia	Not implemented	Under study
	Poland	Not implemented	Implementation planned
	United Kingdom	Not implemented	Under review
Annex 2 Band A			
Avalanche Victims			
2275 Hz			
	Belgium	Not applicable	
	Denmark	Not implemented	will be implemented year 2001
	Estonia	Not applicable	
	Ireland	Not implemented	
	Latvia	Not applicable	
	Poland	Not implemented	Implementation planned
	Portugal	Not implemented	Under study
	The Netherlands	Not applicable	
Annex 2 Band B			
Avalanche Victims			
457 kHz			
	Belgium	Not applicable	
	Bulgaria	Not implemented	Under study
	Denmark	Not implemented	will be implemented year 2001
	Estonia	Not applicable	
	Ireland	Not implemented	
	Latvia	Not applicable	
	Poland	Not implemented	Implementation planned
	Portugal	Not implemented	Under study
	The Netherlands	Not applicable	
Annex 3 Band A			
RLANs and HIPERLANs			
2400-2483.5 MHz			
	Austria	Use of plug-in radio devices only with host equipment and external antennas as declared by the manufacturer	
	France	Limited to 2446.5-2483.5 with some geographical contstrains and e.i.r.p limited to -20dBW/MHz	Military band
	Hungary	Processing gain: min 10 dB, Antenna type: integral or external with max gain 6 dBi.	
	Luxembourg	None	System provider for third party traffic may require a Telecommunications Act

Annex	Country	Restriction	Reason/remark
	Romania	On a secondary basis. Individual licence required. T/R 22-06 not implemented	
	The Netherlands	10 mW licence free indoor and outdoor. 100 mW licence free indoor only. 100 mW with licence outdoor within 2451-2471 MHz	Protection of existing use Government and ENG/OB
	United Kingdom	System provider for third party traffic may require a Wireless Telegraphy and/or Telecommunictions Act Licence	

Annex 3 Band B

RLANs and HIPERLANs

5150-5350 MHz

Belgium	5250-5350 MHz excluded	
Croatia	Licence required	
France	5250-5350 excluded	Governmental band
Hungary	5250-5350 MHz excluded	
Italy	Limited to 5150-5250 MHz	Military applications
Latvia	Not implemented	Under study
Luxembourg	None	System provider for third party traffic may require a Telecommunications Act
Poland	Not implemented	Implementation planned
Portugal	Licence required	Implementation planned.
Sweden	Licence required	With standards - licence exempted
The Netherlands	Not implemented	Implementation planned
United Kingdom	System provider for third party traffic may require a Wireless Telegraphy and/or Telecommunictions Act Licence	

Annex 3 Band C

RLANs and HIPERLANs

5470-5725 MHz

Austria	Not implemented	Military band
Bulgaria	Not implemented	
Croatia	Licence required	
France	Not implemented	France will implement this band identified by the ERC DEC(99)23 when the efficien y of the mitigation techniques made mandatory by this Decision is
Italy	Not implemented	Military applications
Latvia	Not implemented	Under study
Luxembourg	None	System provider for third party traffic may require a Telecommunications Act
Poland	Not implemented	Implementation planned
Portugal	Licence required	Implementation planned.
Switzerland	Not implemented	Exclusive Military band
The Netherlands	Not implemented	Implementation planned
Turkey	Not implemented	
United Kingdom	System provider for third party traffic may require a Wireless Telegraphy and/or Telecommunictions Act Licence	

Annex	Country	Restriction	Reason/remark
Annex 3 Band D			
RLANs and HIPERLANs			
17.1-17.3 GHz			
	Austria	Not implemented	Awaiting ETSI standard
	Croatia	Licence required	
	Finland	Licence required	
	France	Not implemented	Governmental band
	Germany	Not implemented	Under review
	Latvia	Not implemented	Under study
	Luxembourg	Not implemented	
	Poland	Not implemented	Implementation planned
	Portugal	Licence required	Implementation planned.
	Sweden	Licence required	With standards - licence exempted
	Turkey	Not implemented	
	United Kingdom	System provider for third party traffic may require a Wireless Telegraphy and/or Telecommunictions Act Licence	
Annex 4 Band A			
Railway applications			
2446-2454 MHz			
	Estonia	Not implemented	
	Latvia	Not implemented	Under study
	Portugal	Not implemented	Planned
	Romania	Secondary basis. Individual licence required	
	Sweden	Licence required	
Annex 4 Band B			
Railway applications			
27.095 MHz			
	Estonia	Not implemented	
	Finland	None	Existing system at 27.115 MHz
	Latvia	Not implemented	Under study
	Portugal	Not implemented	
	Sweden	Licence required	
	The Netherlands	Not implemented	
Annex 4 Band C			
Railway applications			
4515 kHz			
	Croatia	Not implemented	
	Estonia	Not implemented	
	Latvia	Not implemented	Under study
	Luxembourg	Not implemented	
	Sweden	Licence required	
	The Netherlands	Not implemented	

Appendix 3

Annex	Country	Restriction	Reason/remark
Annex 5 Band A			
RTTT			
5795-5805 MHz			
	Finland	Licence required	
	France	Power limited to 2 W e.i.r.p	
	Latvia	Not implemented	Under study
	Norway	Power limited to 2 W e.i.r.p	
	Poland	Limited implementation	Fixed Services
	Portugal	Licence required	Under study
	Romania	Not implemented	Under study
	Sweden	Individual licence required	
	United Kingdom	System provider may require a Wireless Telegraphy and/or Telecommunications Acts licence to operate. The end user (vehicle units) will be licence exempted. Only 2 W permitted	
Annex 5 Band B			
RTTT			
5805-5815 MHz			
	Estonia	Not implemented	
	Finland	Licence required	
	France	Not implemented	
	Latvia	Not implemented	Under study
	Luxembourg	None	System provider for third party traffic may require a Telecommunications Act
	Norway	Power limited to 2 W e.i.r.p.	
	Poland	Limited implementation	Fixed Services
	Portugal	Licence required	Under study
	Romania	Not implemented	Under study
	Sweden	Individual licence required	
	Switzerland	Not implemented	Exclusive Military band
	United Kingdom	System provider may require a Wireless Telegraphy and/or Telecommunications Acts licence to operate. The end user (vehicle units) will be licence exempted. Only 2 W permitted	
Annex 5 Band C			
RTTT			
63-64 GHz			
	Austria	Not implemented	Awaiting ETSI standard
	Croatia	Licence required	
	Finland	Licence required	
	Ireland	Not implemented	
	Latvia	Not implemented	Under study
	Norway	National conformity assessment until the standard is available	
	Portugal	Licence required	Under study
	Romania	Not implemented	Under study
	Sweden	Individual licence required	

Annex	Country	Restriction	Reason/remark
Annex 5 Band D			
RTTT			
76-77 GHz			
	Bulgaria	Not implemented	
	Croatia	Licence required	
	Ireland	Not implemented	
	Latvia	Not implemented	Under study
	Portugal	Licence required	Under study
	Sweden	Individual licence required	
Annex 6 Band A			
Movement Detection			
2400-2483.5 MHz			
	France	Limited to 2446-2454 MHz with max e.i.r.p 500 mW	Military band
	Italy	Not implemented	Military applications
	Latvia	ERP < 10 mW	
	Portugal	Max e.i.r.p. 10 mW	
	Romania	Not implemented	Under study
	Sweden	Not implemented	
	The Netherlands	Indoor use only	
	United Kingdom	Limited to 2445-2455 MHz	
Annex 6 Band B			
Movement Detection			
9200-9500 MHz			
	Bulgaria	Not implemented	
	Czech Republic	Individual licence required	
	Denmark	Not implemented	Will be implemented year 2001 National interface under preparation
	Estonia	Not implemented	
	Finland	Not implemented	
	France	Not implemented	
	Italy	Not implemented	Military applications
	Latvia	Not implemented	Under study
	Norway	Not implemented	
	Poland	Not implemented	Implementation planned
	Portugal	Not implemented	Under study
	Sweden	Not implemented	
	United Kingdom	May be used for Radar Level Gauges on a licence per site basis only	
Annex 6 Band C			
Movement Detection			
9500-9975 MHz			
	Bulgaria	Not implemented	
	Czech Republic	Individual licence required	
	Estonia	Not implemented	
	France	Limited to 9.88-9.92 with max e.i.r.p 50 mW	
	Germany	Not implemented	Military band
	Latvia	Not implemented	Under study

Annex	Country	Restriction	Reason/remark
	Norway	Not implemented	
	Poland	Not implemented	Implementation planned
	Sweden	Not implemented	
	United Kingdom	May be used for Radar Level Gauges on a licence per site basis only	

Annex 6 Band D

Movement Detection

10.5-10.6 GHz

Austria	Not implemented	Fixed Service
Bulgaria	Not implemented	
Croatia	Not implemented	
Estonia	Not implemented	
Finland	Not implemented	10.45-10.5 GHz available
France	Limited to 10.57-10.61 with max e.I.r.p. 20 mW	
Germany	Not implemented	ENG/OB video links equipment
Hungary	Maximum e.i.r.p. 25 mW	
Latvia	Not implemented	Under study
Luxembourg	In the band 10.5-10.6 GHz the eirp is limited to 25 mW	
Poland	Limited implementation	Fixed Services
Portugal	Not implemented	Under study
Sweden	Limited to 10.51-10.58 GHz	Also 10.25-10.28 GHz and 10.35-10.38 GHz licenced
Turkey	Not implemented	
United Kingdom	Limited to 10.577-10.597 GHz	

Annex 6 Band E

Movement Detection

13.4-14.0 GHz

Bulgaria	Not implemented	
Denmark	Not implemented	Will be implemented year 2001 National interface under preparation
Estonia	Not implemented	
France	Not implemented	
Latvia	Not implemented	Under study
Norway	Not implemented	
Poland	Not implemented	Implementation planned
Sweden	Licence required	
Turkey	Not implemented	

Annex 6 Band F

Movement Detection

24.05-24.25 GHz

Estonia	Not implemented	
France	Limited to 24.075-24.175 GHz. 100 mW e.I.r.p. Higer power can be allowed after agreement with the armed forces	
Latvia	Not implemented	Under study
Poland	Not implemented	Implementation planned
Portugal	Not implemented	Under study
Sweden	None	500 mW allowed
United Kingdom	Limited to 24.15-24.25 GHz	

Annex	Country	Restriction	Reason/remark
Annex 7 Band A			
Alarms			
868.000-868.700 MHz			
	Bulgaria	Not implemented	
	Croatia	Licence required	
	Latvia	Not implemented	Under study
	Poland	Not implemented	Implementation planned
	Portugal	Licence required	
	Romania	Not implemented	
Annex 7 Band B			
Alarms			
869.250-869.300 MHz			
	Bulgaria	Not implemented	
	Hungary	Not implemented	
	Latvia	Not implemented	Under study
	Poland	Limited implementation	WLL services
	Portugal	Licence required	
	Romania	Not implemented	
Annex 7 Band C			
Alarms			
869.650-869.700 MHz			
	Bulgaria	Not implemented	
	Hungary	Not implemented	
	Latvia	Not implemented	Under study
	Poland	Limited implementation	WLL services
	Portugal	Licence required	
	Romania	Not implemented	
Annex 7 Band D			
Alarms			
869.200-869.250 MHz			
	Bulgaria	Not implemented	
	Poland	Limited implementation	WLL services
	Portugal	Licence required	
Annex 8 Band A			
Model Control			
26.995, 27.045, 27.095, 27.145, 27.195 MHz			
	France	Not implemented	Citizen band
	Italy	None	Additional channels: 27.235 and 27.275 MHz
	Latvia	ERP < 10 mW	

Annex	Country	Restriction	Reason/remark
Annex 8 Band B			
Model Control			
34.995-35.225 MHz			
	Bulgaria	Not implemented	
	France	Not implemented	
	Germany	Limited to 35.005-35.205 MHz and individual frequency assignment	Emergency services
	Italy	Not implemented	Military applications
	Latvia	Not implemented	Under study
	Norway	Limited to 30.005-30.305 MHz channel spacing 10 kHz Max e.r.p. 100 mW	
	Portugal	Limited to 30.005-30.205 MHz	
	Romania	Limited to 34.995-35.005 and 35.195-25.225 MHz. Individual licence required if e.r.p. > 100 mW	
	Slovak Republic	Limited to 35-35.2 MHz	Occupied by military
	Sweden	Limited to 35.025-35.205 MHz	
Annex 8 Band C			
Model Control			
40.665, 40.675, 40.685, 40.695 MHz			
	France	Not implemented	
	Italy	None 70.080 and 72.240 MHz also available	Additional channels: 40.715, 40.725, 40.735, 40.765, 40,775, 40.785, 40.815, 40.825, 40.835, 40.865, 40.875 MHz. 70.080 and 72.240 MHz also available
	Latvia	ERP <10 mW	
	Portugal	Limited to 40.695 MHz	
	The Netherlands	None	Aditional channels: 40.725, 40.735, 40.765, 40.775, 40.785, 40.815, 40.825, 40.835, 40.865, 40.875, 40.885, 40.915, 40.925, 40.965, 40.975, 40.985 MHz. Additional channels in 30 MHz: 30.085, 30.095, 30.105, 30.115, 30.185, 30.195 MHz
Annex 9 Band AA			
Inductivce applications			
9-59.750 kHz			
	Bulgaria	Not implemented	
	Croatia	Individual licence required	
	Czech Republic	Individual licence required	
	Germany	Within 9-57 kHz max field strength is 42 dBuA/m at 10 metres. The length of any antenna loop element shall be <30	Applications within the Fixed Service
	Hungary	19.95-20.05 kHz excluded	
	Latvia	Not implemented	Under study
	Portugal	Limited to car immobilisers. Maximum power 42 dBuA/m at 10 metres	
	Romania	Not implemented	

Annex	Country	Restriction	Reason/remark
Annex 9 Band AB			
Inductivce applications			
59.750-60.250 kHz			
	Bulgaria	Not implemented	
	Croatia	Individual licence required	
	Czech Republic	Individual licence required	
	Germany	The length of any antenna loop element shall be <30 m.	
	Latvia	Not implemented	Under study
	Portugal	Limited to car immobilisers. Maximum power 42 dBuA/m at 10 metres	
	Romania	Not implemented	
Annex 9 Band AC			
Inductivce applications			
60.250-70 kHz			
	Bulgaria	Not implemented	
	Croatia	Individual licence required	
	Czech Republic	Individual licence required	
	Germany	Within 67-70 kHz max field strength is 42 dBuA/m at 10 metres. The length of any antenna loop element shall be <30	Applications within the Fixed Service
	Latvia	Not implemented	Under study
	Portugal	Limited to car immobilisers. Maximum power 42 dBuA/m at 10 metres	
	Romania	Not implemented	
Annex 9 Band B			
Inductivce applications			
70-119 kHz			
	Bulgaria	Not implemented	
	Croatia	Individual licence required	
	Czech Republic	Individual licence required	
	Germany	The length of any antenna loop element shall be <30 m.	
	Latvia	Not implemented	Under study
	Romania	Not implemented	
Annex 9 Band C			
Inductivce applications			
119-135 kHz			
	Bulgaria	Not implemented	
	Croatia	Individual licence required	
	Czech Republic	Individual licence required	
	Germany	Within 127-135 kHz max field strength is 42 dBuA/m at 10 metres. The length of any antenna loop element shall be <	Applications within the Fixed Service
	Latvia	Not implemented	Under study
	Portugal	Limited to car immobilisers. Maximum power 42 dBuA/m at 10 metres	
	Romania	Not implemented	

Annex	Country	Restriction	Reason/remark
Annex 9 Band D			
Inductivce applications			
6765-6795 kHz			
	Bulgaria	Not implemented	
	Croatia	Individual licence required	
	Latvia	Not implemented	Under study
	Portugal	Not implemented	Under study
Annex 9 Band E			
Inductivce applications			
7400-8800 kHz			
	Bulgaria	Not implemented	
	Croatia	Individual licence required	
	France	For anti-theft-detection devices	
	Italy	Not implemented	Military applications. Under study for implementation
	Latvia	Not implemented	Under study
	Portugal	Not implemented	Under study
	The Netherlands	Limited to 7400-8100 kHz	8100-8800 kHz planned. Requires sec legislation change
Annex 9 Band F			
Inductivce applications			
13.553-13.567 MHz			
	Bulgaria	Not implemented	
	Croatia	Individual licence required	
	Latvia	Not implemented	Under study
	Portugal	Not implemented	Under study
Annex 9 Band G			
Inductivce applications			
26.957-27.283 MHz			
	Croatia	Individual licence required	
	France	Not implemented	Citizen band
	Italy	Not implemented	Military applications
	Latvia	Not implemented	Under study
	Portugal	Voice, Audio and video only on frequencies above 2.4 GHz	
Annex 10 Band A			
Radio microphones			
29.7-47.0 MHz			
	Austria	General licence for 36.8-36.85-37.45-37.50-37.55 MHz narrow band and 36.7-37.1-44.55-45.0 MHz Broadband radio microphones	
	Croatia	Licence required	
	Czech Republic	Licence required	
	Denmark	32-39.4 MHz as listed in the Danish Radio Interface	
	Estonia	Not implemented	

Annex	Country	Restriction	Reason/remark
	Finland	Only 31.100, 32.100, 32.900, 33.500, 36.700, 37.100 MHz and 42.400-43.600 MHz with maz 200 kHz channels	
	France	Limited to 32.8, 36.4, 39.2 MHz 1 mW erp and 200 kHz	
	Germany	Limited to 32.4-38.2 MHz Individual frequency assignments required. Permitted channel spacing 10 kHz below 36 MHz and 40 kHz above 36	Military applications. Individual frequency assignment under review.
	Hungary	Limited to 34.9-38.5 MHz	
	Iceland	Limited to 41-43.6 MHz	
	Italy	Limited to 41-43.6 MHz	Military applications. Under study for implementation
	Latvia	Not implemented	
	Luxembourg	Limited to 29.7-38 MHz, excluding the use of the band 34.995-35.225 MHz	
	Norway	Limited to 41.0-43.6 MHz Max ch spacing 10 kHz. Max 100 mW e.r.p. AM not allowed	
	Portugal	34.5 and 34.75 MHz available with 180 kHz and 1 mW erp	
	Romania	Not implemented	
	Slovak Republic	Limited to 36.4-38.5 MHz	Occupied by military
	Sweden	Limited to 41.0-43.6 MHz	
	Switzerland	Limited to 31.4-39.6 MHz	Main use by military services
	The Netherlands	Not implemented	Tuning range 36.6-38.8 MHz 1 mW, 40 kHz spacing. Air interface alignment planned.
	Turkey	Limited to 29.7-41.0 MHz	
	United Kingdom	Individual licence required	

Annex 10 Band B

Radio microphones

173.965-174.015 MHz

Austria	Not implemented	
Belgium	Not implemented	
Bulgaria	Not implemented	
Croatia	Licence required	
Czech Republic	Licence required	
Denmark	Not implemented	PMR band
Finland	Individual licence required. Regional restrictions Regional restrictions	PMR and broadcasting usage
France	Not implemented	Governmental band
Germany	Individual frequency assignment	under review
Hungary	Limited to 174-174.015 MHz	Under review
Iceland	PTA to be consulted	
Italy	Not implemented	Military applications
Latvia	ERP <10 mW; 174.000, 174.025, 174.050, 174.075, 174.100, 174.125, 174.150, 174.175, 174.200, 174.225 MHz only aids for handicapped	
Norway	Limited to 173.8125, 173.8375, 173.9125, 173.9375 and 173.9625 MHz. Ch spacing 25 kHz Max e.r.p.1 mW	
Poland	Not implemented	Military band
Portugal	Not implemented	Under study
Romania	Not implemented	
Switzerland	Not implemented	Closely occupied with Mobile services
The Netherlands	Not implemented	Planned. Requires sec legislation change

Annex	Country	Restriction	Reason/remark
Annex 10 Band C			
Radio microphones			
863-865 MHz			
	Bulgaria	Not implemented	
	Croatia	Licence required	
	Poland	Limited implementation	CT2
	Portugal	Not implemented	Planned to be available soon
	Romania	Limited to 845-862 MHz	
Annex 10 Band D			
Radio microphones			
174-216 MHz			
	Austria	Not implemented	
	Croatia	Licence required	
	Denmark	180.5-215.5 available only for handicapped	
	Estonia	Not implemented	
	Finland	Individual licence required - regional restrictions	Broadcasting usage
	France	175.5-178.5 and 183.5-186.5 MHz with 10 mW erp and 200 kHz channel	
	Italy	None	216-223 MHz also available
	Latvia	Not implemented	Under study
	Norway	Not implemented	Allocated to Broadcasting Services
	Romania	Not implemented	
	Sweden	Individual licence required	
	The Netherlands	None	Tuning range 195.1-201.9 MHz
	United Kingdom	Individual licence required above 175 MHz	
Annex 10 Band E			
Radio microphones			
470-862 MHz			
	Austria	Individual licence required	
	Croatia	Licence required	
	Denmark	Limited to 800.100-819.900 MHz	
	Finland	Only 800.100-819.900, 855.500, 856.000, 857.250, 860.375, 861.500 and 861.875 MHz. Individual licence	
	France	Limited to 470-830 MHz	
	Germany	Subbands 608-614 MHz (TV ch 38) and 814-838 MHz (TV ch 64-66) excluded	Radio Astronomy, military applications
	Italy	Limited to 470-854 MHz	854-862 MHz is exclusive military band
	Latvia	Not implemented	Under study
	Norway	Limited to 800-820 MHz max 20 mW erp	
	Poland	Limited implementation	Broadcasting services
	Romania	Not implemented	
	Slovak Republic	Limited to 470-838 MHz	Military band
	Sweden	Individual licence required	
	The Netherlands	None	Tuning ranges: 550.125-556.875, 630.125-636.875, 694.125-700.875, 774.125-781.875
	Ukraine	Individual licence required	

Annex	Country	Restriction	Reason/remark
Annex 10 Band F			
Radio microphones			
1785-1800 MHz			
	Austria	General licence excluding guard bands	
	Bulgaria	Not implemented	
	Denmark	Not implemented	Will be implemented on market requirements
	Estonia	Not implemented	
	Finland	Individual licence required	
	France	Not implemented	Exclusive military band
	Italy	Not implemented	Military applications
	Latvia	Not implemented	Under study
	Luxembourg	Limited to 1785.7-1799.4 MHz	Guard bands to be respected
	Poland	Limited implementation	Broadcasting services
	Romania	Not implemented	
	Sweden	Individual licence required	
	The Netherlands	Not implemented	Planned. Requires sec legislation
	United Kingdom	Individual licence required	
Annex 12 Band A			
Medical Implants			
402-405 MHz			
	Bulgaria	Not implemented	
	Croatia	Not implemented	
	Latvia	Not implemented	Under study
	Portugal	Not implemented	Under study
	Sweden	Not implemented	
Annex 13 Band A			
Wireless Audio			
863-865 MHz			
	Bulgaria	Not implemented	
	Croatia	Individual licence required	
	Latvia	Not implemented	Under study
	Poland	Limited implementation	CT2
	Portugal	Not implemented	Licence exemption under study

Short Range Devices

SRD APPLICATIONS IN BANDS ABOVE 2400 MHz

This spreadsheet is intended to give a rough guide to the frequencies generally available for Short Range Devices.

It should not be taken as a definitive statement of availability and the appropriate annexes should be referred to for the fine detail.

It should also be noted that not all the frequencies listed are available in all CEPT countries and therefore information on free circulation is only indicative

	Frequency Bands																		Power Levels	Transmitter Antenna Source			Channel Spacing	Licensing Requirement		Marking and free circulation. For administrations which have not implemented the R+TTE Directive				Duty cycle			
	2400-2483.5 MHz	2446-2454 MHz	5150-5250 MHz	5250-5300 MHz	5725-5875 MHz	5795-5805 MHz	5805-5815 MHz	9200-9500 MHz	9500-9975 MHz	10.5-10.6 GHz	13.4-14.0 GHz	17.1-17.3 GHz	24.00-24.25 GHz	24.05-24.25 GHz	61.0-61.5 GHz	63-64 GHz	76-77 GHz	122-123 GHz	244-246 GHz	Maximum Power Level	Integral	Dedicated	External	Permitted Channel	Individual Licence	No Individual Licence	Rxxxx SRD Aa	CEPT SRD Aa Y	National Approval	Free Circulation	Very low, < 0.1%	Low, < 1%	High, < 10%	Very High, up to 100%
Non-specific Short Range Devices																				See Annex	Y	Y	No	All	-	Y	Y	-	-	Y	-	-	-	-
Annex 1	Y																			10 mW	Y	Y	No	All	-	Y	Y	-	-	Y	-	-	Y	-
					Y															25 mW	Y	Y	No	All	-	Y	Y	-	-	Y	-	-	-	-
													Y							100 mW	Y	Y	No	All	-	Y	Y	-	-	Y	-	-	-	-
															Y			Y	Y	100 mW	Y	Y	No	All	-	Y	-	-	Y	No	-	-	-	-
RLANs, Annex 3	Y																			100 mW	-	Y	No	250 kbit/s	-	Y	Y	-	-	Y	-	-	-	-
5 GHz HIPERLANs			Y																	1 W	-	Y	No	All	-	Y	Y	-	-	Y	-	-	-	-
5 GHz HIPERLANs				Y																1 W	-	Y	No	All	-	Y	-	-	Y	No	-	-	-	-
17 GHz HIPERLANs												Y								100 mW	-	Y	No	All	-	Y	-	-	Y	No	-	-	-	-
Railway Applications, Annex 4																																		
AVI for Railways		Y																		500 mW	Y	Y	No	Annex 4	-	Y	Y	Y	-	Y	-	-	-	-
Road Transport & Traffic						Y														2 W or 8 W	Y	Y	No	See Annex	-	Y	Y	Y	-	Y	-	-	-	-
Telematics, Annex 5							Y													2 W or 8 W	Y	Y	No	See Annex	Y	-	-	Y	Y	No	-	-	-	-
																Y				t.b.d.	-	Y	No	All	-	Y	Y	Y	-	Y	-	-	-	-
																	Y			See Annex	-	Y	No	All	-	Y	Y	Y	-	Y	-	-	-	-
Movement detection, Annex 6									Y		Y									25 mW	Y	Y	No	All	-	Y	Y	Y	-	Y	-	-	-	-
	Y							Y												25 mW	Y	Y	No	All	-	Y	-	Y	Y	No	-	-	-	-
														Y						100 mW	Y	Y	No	All	-	Y	Y	Y	-	Y	-	-	-	-
										Y										500 mW	Y	Y	No	All	Y	-	-	Y	Y	No	-	-	-	-
RFIDs (under development)																																		
Wireless Audio, Annex 13																																		

Short Range Devices

SRD APPLICATIONS IN BANDS BELOW 2400 MHz

This spreadsheet is intended to give a rough guide to the frequencies generally available for Short Range Devices.

It should not be taken as a definitive statement of availability and the appropriate annexes should be referred to for the fine detail.

It should also be noted that not all the frequencies listed are available in all CEPT countries and therefore information on free circulation is only indicative

	Frequency Bands																										Power Levels	Equipment Antenna Source			Channel Spacing	Licensing Requirement		Marking and free circulation. For administrations which have not implemented the R&TTE Directive				Duty cycle			
	2275 Hz	9-135 kHz	457 kHz	4.515 MHz	6.765-6.795 MHz	7.40-8.80 MHz	13.553-13.567 MHz	26.957-27.283 MHz	27.095 MHz	29.7-40.7 MHz	35.03-35.20 MHz	40.660-40.700 MHz	138.2-138.45 MHz	173.965-174.015 MHz	174-216 MHz	402-405 MHz	433.050-434.790 MHz	470-862 MHz	863.00-865.00 MHz	868.000-868.600 MHz	868.600-868.700 MHz	868.700-869.200 MHz	869.200-869.250 MHz	869.250-869.300 MHz	869.400-869.650 MHz	869.650-869.700 MHz	869.700-870.000 MHz	1785-1800 MHz	Maximum Power Level	Integral	Dedicated	External	Permitted Channel	Individual Licence	No Individual Licence	Rxxxx SRD Aa	CEPT SRD Aa Y	National Approval	Free Circulation	Very low, < 0.1%	Low, < 1%	High, < 10%	Very High, up to 100%
Non-specific Short Range Devices					Y		Y	Y																			See Annex	Y	Y	No	All	-	Y	Y	-	-	Y	-	-	-	-
Annex 1								Y				Y															10 mW	Y	Y	No	All	-	Y	Y	-	-	Y	-	-	Y	-
													Y														10 mW	Y	Y	No	All	-	Y	Y	Y	-	Y	-	Y	-	-
																	Y										10 mW	Y	Y	No	All	-	Y	Y	Y	-	Y	-	-	Y	-
																											25 mW	Y	Y	No	All	-	Y	Y	-	-	Y	-	-	-	-
																				Y							25 mW	Y	Y	No	All	-	Y	Y	-	-	Y	-	Y	-	-
																						Y					25 mW	Y	Y	No	All	-	Y	Y	-	-	Y	Y	-	-	-
																									Y		500 mW	Y	Y	No	25 kHz	-	Y	Y	-	-	Y	-	-	Y	-
																										Y	5 mW	Y	Y	No	All	-	Y	Y	-	-	Y	-	-	-	Y
Avalanche Detection Equipment	Y																										See Annex	Y	No	No	-	-	Y	Y	-	-	Y	-	-	-	Y
Annex 2			Y																								See Annex	Y	No	No	-	-	Y	Y	-	-	Y	-	-	-	Y
Railway Applications, Annex 4																																									
Eurobalise									Y																		See Annex		Y	No	Annex 4	-	Y	Y	Y	-	Y	-	-	-	-
Euroloop				Y																							See Annex		Y	No	Annex 4	-	Y	Y	Y	-	Y	-	-	-	-
Alarms, Annex 7																					Y			Y			10 mW	Y	Y	No	25 kHz	-	Y	Y	Y	-	Y	Y	-	-	-
																									Y		25 mW	Y	Y	No	25 kHz	-	Y	Y	Y	-	Y	-	-	Y	-
Social alarms, Annex 7																							Y				10 mW	Y	Y	No	25 kHz	-	Y	Y	Y	-	Y	Y	-	-	-
Model Control, Annex 8								Y			Y	Y															100 mW	-	Y	No	10 kHz	-	Y	Y	-	-	Y	-	-	-	-
Inductive Applications, Annex 9		Y																									See Annex	Y	Y	Y	All	-	Y	Y	-	-	Y	-	-	-	-
					Y	Y	Y	Y																			See Annex	Y	Y	No	All	-	Y	Y	-	-	Y	-	-	-	-
Radio Microphones, Annex 10																																									
Narrow band audio										Y																	10 mW	Y	Y		50 kHz	-	Y	-	Y	Y	Y		-	-	Y
Aids for handicapped													Y														2 mW	Y	Y		50 kHz	-	Y	Y	Y	-	Y		-	-	Y
Consumer radio microphones																			Y								10 Mw	Y	Y		200 kHz	-	Y	Y	Y	-	Y		-	-	Y
Professional radio microphones															Y												See Annex	Y	Y		200 kHz	Y	-	Y	Y	-	Y		-	-	Y
																	Y										See Annex	Y	Y		200 kHz	Y	-	Y	Y	-	Y		-	-	Y
																										Y	See Annex	Y	Y		200 kHz	Y	-	Y	Y	-	Y		-	-	Y
Medical Implants, Annex 12																Y											25µW	Y	Y	No	25 kHz	-	Y	Y	Y	-	Y	-	-	-	-
Wireless Audio, Annex 13																			Y								10 mW	Y	No	No	300 kHz	-	Y	Y	Y	-	-	-	-	-	Y

Annex 1

Title: Non-specific Short Range Devices

This annex is primarily for Telemetry, Telecommand, Alarms, Data in general and other similar applications. Video applications only above 2.4 GHz.

When selecting parameters for new SRDs, which may have inherent safety of human life implications, manufacturers and users should pay particular attention to the potential for interference from other systems operating in the same, or adjacent, bands.

Available ETSI Standard: EN 300 220-1
EN 300 330
I-ETS 300 440

Superseded Recommendations: CEPT Recommendation T/R 01-04
CEPT Recommendation T/R 20-03

Note: Equipment marketed before the adoption of this ERC Recommendation marked with the abbreviation CEPT LPD Y according to the abrogated CEPT Recommendation T/R 01-04 should be allowed continuation of free circulation and use.

Technical and regulatory parameters:

For interpretation of codes, see Appendix 1

	Frequency Band	Power (Table 2)	Antenna (Table 3)	Channel spacing (Table 4)	Licensing requirement (Table 5)	Approvals (Table 6)	Duty cycle (Table 7)
a	6765 - 6795 kHz [1]	2	1 or 2	13	2	1, 2 or 4[4]	[-]
b	13.553 - 13.567 MHz[1]	2	1 or 2	13	2	1, 2 or 4[4]	[-]
c	26.957 - 27.283 MHz[1]	2 or 8 [2]	1 or 2	13	2	1, 2 or 4[4]	[-]
d	40.660 - 40.700 MHz[1]	8 [2]	1 or 2	13	2	1, 2 or 4[4]	[-]
r	138.2 - 138.45 MHz	8 [2]	1 or 2	13	2	1, 2 or 4[4]	2
e	433.050 - 434.790 MHz[1, 3]	8 [2]	1 or 2	13	2	1, 2 or 4[4]	3

The table continues on the next page.

[1] The band is also designated for industrial, scientific and medical (ISM) application as defined in ITU Radio Regulations.
[2] e.r.p.
[3] Audio and voice signals should be avoided in the band 433.050-434.790 MHz.
[4] For countries which have implemented the R&TTE Directive

Technical and regulatory parameters:

For interpretation of codes, see Appendix 1

	Frequency Band	Power (Table 2)	Antenna (Table 3)	Channel spacing (Table 4)	Licensing requirement (Table 5)	Approvals (Table 6)	Duty cycle (Table 7)
f	868.000 - 868.600 MHz[5]	9[2]	1 or 2	13	2	1, 2 or 4[4]	2
g	868.700 - 869.200 MHz	9[2]	1 or 2	13	2	1, 2 or 4[4]	1
[h	869.300 – 869.400 MHz[6]	t.b.d.	1 or 2	6	2	1, 2 or 4[4]	t.b.d.]
i	869.400 - 869.650 MHz	12[2]	1 or 2	6[7]	2	1, 2 or 4[4]	3
k	869.700 - 870.000 MHz[8]	7a[2]	1 or 2	13	2	1, 2 or 4[4]	4
l	2400 - 2483.5 MHz[1]	8[9]	1 or 2	13	2	1, 2 or 4[4]	[-]
m	5725 - 5875 MHz[1]	9[9]	1 or 2	13	2	1, 2 or 4[4]	[-]
n	24.00 - 24.25 GHz[1]	11[9]	1 or 2	13	2	1, 2 or 4[4]	[-]
o	61.0 - 61.5 GHz[1,10]	11[9]	1 or 2	13	2	3 or 4[4]	[-]
p	122 - 123 GHz[1,10]	11[9]	1 or 2	13	2	3 or 4[4]	[-]
q	244 - 246 GHz[1,10]	11[9]	1 or 2	13	2	3 or 4[4]	[-]

[5] To avoid mutual interference between CT2 and SRDs it is recommended that SRDs below 868.5 MHz should avoid using a dedicated frequency channel and instead use a technology that allows automatic channel selection of a free channel within the band.
[6] [SRD applications in the band 869.3-869.4 MHz should use an access protocol in accordance with EN XXX XXX].
[7] The whole frequency band may also be used as 1 channel for high speed data transmission.
[8] The adjacent frequency band above this band (sub-band "k") has been designated for use by the high powered TETRA service. Manufacturers should take this into account in the design of the e.i.r.p.
[9] e.i.r.p.
[10] No ETSI standard currently available.

Annex 2

Title: Devices for Detecting Avalanche Victims

Available ETSI Standard: ETS 300 718

Superseded Recommendations: CEPT Rec T/R 24-02

Technical and regulatory parameters:

For interpretation of codes, see Appendix 1

	Frequencies	Power (Table 2)	Antenna (Table 3)	Channel spacing (Table 4)	Licensing requirement (Table 5)	Approvals (Table 6)	Duty cycle (Table 7)
a	2275 Hz	2	1	12[1]	2	1, 2 or 4[2]	4
b	457 kHz	1	1	12[1]	2	1, 2 or 4[2]	4

[1] Continuous wave (CW) – no modulation.
[2] For countries which have implemented the R&TTE Directive.

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Annex 3

Title: Local Area Networks, RLANs and HIPERLANs

Radio Local Area Networks (RLANs) (formerly known as wideband data transmission systems)

Available ETSI Standard: ETS 300 328

Superseded Recommendations: CEPT Recommendation T/R 10-01

Note: Equipment marketed before the adoption of this ERC Recommendation marked with the abbreviation CEPT RLAN Y according to the abrogated CEPT Recommendation T/R 10-01 should be allowed continuation of free circulation (i.e. carying) and use.

Technical and regulatory parameters: For interpretation of codes, see Appendix 1

	Frequency Band	Power (Table 2)	Antenna (Table 3)	Channel spacing (Table 4)	Licensing requirement (Table 5)	Approvals (Table 6)	Duty cycle (Table 7)
a	2400 - 2483.5 MHz	11[1, 2]	1 or 2	13[3]	2	1, 2 or 4[4]	-

[1] e.i.r.p.
[2] For direct sequence spread spectrum, the maximum spectrum power density is limited to 20 dBW/1 MHz. For frequency hopping spread spectrum, the maximum spectrum power density is limited to -10 dBW/100 kHz.
[3] Minimum data rate: 250 kbit/s.
[4] For countries which have implemented the R&TTE Directive.

High Performance Radio Local Area Networks (HIPERLANs)

Available ETSI standard: EN 300 836-1

Spectrum relevant ERC Decision: ERC/DEC/(99)23

Superseded Recommendations: CEPT Recommendation T/R 22-06

Technical and regulatory parameters: For interpretation of codes, see Appendix 1

	Frequency Band	Power (Table 2)	Antenna (Table 3)	Channel spacing (Table 4)	Licensing Requirement (Table 5)	Approvals (Table 6)	Duty cycle (Table 7)
b	5150-5350 MHz[5, 6]	11a[1, 7]	2	13	2	1, 2 or 4[4]	-
c	5470-5725 MHz[6]	13[1, 7]	2	13	2	1, 2 or 4[4]	-
d	17.1-17.3 GHz[8]	11[1]	2	13	2	3 or 4[4]	-

[5] Indoor use only permitted.
[6] HIPERLANs shall only be allowed to operate when the following mandatory features are realised: a) transmitter power control to ensure a mitigation factor of at least 3 dB; b) Dynamic Frequency Selection associated with the channel selection mechanism required to provide a uniform spread of the loading of the HIPERLANs across a minimum of 330 MHz or 255 MHz in the case of equipment used only in the band 5470 – 5725 MHz. For full details of the mandatory features required see the relevant ERC Decision and ETSI standards.
[7] Maximum mean e.i.r.p. The mean e.i.r.p. refers here to the e.i.r.p. averaged over the transmission burst at the highest power control setting.
[8] No ETSI standard currently available.

Annex 4

Title: Railway applications

This annex covers applications specifically intended for use on railways including automatic vehicle identification and balises (train control systems).

Automatic Vehicle Identification for Railways (AVI)

Available ETSI Standard: EN 300 761

Superseded Recommendations: None

Technical and regulatory parameters:

For interpretation of codes, see Appendix 1

	Frequency Band	Power (Table 2)	Antenna (Table 3)	Channel spacing (Table 4)	Licensing requirement (Table 5)	Approvals (Table 6)	Duty cycle (Table 7)
a	2446-2454 MHz	12[1]	1 or 2	12[2]	2	1, 2 or 4[4]	-

Eurobalise

Available ETSI Standard: EN 300 330

Superseded Recommendations: None

Technical and regulatory parameters:

For interpretation of codes, see Appendix 1

	Frequency Band	Power (Table 2)	Antenna (Table 3)	Channel Spacing (Table 4)	Licensing requirement (Table 5)	Approvals (Table 6)	Duty cycle (Table 7)
b	27.095 MHz	18[3]	2	12[3]	2	1, 2 or 4[4]	-

The maximum allowed H-field for the Eurobalise system is illustrated in Figure 1 overleaf.

[1] e.i.r.p., transmitting only in presence of train.
[2] 5 channels, each 1.5 MHz wide, within the band 2446-2454 MHz, i.e: 2447.0, 2448.5, 2450.0, 2451.5, 2453.0 MHz.
[3] See spectrum mask in Figure 1.
[4] For countries which have implemented the R&TTE Directive.

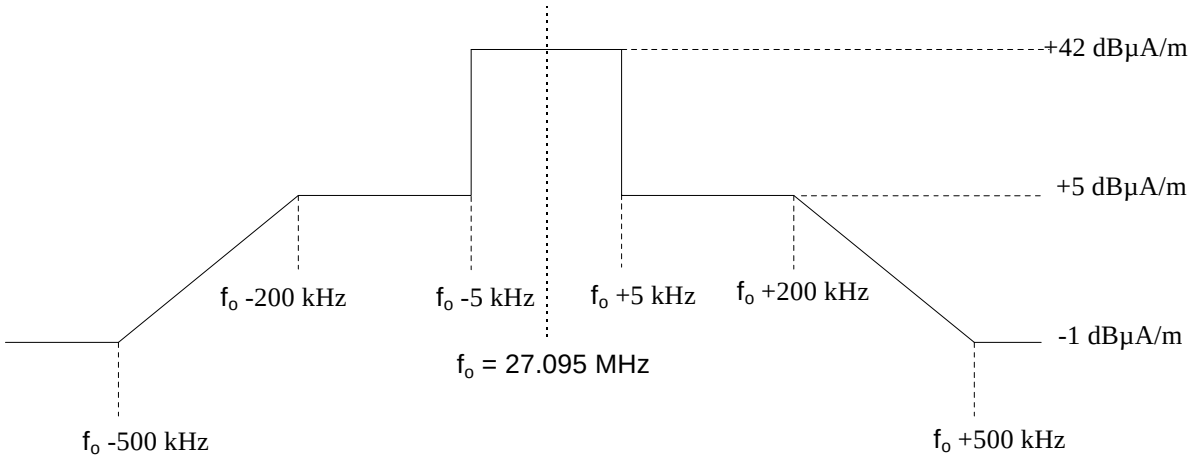

Figure 1. Magnetic field limits at 10 metre measurement distance for the Eurobalise system

Euroloop

Available ETSI Standard: EN 300 330

Superseded Recommendations: None

Technical and regulatory parameters:

For interpretation of codes, see Appendix 1

	Frequency Band	Power (Table 2)	Antenna (Table 3)	Channel spacing (Table 4)	Licensing requirement (Table 5)	Approvals (Table 6)	Duty cycle (Table 7)
c	4515 kHz	18 [5, 6]	2	12 [5]	2	1, 2 or 4[4]	-

The maximum allowed H-field for the Euroloop system is illustrated in Figure 2 overleaf.

[5] See spectrum mask in Figure 2.
[6] Transmitting only on receipt of a Eurobalise telepowering signal from a train.

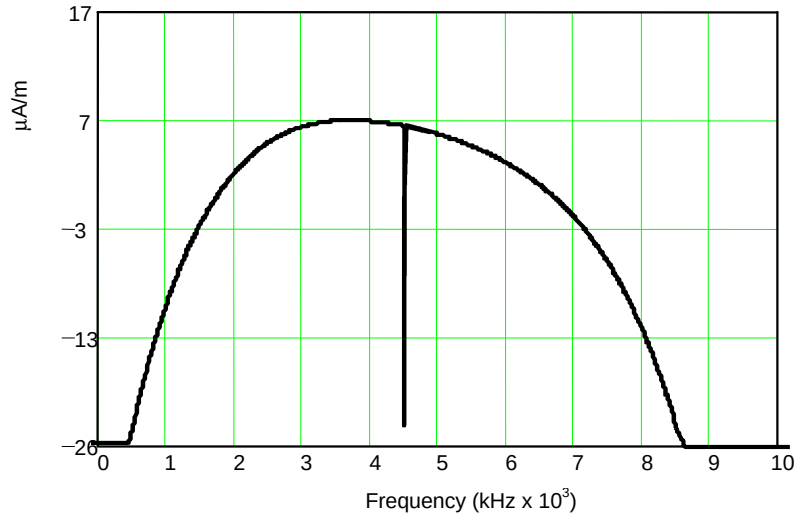

Figure 2. Magnetic field limits at 10 metre measurement distance in 10 kHz measurement bandwidth for the Euroloop up-link transmission.

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Annex 5

Title: Road Transport &Traffic Telematics (RTTT)

Available ETSI Standard: EN 300 674
EN 301 091
ES 201 674-1
ES 201 674-2

Spectrum relevant ERC Decision: ERC/DEC/(92)02

Superseded Recommendations: CEPT Recommendation T/R 22-04

Technical and regulatory parameters:

For interpretation of codes, see Appendix 1

	Frequency Band	Power (Table 2)	Antenna (Table 3)	Channel spacing (Table 4)	Licensing requirement (Table 5)	Approvals (Table 6)	Duty cycle (Table 7)
a	5795-5805 MHz[1]	14 or 15[2]	1 or 2	12[3]	2	1, 2 or 4[7]	-
b	5805-5815 MHz [4]	14 or 15[2]	1 or 2	12[3]	1	2, 3 or 4[7]	-
c	63-64 GHz [5]	16[2]	2	13	2	1, 2 or 4[7]	-
d	76-77 GHz [6]	17[2]	2	13	2	1, 2 or 4[7]	-

[1] 5795-5805 MHz road to vehicle systems, particularly (but not exclusively) road toll systems.
[2] e.i.r.p.
[3] For 5 MHz channel spacing systems, frequencies are: 5800 MHz – 2.5 MHz; 5800 MHz + 2.5 MHz; 5810 MHz – 2.5 MHz; 5810 MHz + 2.5 MHz. For 10 MHz channel spacing systems, frequencies are 5800 MHz and 5810 MHz.
[4] 5805-5815 MHz on a national basis for multi-lane road junctions, particularly, but not exclusively, road toll systems.
[5] Vehicle to vehicle and road to vehicle systems.
[6] Vehicle radar systems.
[7] For countries which have implemented the R&TTE Directive

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Annex 6

Title: Equipment for Detecting Movement and Equipment for Alert

Available ETSI Standard: I-ETS 300 440

Superseded Recommendations: CEPT Recommendation T/R 60-01

Technical and regulatory parameters:

For interpretation of codes, see Appendix 1

	Frequency Band	Power (Table 2)	Antenna (Table 3)	Channel spacing (Table 4)	Licensing requirement (Table 5)	Approvals (Table 6)	Duty cycle (Table 7)
a	2400-2483.5 MHz	9[1]	1 or 2	13	2[2]	2, 3 or 4[3]	-
b	9200-9500 MHz	9[1]	1 or 2	13	2[2]	2, 3 or 4[3]	-
c	9500-9975 MHz	9[1]	1 or 2	13	2[2]	1, 2 or 4[3]	-
d	10.5-10.6 GHz	12[1]	1 or 2	13	1	2, 3 or 4[3]	-
e	13.4-14.0 GHz	9[1]	1 or 2	13	2[2]	1, 2 or 4[3]	-
f	24.05-24.25 GHz	11[1]	1 or 2	13	2[2]	1, 2 or 4[3]	-

[1] e.i.r.p.
[2] Some countries may allow equipment with transmitter powers between 25 mW and 500 mW in which case an individual licence or a general licence may be required.
[3] For countries which have implemented the R&TTE Directive.

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Annex 7

Title: Alarms

This annex covers frequency bands recommended exclusively for alarm systems including social alarms and alarms for security and safety.

When selecting parameters for new SRDs, which may have inherent safety of human life implications, manufacturers and users should pay particular attention to the potential for interference from other systems operating in the same or adjacent bands.

Available ETSI Standard: EN 300 220-1 and EN 300 220-2 where applicable

Spectrum relevant ERC Decision: ERC/DEC/(97)06

Superseded Recommendations:

Technical and regulatory parameters:

For interpretation of codes, see Appendix 1

Alarms in general

	Frequency Band	Power (Table 2)	Antenna (Table 3)	Channel spacing (Table 4)	Licensing requirement (Table 5)	Approvals (Table 6)	Duty cycle (Table 7)
a	868.600-868.700 MHz	8[1]	1 or 2	6[2]	2	1, 2 or 4[3]	1
b	869.250-869.300 MHz	8[1]	1 or 2	6	2	1, 2 or 4[3]	1
c	869.650-869.700 MHz	9[1]	1 or 2	6	2	1, 2 or 4[3]	3

Social Alarms

	Frequency Band	Power (Table 2)	Antenna (Table 3)	Channel spacing (Table 4)	Licensing requirement (Table 5)	Approvals (Table 6)	Duty cycle (Table 7)
d	869.200-869.250 MHz	8[1]	1 or 2	6	2	1, 2 or 4[3]	1

[1] e.r.p.
[2] The whole frequency band may also be used as 1 channel for high speed data transmission.
[3] For countries which have implemented the R&TTE Directive.

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Annex 8

Title: Model Control

This annex covers the application of model control equipment, which is solely for the purpose of controlling the movement of the model, in the air, on land or over or under the water surface. Although the bands are not harmonised, the parameters given in the table are common in a majority of CEPT countries. Additional frequencies or frequency bands may be available for use in particular countries. It should be noted that the bands are not exclusive for this type of application.

Available ETSI Standard: EN 300 220-1

Superseded Recommendations: CEPT Recommendation T/R 20-03
CEPT Recommendation T/R 20-04

Technical and regulatory parameters:

For interpretation of codes, see Appendix 1

	Frequency Bands or Channels	Power (Table 2)	Antenna (Table 3)	Channel spacing (Table 4)	Licensing requirement (Table 5)	Approvals (Table 6)	Duty cycle (Table 7)
a	26.995, 27.045, 27.095, 27.145, 27.195 MHz	11[1]	2	3	2	1, 2 or 4[3]	-
b	34.995-35.225 MHz [2]	11[1]	2	3	2	1, 2 or 4[3]	-
c	40.665, 40.675, 40.685, 40.695 MHz	11[1]	2	3	2	1, 2 or 4[3]	-

[1] e.r.p.
[2] Only allowed for flying models.
[3] For countries which have implemented the R&TTE Directive.

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Annex 9

Title: Inductive applications

Inductive applications include for example car immobilisers, 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[1], data transfer to handheld devices, automatic article identification, wireless control systems and automatic road tolling.

When selecting parameters for new SRDs, which may have inherent safety of human life implications, manufacturers and users should pay particular attention to the potential for interference from other systems operating in the same, or adjacent, bands.

Users should be aware that emissions from inductive applications could cause interference to nearby receivers of other radio services.

Particular attention should also be paid to the more stringent protection requirements identified by the ITU for global distress and safety communications frequencies in the same or adjacent bands.

Available ETSI Standard: EN 300 330

Superseded Recommendations: None

Technical and regulatory parameters: For interpretation of codes, see Appendix 1

	Frequency Band	Field Strength (Table 2)	Antenna (Table 3)	Channel spacing (Table 4)	Licensing requirement (Table 5)	Approvals (Table 6)	Duty cycle (Table 7)
aa	9-59.750 kHz	3[2]	1, 2 or 3[3]	13	2	1, 2 or 4[4]	-
ab	59.750 – 60.250 kHz	2	1, 2 or 3[3]	13	2	1, 2 or 4[4]	-
ac	60.250 – 70 kHz	3[2]	1, 2 or 3[3]	13	2	1, 2 or 4[4]	-
b	70-119 kHz	2	1, 2 or 3[3]	13	2	1, 2 or 4[4]	-
c	119-135 kHz	3[2]	1, 2 or 3[3]	13	2	1, 2 or 4[4]	-

The maximum allowed H-field for bands *a, b* and *c* is illustrated in Figure 1 overleaf.

[1] Other types of anti-theft systems can be operated in accordance with other relevant annexes.
[2] In the case of loop antennas type 1 and 2 with an area between 0.05 m^2 and 0.16 m^2, the field strength 3 is reduced by 10 x log (area/0.16 m^2); for an antenna area less than 0.05 m^2 the field strength 3 is reduced by 10 dB.
[3] In the case of type 3 antennas only loop coil antennas should be employed.
[4] For countries which have implemented the R&TTE Directive.

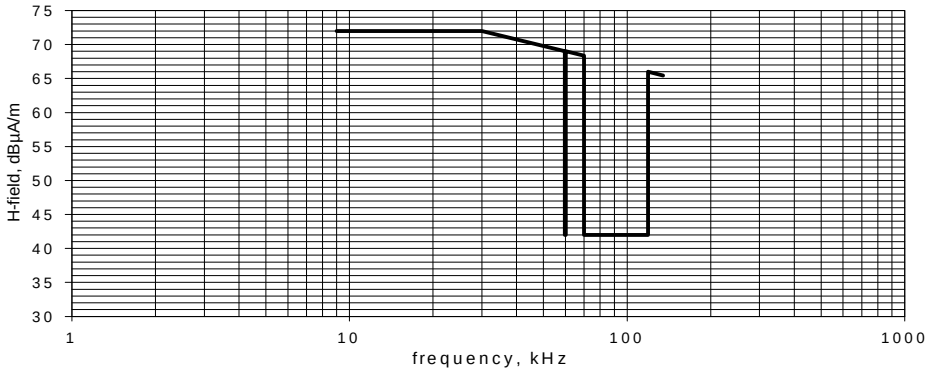

Figure 1. 9-135 kHz magnetic field strength limits at 10-metre measurement distance.

	Frequency Band[5]	Field Strength (Table 2)	Antenna (Table 3)	Channel spacing (Table 4)	Licensing requirement (Table 5)	Approvals (Table 6)	Duty cycle (Table 7)
d	6765 - 6795 kHz	2[6]	1 or 2	13	2	1, 2 or 4[4]	-
e	7400 - 8800 kHz	5	1 or 2	13	2	1, 2 or 4[4]	-
f	13.553 - 13.567 MHz	2[6]	1 or 2	13	2	1, 2 or 4[4]	-
g	26.957 - 27.283 MHz	2	1 or 2	13	2	1, 2 or 4[4]	-

The maximum allowed H-field limits for bands *d* and *f* are illustrated in Figure 2

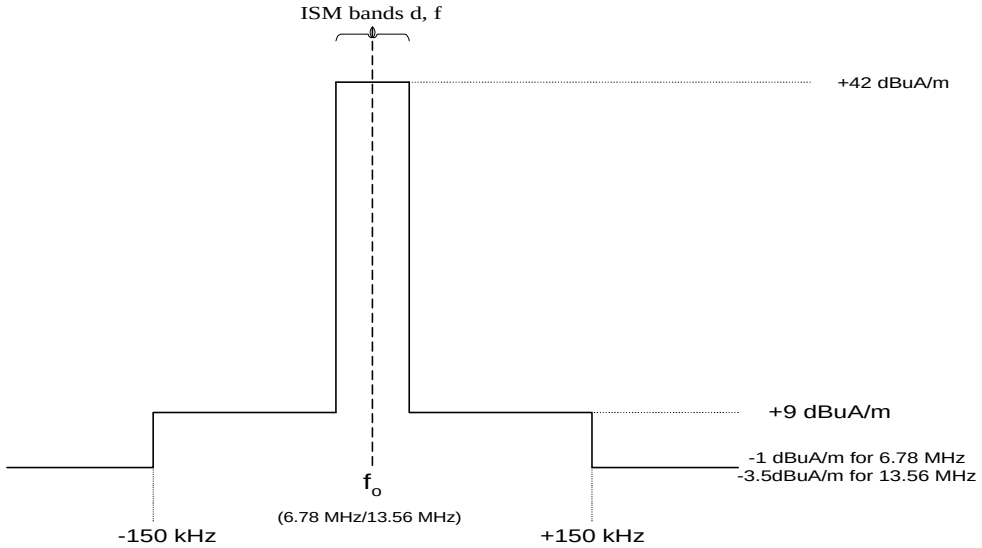

Figure 2. Magnetic field strength limits at 10 metre measurement distance for the 6.78 MHz and 13.56 MHz bands.

[5] Other frequency bands below 30 MHz are under study.
[6] See spectrum mask in Figure 2.

Annex 10

Title: Radio microphones

Radio microphones (also referred to as wireless microphones or cordless microphones) are small, low power (50mW or less) transmitters designed to be worn on the body, or hand held, for the transmission of close, personal sound. The receivers are more tailored to specific uses and may range from small and portable to rack mounted modules as part of a multichannel system. This annex covers professional and consumer radio microphones, both hand-held and body-worn, and aids for the handicapped.

Available ETSI Standard: EN 300 422

Superseded recommendations: CEPT Recommendation T/R 20-06.

Technical and regulatory parameters:
For interpretation of codes, see Appendix 1.

Frequency Bands:
Because of the difficulty in determining harmonised frequency bands for radio microphones, frequency band limits should be regarded as tuning ranges within which a device can be designed to operate. In most cases, Appendix 3 indicates those parts of a range that are not available in individual countries but this does not apply to the broadcasting bands at 174-216 MHz and 470-862 MHz where national geographical restrictions are likely to exist and the national administration should be contacted.

Narrow Band Audio

	Frequency Band	Power (Table2)	Antenna (Table 3)	Channel spacing (Table 4)	Licensing requirement (Table 5)	Approvals (Table 6)	Duty Cycle (Table 7)
a	29.7-47.0 MHz[1, 2]	8[3]	1 or 2	7[4]	2	2, 3 or 4[6]	4

Aids for the handicapped

	Frequency Band	Power (Table2)	Antenna (Table 3)	Channel spacing (Table 4)	Licensing requirement (Table 5)	Approvals (Table 6)	Duty Cycle (Table 7)
b	173.965-174.015 MHz[5]	7[3]	1 or 2	7[4]	2	1, 2 or 4[6]	4

[1] Tuning range – national restrictions may apply.
[2] 30.3 – 30.5 MHz, 32.15 – 32.45 MHz and 41.015 – 47.000 MHz are harmonised military bands.
[3] Maximum permitted e.r.p.
[4] Maximum permitted channel spacing.
[5] This allocation may be subjected to high levels of interference from broadcasting services in some countries.
[6] For countries which have implemented the R&TTE Directive.

Consumer radio microphones

	Frequency Band	Power (Table2)	Antenna (Table 3)	Channel spacing (Table 4)	Licensing requirement (Table 5)	Approvals (Table 6)	Duty Cycle (Table 7)
c	863-865 MHz	8[3]	1 or 2	11[4]	2	1, 2 or 4[6]	4

Professional radio microphones

	Frequency Band	Power (Table2)	Antenna (Table 3)	Channel spacing (Table 4)	Licensing requirement (Table 5)	Approvals (Table 6)	Duty Cycle (Table 7)
d	174-216 MHz[1]	8[3] or 10[3, 7]	1 or 2	11[4]	1	1, 2 or 4[6]	4
e	470-862 MHz[1]	8[3]or 10[3, 7]	1 or 2	11[4]	1	1, 2 or 4[6]	4
f	1785-1800 MHz[8]	8[9] or 10[7, 9]	1 or 2	11[4]	1	1, 2 or 4[6]	4

[7] Body-worn radio microphones.
[8] Guard bands at 1785.0-1785.7 and 1799.4-1800 MHz may be required to protect services in adjacents bands.
[9] Maximum permitted e.i.r.p.

Annex 12

Title: Ultra Low Power Active Medical Implants

This annex covers active implantable medical devices (for a convenient definition see the EC directive 90/385/EEC (Active Implantable Medical Device directive)).

Available ETSI Standard: EN 300 220-1

Superseded recommendations: None

Technical and regulatory parameters:

For interpretation of codes, see Appendix 1

	Frequency Band	Power (Table 2)	Antenna (Table 3)	Channel spacing (Table 4)	Licensing requirement (Table 5)	Approvals (Table 6)	Duty cycle (Table 7)
a	402-405 MHz	5a[1]	1 or 2	6 [2]	2	1, 2 or 4[3]	-

[1] e.r.p.
[2] Individual transmitters may combine adjacent channels for increased bandwidth up to 300 kHz.
[3] For countries which have implemented the R&TTE Directive.

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Annex 13

Title: Wireless Audio Applications

Applications for wireless audio systems include the following, cordless loudspeakers; cordless headphones; cordless headphones for portable use, for example 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 with concerts or other stage productions.

Radio microphones are not included in this Annex.

Systems should be designed so that in the absence of an audio input there should be no transmission of an RF carrier.

Available ETSI Standard: EN 301 357

Superseded recommendations: None

Technical and regulatory parameters:

For interpretation of codes, see Appendix 1

	Frequency Band	Power (Table 2)	Antenna (Table 3)	Channel spacing (Table 4)	Licensing requirement (Table 5)	Approvals (Table 6)	Duty cycle (Table 7)
a	863-865 MHz	8[1]	1	13[2]	2	1, 2 or 4[3]	4

[1] e.r.p.
[2] In the case of analogue systems the maximum occupied bandwidth should not exceed 300 kHz. Digital systems are under study.
[3] For countries which have implemented the R&TTE Directive