Commission for
Communications Regulation

Permitted Short Range Devices in Ireland

General Document

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Additional Information

Document Version	Date	Nature of Update
02/71R9	07 March 2014	Implementation of Commission Decision 2013/752/EU
02/71R8	10 October 2013	Reinstated 17.1 - 17.3 GHz under Table 3: Wideband Data Transmission Systems (including WAS/RLANs)
02/71R7	03 September 2013	Update of Requirements for SRDs in Ireland
02/71R6	19 December 2011	Update of Requirements for SRDs in Ireland
02/71R5	23 December 2010	Update of Requirements for SRDs in Ireland
02/71R4	22 December 2009	Update of Requirements for SRDs in Ireland
02/71R3	21 July 2009	Update of Requirements for SRDs in Ireland
02/71R2	21 January 2009	Update of Requirements for SRDs in Ireland
02/71R1	23 November 2007	Inclusion of equipment for movement detection and alert in 10.4 - 10.42 GHz band and General Information section
02/71R	22 December 2006	Update of Requirements for SRDs in Ireland
02/71	30 July 2002	Original Document

Content

Section Page

1 General Information

1. The Radio and Telecommunications Terminal Equipment Directive[1] ("R&TTE Directive") was transposed into Irish law by Statutory Instrument ("S.I.") 240 of 2001 entitled *"European Communities (Radio Equipment and Telecommunications Terminal Equipment) Regulations, 2001"*. Regulation 5(6)(a) of S.I. 240 of 2001 transposes Article 4.1 of the R&TTE Directive and requires the Commission for Communications Regulation (ComReg) to notify the European Commission of the regulated interfaces for the radio services in Ireland.

2. This document contains interface requirements for the operation of Short Range Devices (SRDs) in Ireland. These requirements have been stipulated for the purpose of the efficient and effective use of the radio spectrum.

3. The manner in which the radio spectrum is allocated in Ireland is laid down in the *"Radio Frequency Plan for Ireland"* (ComReg document 13/118[2], as revised).

4. All radio and telecommunications terminal equipment must comply with the essential requirements and other relevant provisions of the R&TTE Directive before being placed on the market or put into service in Ireland. In terms of the usage of Short Range Devices in Ireland, such radio equipment must operate in accordance with the relevant interface requirements laid down in this document.

5. Under Irish legislation (the Wireless Telegraphy Acts 1926 - 2009), all apparatus for Wireless Telegraphy requires a licence unless that apparatus has been specifically exempted from licensing under Irish legislation by means of an Exemption Order. In Ireland Short Range Devices that operate in accordance with the requirements laid down in this document (and any revisions thereof) are exempt from licensing by exemption orders S.I. 160 of 2006 and S.I. 405 of 2002.

6. All radio equipment should operate so as to optimise the effective and appropriate use of the radio spectrum and so that it does not cause harmful interference to other authorised radio services.

[1] Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity is available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1999:091:0010:0028:EN:PDF

[2] http://www.comreg.ie/publications/radio_frequency_plan_for_ireland.583.104517.p.html

7. The term "reference standards" refers to the standards currently applicable to the particular radio service in question. In some cases sub-parts of these standards are harmonised standards under the R&TTE Directive. Harmonised standards, although not compulsory, give a presumption of conformity to the relevant essential requirements of the R&TTE Directive under the scope of that standard. A list of harmonised standards under the R&TTE Directive is published in the Official Journal of the European Union (OJEU) and is published electronically on the European Commission website[3]. The OJEU maintains the list of harmonised standards and defines which parts and which versions are in force. Conformity to the harmonised standards which are in force at the time of putting into service is recommended. Users are advised to refer to the latest publication of the OJEU for information on current harmonised standards.

8. Where standards are contained in Irish Regulations, these refer to the standards in force at the time of writing of those Regulations. If a standard is superseded this should be read as referring to the relevant successor or most up to date revision of that standard.

9. Commission Decision 2000/299/EC[4] established classifications for radio and telecommunications terminal equipment. Radio and telecommunications terminal equipment which can be placed on the market and put into service without restrictions has been designated as Class 1. A list of Class 1 radio and telecommunications terminal equipment is maintained on the CEPT website[5]. Radio equipment which has restrictions placed on it in terms of either placing on the market or putting into service is designated as Class 2 equipment and should accordingly be marked with the alert symbol.

10. ComReg may, from time to time, introduce additional requirements where necessary for the purposes of ensuring the effective and efficient use of the radio spectrum. Such additional requirements may be necessitated by, inter alia, changes to spectrum allocations and/or technological developments. ComReg reserves the right to amend interface requirements where necessary and this document is therefore subject to revision.

11. Web addresses referenced throughout this document are for convenience only. Please note that ComReg is not responsible for the content of external websites.

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[3] http://ec.europa.eu/enterprise/sectors/rtte/documents/standards/index_en.htm

[4] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2000:097:0013:0014:EN:PDF

[5] http://www.cept.org/ecc/topics/short-range-device-regulations-and-indicative-list-of-equipment-sub-classes-in-accordance-with-the-rtte-directive-(19995ec)

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14. Recipients of this document in any format should take their own professional financial, legal or other advice in order to make an independent assessment of the potential value of any allocation of radio spectrum by whatever means applicable.

2 Introduction

15. The term "Short Range Device" (SRD) is intended to cover the radio transmitters which provide uni-directional or bi-directional communication and which have low capability of causing interference to other radio equipment. SRDs include devices such as inductive applications, model control, Road Transport and Traffic Telematics (RTTT) systems, cordless telephones, Alarms, Field Disturbance and Doppler Apparatus (FDDA) systems, Wireless microphones, wireless audio systems and wideband data transmission systems.

16. Short Range Devices operate on a non-interference and non-protected basis in Ireland. SRDs that operate in accordance with the requirements described in this document may be operated without the need for an individual user licence in Ireland. These SRDs are covered by exemption orders. However, this exemption shall not absolve an operator from any requirement in law to obtain additional consents, permissions, authorisations or licences as may be necessary (e.g. for the provision of services to the public).

17. The interface requirements for SRDs are detailed in Tables 1 - 13 as follows:

    Table 1: Non-Specific Short Range Devices

    Table 2: Tracking, Tracing and Data Acquisition Devices

    Table 3: Wideband Data Transmission Systems (incl. WAS/RLANs)

    Table 4: Railway Applications

    Table 5: Road Transport and Traffic Telematics (RTTT)

    Table 6: Radio determination Applications

    Table 7: Alarms

    Table 8: Model Control

    Table 9: Inductive Applications

    Table 10: Radio Microphone Applications Including Aids for the Hearing Impaired

    Table 11: Radio Frequency Identification Applications

    Table 12: Active Medical Implants and Their Associated Peripherals

    Table 13: Wireless Audio Applications

18. The legislation and documentation relevant to SRDs are listed in Section 4: Relevant Documentation.

3 Interface Requirements for Short Range Devices

3.1 Interface Requirements for Non-Specific Short Range Devices[6]

Important Note:

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 advise users on the risks of potential interference and its consequences.

Table 1 Interface Requirements for Non-specific Short Range Devices

Mandatory Requirements			Information	
Frequency Band	**Maximum Permitted Radiated Power / Field Strength**	**Mitigation Requirements**	**Reference Standards**	**Relevant Documents / Other Notes**
6765 – 6795 kHz[7]	42 dBµA/m @ 10m	-	EN 300 330	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
13.553 – 13.567 MHz[7]	42 dBµA/m @ 10m	-	EN 300 330	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03

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

[7] Frequency band is also identified in Table 9

Table 1 Interface Requirements for Non-specific Short Range Devices

Mandatory Requirements			Information	
Frequency Band	**Maximum Permitted Radiated Power / Field Strength**	**Mitigation Requirements**	**Reference Standards**	**Relevant Documents / Other Notes**
26.957 – 27.283 MHz[8]	42 dBµA/m @ 10m, which corresponds to 10 mW ERP[9]	-	EN 300 220, EN 300 330	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
40.660 – 40.700 MHz	10 mW ERP	-	EN 300 220	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
49.82 – 49.98 MHz[10]	10 mW ERP	-	EN 300 220	
138.20 - 138.45 MHz	10 mW ERP	Duty cycle[11] <1.0% (Note 1.1)	EN 300 220	Other references: ERC/REC 70-03 ECC/DEC/(05)02
169.4 – 169.4750 MHz[12]	500 mW EIRP	Channel Spacing <50 kHz Duty cycle limit: 1.0 %	EN 300 220	Decision 2006/771/EC Decision 2013/752/EU Other references: ERC/REC 70-03

[8] Frequency band is also identified in Table 9

[9] Effective Radiated Power

[10] Not included in ERC/REC/70-03 – National SRD solution only.

[11] Duty cycle means the ratio of time during any one-hour period when equipment is actively transmitting.

[12] Frequency band is also identified in Table 2 and Table 10

Table 1 Interface Requirements for Non-specific Short Range Devices				
Mandatory Requirements			**Information**	
Frequency Band	**Maximum Permitted Radiated Power / Field Strength**	**Mitigation Requirements**	**Reference Standards**	**Relevant Documents / Other Notes**
169.4 – 169.4875 MHz	10 mW EIRP	Duty cycle limit: 0.1 %	EN 300 220	Decision 2006/771/EC Decision 2013/752/EU Other references: ERC/REC 70-03
169.48750 – 169.58750 MHz	10 mW EIRP	Duty cycle limit: 0.001 %	EN 300 220	Decision 2006/771/EC Decision 2013/752/EU Other references: ERC/REC 70-03
169.5875 – 169.8125 MHz	10 mW ERP	Duty Cycle[7] < 0.1 % Channel Spacing: 12.5 kHz	EN 300 220	Equipment that concentrates or multiplexes individual equipment is excluded. European Legislation: Decision 2006/771/EC Decision 2013/752/EU Other references: ECC/DEC/(05)02 ERC/REC 70-03
173.2125 – 173.2375 MHz[13]	10 mW ERP	Channel Spacing ≤ 25kHz	EN 300 220	Telecommand only
173.2375 – 173.275 MHz[13]	100 mW ERP	≤ 25kHz	EN 300 220	

[13] Not included in ERC/REC/70-03 – National SRD solution only.

Table 1 Interface Requirements for Non-specific Short Range Devices				
Mandatory Requirements			**Information**	
Frequency Band	**Maximum Permitted Radiated Power / Field Strength**	**Mitigation Requirements**	**Reference Standards**	**Relevant Documents / Other Notes**
433.050 – 434.790 MHz	10 mW ERP	Duty Cycle ≤ 10 % Note 1.1	EN 300 220	See Note 1.4 European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
433.050 – 434.790 MHz	1 mW ERP (-13 dBm/10 kHz power density for wideband modulation with a bandwidth greater than 250 kHz)	Duty Cycle ≤ 100 %	EN 300 220	See Note 1.4bis European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
434.040 – 434.790 MHz	10 mW ERP	Duty Cycle ≤ 100 % Channel Spacing ≤ 25 kHz	EN 300 220	See Note 1.4bis European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03

Table 1 Interface Requirements for Non-specific Short Range Devices

Mandatory Requirements			Information	
Frequency Band	**Maximum Permitted Radiated Power / Field Strength**	**Mitigation Requirements**	**Reference Standards**	**Relevant Documents / Other Notes**
458.4875 – 458.6375 MHz[14]	500 mW ERP	Channel Spacing ≤ 25 kHz	EN 300 220	On-site[15] telemetry/telecommand only. Please Note adjacent band use for ECG monitoring in hospitals (see Table 12)
458.8375 – 458.9875 MHz[14]	500 mW ERP	Channel Spacing ≤ 25 kHz	EN 300 220	On-site telemetry/telecommand only. Please Note adjacent band use for ECG monitoring in hospitals (see Table 12)
863 - 870 MHz	≤ 25 mW ERP	Duty Cycle ≤ 0.1 % or LBT (Notes 1.1, 1.5). Channel Spacing ≤ 100 kHz, for 47 or more channels (Note 1.2)	EN 300 220	See Notes 1.3 and 1.4 FHSS Modulation European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03

[14] Not included in ERC/REC/70-03 – National SRD solution only.

[15] Only systems for which both the transmitter and receiver are on the same site (e,g. a company premises, compound, complex, etc) are considered to be on-site systems

Table 1 Interface Requirements for Non-specific Short Range Devices				
Mandatory Requirements			**Information**	
Frequency Band	**Maximum Permitted Radiated Power / Field Strength**	**Mitigation Requirements**	**Reference Standards**	**Relevant Documents / Other Notes**
863 - 870 MHz (continued)	≤ 25 mW ERP Power density : -4.5 dBm/100 kHz (Note 1.7)	Duty Cycle ≤ 0.1 % , or LBT + AFA (Note 1.1,1.5 and 1.6)	EN 300 220	See Notes 1.3 and 1.4 DSSS and other wideband modulations other than FHSS European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
863 - 870 MHz (continued)	≤ 25 mW ERP	Duty Cycle ≤ 0.1 %, or LBT + AFA (Note 1.1, 1.5) Channel Spacing ≤ 100 kHz, for 1 or more channels. Modulation bandwidth ≤ 300 kHz (Note 1.2)	EN 300 220	See Notes 1.3 and 1.4 Narrow/wide-band Modulation European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03

Table 1 Interface Requirements for Non-specific Short Range Devices				
Mandatory Requirements			**Information**	
Frequency Band	**Maximum Permitted Radiated Power / Field Strength**	**Mitigation Requirements**	**Reference Standards**	**Relevant Documents / Other Notes**
868.000 - 868.600 MHz	25 mW ERP	Duty Cycle ≤ 1 %, or LBT + AFA (Note 1.1)	EN 300 220	See Note 1.4 Narrow/wide-band Modulation No channel spacing. However, the whole stated frequency band may be used (see Note 1.2). European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
868.700 - 869.200 MHz	25 mW ERP	Duty Cycle ≤ 0.1 %, or LBT + AFA (Note 1.1)	EN 300 220	See Note 1.4. Narrow/wide-band Modulation No channel spacing. However the whole stated frequency band may be used (see Note 1.2). European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references:ERC/REC 70-03

Table 1 Interface Requirements for Non-specific Short Range Devices				
Mandatory Requirements			**Information**	
Frequency Band	**Maximum Permitted Radiated Power / Field Strength**	**Mitigation Requirements**	**Reference Standards**	**Relevant Documents / Other Notes**
869.400 - 869.650 MHz	500 mW ERP	Duty Cycle ≤ 10 %, or LBT + AFA (Note 1.1) Channel spacing must be 25 kHz except that the whole band may also be used as one single channel for high speed data transmission.	EN 300 220	Narrow/wide-band Modulation European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
869.700 - 870.000 MHz	5 mW ERP	Up to 100% duty cycle	EN 300 220	See Note 1.4bis Narrow/wide-band Modulation No channel spacing but the whole stated frequency band may be used. European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03

Table 1 Interface Requirements for Non-specific Short Range Devices				
Mandatory Requirements			**Information**	
Frequency Band	**Maximum Permitted Radiated Power / Field Strength**	**Mitigation Requirements**	**Reference Standards**	**Relevant Documents / Other Notes**
869.700 - 870.000 MHz (continued)	25 mW ERP	Duty Cycle ≤ 1%, or LBT + AFA (Note 1.1)		See Note 1.4bis Narrow/wide-band Modulation. No channel spacing but the whole stated frequency band may be used. European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
2400 - 2483.5 MHz[16]	10 mW EIRP			European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
5725 - 5875 MHz	25 mW EIRP	-	EN 300 440	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03

[16] Frequency bands are also identified in Table 3 and Table 6

Table 1 Interface Requirements for Non-specific Short Range Devices				
Mandatory Requirements			**Information**	
Frequency Band	**Maximum Permitted Radiated Power / Field Strength**	**Mitigation Requirements**	**Reference Standards**	**Relevant Documents / Other Notes**
24.00 - 24.25 GHz[17]	100 mW EIRP	-	EN 300 440	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
61.0 - 61.5 GHz	100 mW EIRP	-	-	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
122.0-122.25 GHz	10 dBm EIRP/250 MHz and -48 dBm/MHz at >30° elevation	Note 1.8		
122.25-123.00 GHz	100 mW EIRP	-	-	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references:ERC/REC 70-03

[17] Frequency bands are also identified in Table 5

Table 1 Interface Requirements for Non-specific Short Range Devices				
Mandatory Requirements			**Information**	
Frequency Band	**Maximum Permitted Radiated Power / Field Strength**	**Mitigation Requirements**	**Reference Standards**	**Relevant Documents / Other Notes**
244 – 246 GHz	100 mW EIRP	-	-	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
3.1 - 4.8 GHz **6 - 9 GHz**	*	*	ECC/DEC/(06)04	Generic UWB regulation * See detailed requirements in the related ECC Decision
1349 MHz[18]	500 mW ERP		EN 300 440	Video senders only
2400 – 2483.5 MHz[18]	25 mW EIRP		EN 300 440	Video Surveillance only

[18] Not included in ERC/REC/70-03 – National SRD solution only

Note 1.1: When either, a duty cycle, Listen Before Talk (LBT) or equivalent technique applies then it shall not be user dependent/adjustable and shall be guaranteed by appropriate technical means.

For LBT devices without Adaptive Frequency Agility (AFA), or equivalent techniques, the duty cycle limit applies.

For any type of frequency-agile device the duty cycle limit applies to the total transmission unless LBT or equivalent technique is used.

Note 1.2: The preferred channel spacing is 100 kHz allowing for a subdivision into 50 kHz or 25 kHz.

Note 1.3: Sub-bands for alarms are excluded (see Table 7).

Note 1.4: Audio and video applications are allowed provided that a digital modulation method is used with a maximum bandwidth of 300 kHz.

Analogue and digital voice applications are allowed with a maximum bandwidth ≤ 25 kHz.

In sub-band 863-865 MHz voice and audio conditions of Annexes 10 and 13 of ERC/REC 70 – 03 apply respectively.

Note 1.4bis: Audio and video applications are excluded. Analogue or digital voice applications are allowed with a max. Bandwidth ≤ 25 kHz and with spectrum access technique such as Listen Before Talk (LBT) or equivalent. The transmitter shall include a power output sensor controlling the transmitter to a maximum transmit period of 1 minute for each transmission.

Note 1.5: Duty cycle may be increased to 1% if the band is limited to 865 - 868 MHz.

Note 1.6: For other wide-band modulation than FHSS (Frequency Hopping Spread Spectrum) and DSSS (Direct-sequence Spread Spectrum) with a bandwidth of 200 kHz to 3 MHz, duty cycle can be increased to 1% if the band is limited to 865 - 868 MHz and power to ≤10 mW ERP

Note 1.7: The power density can be increased to +6.2 dBm/100 kHz and -0.8 dBm/100 kHz if the band of operation is limited to 865 - 868 MHz and 865 - 870 MHz respectively.

Note 1.8: These limits should be measured with an RMS detector with an averaging time of 1 ms or less.

3.2 Interface Requirements for Tracking, Tracing and Data Acquisition Devices

Important Note:

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 advise users on the risks of potential interference and its consequences.

Table 2 Interface Requirements for Tracking, Tracing and Data Acquisition Devices

Mandatory Requirements			Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
456.9 – 457.1 kHz	7 dBμA/m @ 10 m	Continuous Wave (CW) – no modulation	EN 300 718	Emergency Detection of buried victims and valuable items. Centre frequency is 457kHz European Legislation: 2001/148/EC 2013/752/EU Other References: ERC/REC 70-03
169.4 - 169.475 MHz[19]	500 mW ERP	Duty cycle < 10% Max 50 kHz channel spacing	EN 300 220	Meter Reading European Legislation: Decision 2006/771/EC Decision 2013/752/EU Other references: ECC/DEC(05)02 ERC/REC 70-03

[19] This frequency is also identified in Table 1

3.3 Interface Requirements for Wideband Data Transmission Systems (including WAS/RLANs)

Important Note:

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 advise users on the risks of potential interference and its consequences.

Table 3 Interface Requirements for Wideband Data Transmission Systems (including WAS/RLANs)

Mandatory Requirements			**Information**	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
2400 – 2483.5 MHz	100 mW EIRP 100mW/100 kHz EIRP density applies when frequency hopping modulation is used. For wide band modulations other than FHSS, the max. EIRP density is limited to 10 mW/MHz.	See Note 3.1	EN 300 328	European Legislation: Decision 2006/771/EC Decision 2013/752/EU Decision 2011/829/EU Other references: ERC/REC 70-03
5150 – 5350 MHz	200 mW mean EIRP (see Note 3.3) Power Density[20]: 10 mW/MHz in any 1 MHz band	Indoor use only. See Notes 3.1 and 3.2	EN 301 893	European Legislation: Decisions 2007/90/EC, 2005/513/EC. Other references: ECC/DEC/(04)08 ERC/REC 70-03

[20] Max mean EIRP

Table 3 Interface Requirements for Wideband Data Transmission Systems (including WAS/RLANs)

Mandatory Requirements			Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
5470 – 5725 MHz	1 W mean EIRP Power Density[21]: 50 mW/MHz in any 1 MHz band (see Note 3.3)	See Notes 3.1 and 3.2	EN 301 893	European Legislation: Decisions 2007/90/EC, 2005/513/EC, Other references: ECC/DEC/(04)08 ERC/REC 70-03
5725 – 5875 MHz[22]	2 W EIRP (Max mean) Power Density (Max mean EIRP): 100mW/MHz (see Note 3.1)	-	EN 301 489-4 EN 301 489-17 EN 302 326e EN 302 502	Registration Required[23] Other references:ECC/REC (06)04
17.1 – 17.3 GHz[24]	100 mW EIRP	-	-	-
57 -66 GHz	40 dBm mean EIRP The maximum EIRP density is limited to 13 dBm/MHz This refers to the highest power level of the transmitter power control range during the transmission burst if transmitter power control is implemented	Fixed Outdoor applications are excluded See Note 3.1	EN 302 567	European Legislation: Decision 2006/771/EC Decision 2013/752/EU Decision 2011/829/EU Other references: ERC/REC 70-03

[21] Max mean EIRP

[22] Not included in ERC/REC/70-03 – National SRD solution only

[23] See ComReg document 03/42 or http://www.comreg.ie/licensing_and_services/5_8_ghz_registration.683.ghzlic.html

[24] 17.1 – 17.3 GHz has been removed from Annex 3 of ERC/REC/70-03, as such this frequency band may be subject to removal from future revisions of this document. Note that this frequency band is also identified in Table 6.

Note 3.1: The equipment shall implement an adequate spectrum sharing mechanism in order to facilitate sharing between the various technologies and applications covered in Table 2.

Note 3.2: WAS/RLANs operating in the bands 5250 – 5350 MHz and 5470 – 5725 MHz shall use mitigation techniques that give at least the same protection as the detection, operational, and response requirements described in EN 301 893 to ensure compatible operation with radio determination systems (radars). Such mitigation techniques shall equalise the probability of selecting a specific channel for all available channels so as to ensure, on average, a near-uniform spread of spectrum loading. Specific information about the applicability of EN 301 893 can be found at http://ec.europa.eu/comm/enterprise/rtte/harstand.htm.

Note 3.3: WAS/RLANs operating in the bands 5250 – 5350 MHz and 5470 – 5725 MHz shall employ transmitter power control (TPC) which provides, on average a mitigation factor of at least 3 dB on the maximum permitted output power of the systems. If TPC is not in use the maximum permitted mean EIRP and the corresponding mean EIRP density limits shall be reduced by 3 dB.

3.4 Interface requirements for Railway Applications

Important Note:

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 advise users on the risks of potential interference and its consequences.

Table 4 Interface requirements for Railway Applications

Mandatory Requirements			Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
984 – 7487 kHz[25]	9 dBμA/m at 10m	Duty cycle <1%	EN 300 330	Transmitting only on receipt of a Balise/Eurobalise tele-powering signal from a train. Centre frequency is 4234 kHz Other references: ERC/REC 70-03
27.090 – 27.100 MHz[26]	42 dBμA/m @ 10 m	-	EN 300 330	Railway Application (Eurobalise) Centre Frequency is 27.095 MHz Other references: ERC/REC 70-03

[25] Balise up-link (ground to train) systems including Eurobalise

[26] Balise tele-powering and down-link (train to ground) systems including Eurobalise and activation of the Loop / Euroloop

Table 4 Interface requirements for Railway Applications

Mandatory Requirements			Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
7.3 – 23.0 MHz[27]	-7 dBμA/m at 10m	-	-	Maximum field strength specified in a bandwidth of 10 kHz, spatially averaged over any 200m length of the loop. Transmitting only in the presence of trains. Spread Spectrum Signal. Code length: 472 chips. Centre frequency is 13.547 MHz Other references: ERC/REC 70-03
76-77 GHz	55 dBm peak EIRP			Obstruction/Vehicle detection via radar Sensor at railway level crossings.50 dBm average power or 23.5 dBm average power for pulse radar.

[27] Loop up-link (ground to train) systems including Euroloop

3.5 Interface Requirements for Road Transport and Traffic Telematics (RTTT)

Important Note:

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 advise users on the risks of potential interference and its consequences.

Table 5 Interface Requirements for Road Transport and Traffic Telematics (RTTT)

Mandatory Requirements			Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
5795 – 5805 MHz	2 W EIRP	-	EN 300 674 ES 200 674	Other references: ECC/DEC/(02)01 ERC/REC 70-03
5805 – 5815 MHz	2 W EIRP	-	EN 300 674 ES 200 674	Expansion spectrum only Other references: ECC/DEC/(02)01 ERC/REC 70-03
21.65 – 26.65 GHz	Max Mean Power Density for frequencies below 22GHz: - 61.3dBm/MHz EIRP Max Mean Power Density for frequencies above 22GHz: - 41.3 dBm/MHz EIRP; Peak Power Density: 0 dBm/50 MHz EIRP	For automotive Short Range Radars (SRR) * See detailed requirements in related ECC Decision. New SRR equipment may only be placed onto the market until 1 July 2013	EN 302 288	Temporary designation for automotive Short Range Radar (SRR) for collision mitigation and traffic safety applications only. European Legislation: Decision 2011/485/EU Decision 2005/50/EC Other references: ECC/DEC/(04)10 ERC/REC 70-03

Table 5 Interface Requirements for Road Transport and Traffic Telematics (RTTT)

Mandatory Requirements			Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
24.05 – 24.075 GHz	100 mW EIRP	-	EN 300 440	For Vehicle Radars European Legislation: Decision 2006/771/EU Decision 2013/752/EU Decision 2011/829/EU Other References: ERC/REC 70-03
24.075 – 24.150 GHz	0.1 mW EIRP	-	EN 300 440	For vehicle radars European Legislation: Decision 2006/771/EU Decision 2013/752/EU Decision 2011/829/EU Other references: ECC/DEC/(04)10 ERC/REC 70-03

Table 5 Interface Requirements for Road Transport and Traffic Telematics (RTTT)

Mandatory Requirements			Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
24.075 – 24.150 GHz (continued) **24.075 – 24.150 GHz (continued)**	100 mW EIRP	≤ 4µs/40 kHz dwell time for every 3ms[28]	EN 300 440	For automotive radars. The mitigation requirement is given for devices mounted behind a bumper. If mounted without a bumper , the requirement should be 3 µs/40 kHz maximum dwell time every 3 ms European Legislation: Decision 2006/771/EU Decision 2013/752/EU Decision 2011/829/EU Other references: ECC/DEC/(04)10 ERC/REC 70-03
24.075 – 24.150 GHz (continued)	100 mW EIRP	≤ 1ms/40 kHz dwell time every 40 ms[28]	EN 300 440	For vehicle radars. The spectrum access and mitigation requirement is given for devices mounted either behind a bumper or mounted without a bumper.

[28] A requirement for minimum frequency modulation range (applicable to FMCW or step frequency signals) or minimum instantaneous bandwidth (applicable to pulsed signal) of 250 kHz applies in addition to the requirement on maximum dwell time.

Table 5 Interface Requirements for Road Transport and Traffic Telematics (RTTT)

Mandatory Requirements			Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
				European Legislation: Decision 2006/771/EU Decision 2013/752/EU Decision 2011/829/EU Other references: ECC/DEC/(04)10 ERC/REC 70-03
24.150 – 24.250 GHz	100 mW EIRP	-	EN 300 440	For vehicle radars European Legislation: Decision 2006/771/EU Decision 2013/752/EU Decision 2011/829/EU Other references: ECC/DEC/(04)10 ERC/REC 70-03
63 – 64 GHz	40 dBm EIRP		EN 302 686	Vehicle to vehicle and road to vehicle systems. European Legislation: Decision 2006/771/EC Decision 2013/752/EU Decision 2011/829/EU Other references: ECC/DEC/(02)01 ERC/REC 70-03

Table 5 Interface Requirements for Road Transport and Traffic Telematics (RTTT)

Mandatory Requirements			Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
76 – 77 GHz[29]	55 dBm peak EIRP 50 dBm average power or 23.5 dBm average power for pulse radar only.		EN 301 091	Vehicle and infrastructure radar systems European Legislation: Decision 2006/771/EU Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03

[29] Frequency band is also included in Annex 4

3.6 Interface Requirements for Radio Determination Applications

Important Note:

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 advise users on the risks of potential interference and its consequences.

Table 6 Interface Requirements for Radio Determination Applications

Mandatory Requirements		**Information**	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Reference Standards	Relevant Documents / Other Notes
2400 – 2483.5 MHz	25 mW EIRP	EN 300 440	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/DEC/(01)08 ERC/REC 70-03
9200 – 9500 MHz	25 mW EIRP	EN 300 440	Other references: ERC/REC 70-03
9500 – 9975 MHz	25 mW EIRP	EN 300 440	Other references: ERC/REC 70-03
2.2-8 GHz		ECC/DEC/(07)01	For Material Sensing Devices. * See detailed requirements in related ECC Decision

Table 6 Interface Requirements for Radio Determination Applications

Mandatory Requirements		Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Reference Standards	Relevant Documents / Other Notes
4.5 – 7.0 GHz	-41.3 dBm/MHz EIRP[30]	-	Tank Level Probing Radar (TLPR) only European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
8.5 – 10.6 GHz	-41.3 dBm/MHz EIRP[30]	-	Tank Level Probing Radar (TLPR) only The radiated unwanted emissions within the frequency band 10.6-10.7 GHz outside the test tank enclosure shall be less than -60 dBm/MHz EIRP European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
10.4 - 10.42 GHz[31]	500 mW EIRP	EN 300 440	

[30] The power limit is the radiated emission outside an enclosed tank structure. The maximum emission inside an enclosed tank structure is limited to +24 dBm EIRP for the 4.5 – 7.0 GHz band, +30 dBm EIRP for the 8.5 – 10.6 GHz band, and +43 dBm EIRP for the 24.05 - 27.0 GHz, 57 - 64 GHz and 75 - 85 GHz bands.

[31] Not included in ERC/REC/70-03 – National SRD solution only

Table 6 Interface Requirements for Radio Determination Applications

Mandatory Requirements		Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Reference Standards	Relevant Documents / Other Notes
10.5 – 10.6 GHz	25 mW EIRP	EN 300 440	Other references: ERC/REC 70-03
13.4 – 14 GHz	25 mW EIRP	EN 300 440	Other references: ERC/REC 70-03
17.1 – 17.3 GHz[32]	26 dBm EIRP[30]		Ground Based Synthetic Aperture Radar[33] - DAA European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
24.05 – 24.25 GHz[34]	100 mW EIRP	EN 300 440	Other references: ERC/REC 70-03 The frequency band 24.00 – 24.25 GHz is identified with the same emission parameters in Table 1

[32] Frequency band also identified in Table 3

[33] Specific requirements for the radar antenna pattern and for the implementation of the Detect and Avoid (DAA) technique apply as described in EN 300 440 for Ground Based Synthetic Aperture Radar (GBSAR) systems.

[34] Frequency band also identified in Table 1

Table 6 Interface Requirements for Radio Determination Applications			
Mandatory Requirements		**Information**	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Reference Standards	Relevant Documents / Other Notes
24.05 – 27.0 GHz	-41.3 dBm/MHz EIRP[30]	-	Tank Level Probing Radar (TLPR) only European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
57 – 64 GHz	-41.3 dBm/MHz EIRP[30]	-	Tank Level Probing Radar (TLPR) only European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
75 – 85 GHz	-41.3 dBm / MHz EIRP[30]	-	Tank Level Probing Radar (TLPR) only European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03

3.7 Interface Requirements for Alarms

Important Note:

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 advise users on the risks of potential interference and its consequences.

Table 7 Interface Requirements for Alarms

Mandatory Requirements			Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
868.600 – 868.700 MHz	10 mW ERP	Duty Cycle < 1 % Channel Spacing: 25 kHz The whole frequency band may also be used as one single channel for high-speed data transmission.	EN 300 220	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
869.200 – 869.250 MHz	10 mW ERP	Duty Cycle < 0.1 % Channel Spacing: 25 kHz	EN 300 220	Social Alarms[35] European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03

[35] Social alarm devices are used to assist elderly people and people with disabilities living at home when then they are in distress.

Table 7 Interface Requirements for Alarms

Mandatory Requirements			Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
869.250 – 869.300 MHz	10 mW ERP	Duty Cycle < 0.1 % Channel Spacing: 25 kHz	EN 300 220	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
869.300 – 869.400 MHz	10 mW ERP	Duty Cycle < 1 % Channel Spacing: 25 kHz	EN 300 220	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
869.650 – 869.700 MHz	25 mW ERP	Duty Cycle < 10 % Channel Spacing: 25 kHz	EN 300 220	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03

3.8 Interface Requirements for Model Control

Important Note:

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 advise users on the risks of potential interference and its consequences.

Table 8 Interface Requirements for Model Control

Mandatory Requirements			Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
26.99 – 27.20 MHz **(26.995, 27.045, 27.095,** **27.145, 27.195 MHz)**	100 mW ERP	Channel Spacing: 10 kHz	EN 300 220	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
34.995 – 35.225 MHz	100 mW ERP	Channel Spacing: 10 kHz	EN 300 220	Flying Models only Other references: ERC/DEC/(01)11 ERC/REC 70-03
40.660 – 40.700 MHz **(40.665, 40.675, 40.685,** **40.695 MHz)**	100 mW ERP	Channel Spacing: 10 kHz	EN 300 220	Other references: ERC/DEC/(01)12 ERC/REC 70-03

3.9 Interface Requirements for Inductive Applications[36]

Important Note:

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 advise users on the risks of potential interference and its consequences.

Table 9 Interface Requirements for Inductive Applications

Mandatory Requirements		Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Reference Standards	Relevant Documents / Other Notes
9 – 90 kHz	72 dBμA/m @ 10 m	EN 300 330	In case of external antennas only loop coil antennas may be employed. Field strength level descending 3dB/octave at 30kHz European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03

[36] 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.

Table 9 Interface Requirements for Inductive Applications

Mandatory Requirements		Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Reference Standards	Relevant Documents / Other Notes
90 – 119 kHz	42 dBμA/m @ 10 m	EN 300 330	In case of external antennas only loop coil antennas may be employed. European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
119 – 135 kHz	66 dBμA/m @ 10 m	EN 300 330	In case of external antennas only loop coil antennas may be employed. Field strength level descending 3dB/octave at 119 kHz European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03

Table 9 Interface Requirements for Inductive Applications

Mandatory Requirements		Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Reference Standards	Relevant Documents / Other Notes
135 – 140 kHz	42 dBμA/m @ 10 m	EN 300 330	In case of external antennas only loop coil antennas may be employed. European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
140 – 148.5 kHz	37.7 dBμA/m @ 10 m	EN 300 330	In case of external antennas only loop coil antennas may be employed. European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
148.5 – 1600 kHz[37]	-5 dBμA/m @ 10 m	EN 300 330	In case of external antennas only loop coil antennas may be employed.

[37] Not included in ERC/REC/70-03 – National SRD solution only

Table 9 Interface Requirements for Inductive Applications

Mandatory Requirements		Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Reference Standards	Relevant Documents / Other Notes
148.5 kHz – 5 MHz	-15 dBμA/m at 10m	EN 300 330	In the case of external antennas, only loop coil antennas may be employed. The maximum field strength is specified in a bandwidth of 10 kHz. The maximum allowed total field strength is -5 dBμA/m at 10m for systems operating at bandwidths larger than 10 kHz whilst keeping the density limit (-15 dBμA/m at 10m) European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
285 – 400 kHz[37]	38 dBμA/m @ 10 m	EN 300 330	
400 – 600 kHz	-8 dBμA/m at 10m	EN 300 330	For RFID only. In the case of external antennas, only loop coil antennas may be employed. The maximum field strength is specified in a bandwidth of 10 kHz. The maximum allowed total field strength is -5 dBμA/m at 10 m for systems operating at bandwidths larger than 10 kHz measured at the centre frequency, whilst keeping the density limit (-8 dBμA/m in a bandwidth of 10 kHz.) These systems should operate with a minimum operating bandwidth of 30 kHz.

Table 9 Interface Requirements for Inductive Applications

Mandatory Requirements		Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Reference Standards	Relevant Documents / Other Notes
			European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
1650 – 1950 kHz[37]	8 dBμA/m @ 10 m	EN 300 330	
1805 – 2200 kHz[37]	-8 dBμA/m @ 10 m	EN 300 330	
2540 – 3560 kHz[37]	-8 dBμA/m @ 10 m	EN 300 330	
3155 – 3400 kHz	13.5 dBμA/m @ 10 m	EN 300 330	In case of external antennas only loop coil antennas may be employed. European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03

Table 9 Interface Requirements for Inductive Applications

Mandatory Requirements		Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Reference Standards	Relevant Documents / Other Notes
6765 – 6795 kHz	42 dBμA/m @ 10 m	EN 300 330	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
7400 – 8800 kHz	9 dBμA/m @ 10 m	EN 300 330	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references:ERC/REC 70-03
5 - 30 MHz	-20 dBμA/m at 10m	EN 300 330	In the case of external antennas, only loop coil antennas may be employed. The maximum field strength is specified in a bandwidth of 10 kHz. The maximum allowed total field strength is -5 dBμA/m at 10m for systems operating at bandwidths larger than 10 kHz whilst keeping the density limit (-20 dBμA/m at 10m) European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03

Table 9 Interface Requirements for Inductive Applications			
Mandatory Requirements		**Information**	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Reference Standards	Relevant Documents / Other Notes
10.2 – 11 MHz	9 dBμA/m @ 10 m	EN 300 330	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
13.553 – 13.567 MHz	42 dBμA/m @ 10 m	EN 300 330	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
13.553 – 13.567 MHz	60 dBμA/m @ 10 m	EN 300 330	For RFID and EAS only European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
26.957 – 27.283 MHz	42 dBμA/m @ 10 m	EN 300 330	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03

3.10 Interface Requirements for Radio Microphone Applications Including Aids for the Hearing Impaired

Important Note:

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 advise users on the risks of potential interference and its consequences.

Table 10 Interface Requirements for Radio Microphones and Assistive Hearing Devices

Mandatory Requirements			Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
29.7 – 47.0 MHz	10 mW ERP	Channel Spacing 50 kHz	EN 300 422	On a tuning range basis. The frequency bands 30.3 – 30.5 MHz, 32.15 – 32.45 MHz and 41.015 - 47.00 MHz are harmonised military bands in Europe. Other references: ERC/REC 70-03
173.965 – 174.015 MHz	2 mW ERP	Channel Spacing: 50 kHz	EN 300 422	Aids for hearing impaired Other references: ERC/REC 70-03
863 – 865 MHz	10 mW ERP	Channel Spacing: 200 kHz	EN 301 357	Other references: ERC/REC 70-03

Table 10 Interface Requirements for Radio Microphones and Assistive Hearing Devices

Mandatory Requirements			Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
169.4000 - 169.4750 MHz[38]	10 mW EIRP	Max 50 kHz	EN 300 422	Aids for the hearing impaired. (Personal Hearing Aid System) European Legislation: Decision 2006/771/EC Decision 2013/752/EU Other references: ECC/DEC(05)02 ERC/REC 70-03
169.4875 - 169.5875 MHz	10 mW EIRP	Max 50 kHz	EN 300 422	Aids for the hearing impaired (personal Hearing Aid System) – exclusive use. European Legislation: Decision 2006/771/EC Decision 2013/752/EU Other references: ECC/DEC(05)02 ERC/REC 70-03

[38] Frequency band is also identified in Table 1 and Table 2

3.11 Interface Requirements for Radio Frequency Identification Applications (RFID)

Important Note:

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 advise users on the risks of potential interference and its consequences.

Table 11 Interface Requirements for Radio Frequency Identification Applications (RFID)

Mandatory Requirements			Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
865.0 – 865.6 MHz	100 mW ERP	Channel Spacing: 200 kHz	EN 302 208	Other references: ERC/REC 70-03
865.6 – 867.6 MHz	2 W ERP	Channel Spacing: 200 kHz	EN 302 208	Other references: ERC/REC 70-03
867.6 – 868.0 MHz	500 mW ERP	Channel Spacing: 200 kHz	EN 302 208	Other references: ERC/REC 70-03
2446 – 2454 MHz	≤500 mW EIRP	-	EN 300 440	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
2446 – 2454 MHz	>500 mW - 4 W EIRP	Duty Cycle ≤ 15 % FHSS techniques should be used.	EN 300 440	Power levels above 500 mW are restricted to be used inside the boundaries of a building. Duty cycle ≤ 15 % in any 200 ms period (i.e. 30 ms on/170 ms off) Other references: ERC/REC 70-03

3.12 Interface Requirements for Active Medical Implants and Their Associated Peripherals[39]

Important Note:

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 advise users on the risks of potential interference and its consequences.

Table 12 Interface Requirements for Active Medical Implants and Their Associated Peripherals

Mandatory Requirements			Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
9 – 315 kHz	30 dBμA/m @ at10 m	Duty Cycle < 10 %	EN 300 330	The application is for ultra low power active medical implant systems using inductive loop techniques for telemetry purposes European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03

[39] 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.

Table 12 Interface Requirements for Active Medical Implants and Their Associated Peripherals				
Mandatory Requirements			**Information**	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
315 – 600 kHz	-5 dBμA/m @ 10 m	Duty Cycle < 10 %	EN 300 330	Animal implantable devices European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
12.5 – 20 MHz	-7 dBμA/m @ 10m	Duty cycle < 10%	EN 300 330	This application is for Ultra Low Power (ULP) active animal implantable devices (ULP-AID), limited to indoor only applications. The maximum field strength is specified in a bandwidth of 10 kHz. The transmission mask of ULP-AID is defined as follows: 3 dB Bandwidth 300 kHz 10 dB Bandwidth 800 kHz 20 dB Bandwidth 2 MHz European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03

Table 12 Interface Requirements for Active Medical Implants and Their Associated Peripherals				
Mandatory Requirements			**Information**	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
30.0 – 37.5 MHz	1 mW ERP	Duty Cycle < 10 %	EN 300 220	The application is for Ultra Low Power medical membrane implants for blood pressure measurements European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
401 – 402 MHz	25 µW ERP	Duty cycle ≤ 0.1% unless devices use LBT or equally efficient mitigation technique in which case there is no duty cycle restriction (see Note 12.2). Channel spacing 25kHz	EN 302 537	For Ultra Low Power Active Medical Implants and accessories covered by the applicable harmonised standard and not covered by 402 – 405 MHz. Individual transmitters may combine adjacent 25kHz channels for increased bandwidth up to 100 kHz (See Note 12.1) European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03

Table 12 Interface Requirements for Active Medical Implants and Their Associated Peripherals				
Mandatory Requirements			**Information**	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
402 – 405 MHz	25 µW ERP	Channel Spacing: 25kHz Other channelling restriction: Individual transmitters may combine adjacent channels for increased bandwidth up to 300 kHz. See Note 12.3	EN 301 839	Active Medical Implants European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/DEC/(01)17 ERC/REC 70-03
405 – 406 MHz	25 µW ERP	Duty cycle ≤ 0.1% Unless devices use LBT or equally efficient mitigation technique in which case there is no duty cycle restriction (see Note 12.2). Channel spacing 25kHz	EN 302 537	For Ultra Low Power Active Medical Implants and accessories covered by the applicable harmonised standard and not covered by 402 – 405 MHz. Individual transmitters may combine adjacent 25kHz channels for increased bandwidth up to 100 kHz (see Note 12.1) European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03

Table 12 Interface Requirements for Active Medical Implants and Their Associated Peripherals				
Mandatory Requirements			**Information**	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
458.6375 – 458.8375 MHz[40]	10 mW ERP	Channel Spacing: 25 kHz	EN 300 220	**ECG monitoring only**
2483.5 – 2500 MHz	10 dBm EIRP	LBT + AFA and less than 10% duty cycle The equipment shall implement a spectrum access mechanism as described in the applicable harmonised standard or an equivalent spectrum access mechanism Channel Spacing 1 MHz		For Low Power Active Medical Implants and associated peripherals, covered by the applicable harmonised standard. Individual transmitters may combine adjacent channels on a dynamic basis for increased bandwidth higher than 1 MHz. Peripheral units are for indoor use only.

Note 12.1: Due to the limited available spectrum of 1 MHz, a maximum bandwidth of 100 kHz is permitted for these bands to ensure that several users could access the band concurrently.

Note 12.2: Systems not providing frequency agility based on ambient RF field sensing are limited to a maximum permitted ERP of 250 nanowatts with a duty cycle of ≤ 0.1%.

Note 12.3: The equipment shall implement a spectrum access mechanism as described in the applicable harmonised standard or an equivalent spectrum access mechanism.

[40] Not included in ERC/REC/70-03 – National SRD solution only.

3.13 Interface Requirements for Wireless Audio Applications[41]

Important Note:

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 advise users on the risks of potential interference and its consequences.

Table 13 Interface Requirements for Wireless Audio Applications

Mandatory Requirements			Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
31.025 – 31.325 MHz[42]	10 mW ERP	-	Ref to TTE 9 (see document odtr98/62R)	Analogue cordless phones only National Legislation: S.I. 410 of 1997 Other references: ERC/REC 70-03
39.925 – 40.225 MHz[42]	10 mW ERP	-	Ref to TTE 9 (see document odtr 98/62R)	Analogue cordless phones only National Legislation: S.I. 410 of 1997

[41] Applications for wireless audio systems include cordless loudspeakers, cordless headphones for portable use e.g. portable CD, cassette or radio devices carried on a person, cordless headphones for use in a vehicle, e.g. for use with a radio or mobile telephone, in-ear monitoring, for use with concerts or other stage productions.
[42] Not included in ERC/REC/70-03 – National SRD solution only

Table 13 Interface Requirements for Wireless Audio Applications

Mandatory Requirements			Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
49.82 – 49.98 MHz[42]	10 mW ERP	-	EN 300 220	Baby Monitors[43]
87.5 – 108 MHz	50 nW ERP	Channel Spacing: 200 kHz	EN 301 357	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/REC 70-03
446.0 – 446.1 MHz[42]	500 mW ERP	8 channels specified in S.I. 93 of 1998. Channel Spacing: 12.5 kHz CTCSS or DCS tone control	EN 300 296	PMR446 hand portable with integral antennas for speech communications. National Legislation: S.I. 93 of 1998.
446.1 – 446.2 MHz[42]	500 mW ERP	6.25 kHz or 12.5 kHz channel spacing	EN 300 113 - 2 or EN 301 166 - 2	Digital PMR 446 hand portable Other references: ECC/DEC(05)12

[43] When operating short range devices on these frequencies in close proximity to domestic television receivers care must be taken as the domestic television receivers may suffer interference

Table 13 Interface Requirements for Wireless Audio Applications

Mandatory Requirements			Information	
Frequency Band	Maximum Permitted Radiated Power / Field Strength	Mitigation Requirements	Reference Standards	Relevant Documents / Other Notes
863 – 865 MHz	10 mW ERP	-	EN 301 357	European Legislation: Decision 2006/771/EC Decision 2011/829/EU Decision 2013/752/EU Other references: ERC/DEC/(01)18 ERC/REC 70-03
864.8 – 865 MHz	10 mW ERP	Channel Spacing: 50 kHz	EN 300 220	Narrow band analogue voice devices Other references: ERC/REC 70-03
1880 – 1900 MHz[42]	250 mW ERP (Peak)	-	EN 301 406	DECT Cordless Phones National Legislation: S.I. 169 of 1994

4 Relevant Documentation

National Legislation

Primary Legislation

Wireless Telegraphy Acts 1926 to 2009.

Secondary Legislation

S.I. 160 of 2006: Wireless Telegraphy Act, 1926 (Section 3) (Exemption of Short Range Devices) (Amendment) Order, 2006.

S.I. 405 of 2002: Wireless Telegraphy Act, 1926 (Section 3) (Exemption of Short Range Devices) Order, 2002.

S.I. 436 of 1998: Wireless Telegraphy Act, 1926 (Section 3)(Exemption of Citizens' Band (CB) Radios) Order, 1998.

S.I. 410 of 1997: Wireless Telegraphy (Cordless Telephones) Exemption Order, 1997.

S.I. 168 of 1994: European Communities (Digital European Cordless Telecommunications - DECT) Regulations, 1994.

S.I. 93 of 1998: Wireless Telegraphy Act, 1926 (Section 3) (Exemption of Short Range Business Radios) Order, 1998.

ComReg/ODTR Documentation

13/118, as revised: Radio Frequency Plan for Ireland

03/42: Registration of 5.8 GHz Wireless Access Base Stations.

98/62R: TTE 9: Type Approval requirements for analogue cordless telephones for connection to switched public telecommunications networks in Ireland.

ETSI Documentation

EN 302 567: Broadband Radio Access Networks (BRAN); 60 GHz Multiple-Gigabit WAS/RLAN Systems; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

EN 302 537: Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Ultra Low Power Medical Data Service Systems operating in the frequency range 401 MHz to 402 MHz and 405 MHz to 406 MHz.

EN 302 502: Broadband Radio Access Networks (BRAN); 5,8 GHz fixed broadband data transmitting systems; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

EN 302 326: Fixed Radio Systems; Multipoint Equipment and Antennas.

EN 302 264: Electromagnetic compatibility and Radio spectrum Matters (ERM);Short Range Devices; Road Transport and Traffic Telematics (RTTT); Short Range Radar equipment operating in the 77 GHz to 81 GHz band

EN 301 489-4: Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 4: Specific conditions for fixed radio links, Broadband Data Transmission System Base stations, ancillary equipment and services.

EN 301 489-17: Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment; Part 17: Specific conditions for Broadband Data Transmission Systems.

EN 301 326: Fixed Radio Systems; Multipoint Equipment and Antennas

EN 300 220: Electromagnetic Compatibility and Radio Spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW.

EN 300 328: Electromagnetic Compatibility and Radio Spectrum Matters (ERM); Wideband Transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using spread spectrum modulation techniques.

EN 300 330: Electromagnetic Compatibility and Radio Spectrum Matters (ERM);Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz.

EN 300 422: Electromagnetic Compatibility and Radio Spectrum Matters (ERM); Wireless microphones in the 25 MHz to 3 GHz frequency range.

EN 300 440: Electromagnetic Compatibility and Radio Spectrum Matters (ERM); Short range devices; Radio equipment to be used in the 1 GHz to 40 GHz frequency range.

EN 300 674: Electromagnetic Compatibility and Radio Spectrum Matters (ERM); 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) operating in the 5,8 GHz Industrial, Scientific and Medical (ISM) band.

EN 300 718: Electromagnetic Compatibility and Radio Spectrum Matters (ERM); Avalanche Beacons; Transmitter-receiver systems.

EN 300 761: Electromagnetic Compatibility and Radio Spectrum Matters (ERM); Short Range Devices (SRD); Automatic Vehicle Identification (AVI) for railways operating in the 2,45 GHz frequency range.

EN 301 091: Electromagnetic compatibility and Radio Spectrum Matters (ERM); Road Transport and Traffic Telematics (RTTT); Technical characteristics and test methods for radar equipment operating in the 76 GHz to 77 GHz band.

EN 301 357: Electromagnetic compatibility and Radio Spectrum Matters (ERM); 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.

ES 200 674: Electromagnetic compatibility and Radio Spectrum Matters (ERM); Road Transport and Traffic Telematics (RTTT); Part 1: Technical characteristics and test methods for High Data Rate (HDR) data transmission equipment operating in the 5,8 GHz Industrial, Scientific and Medical (ISM) band.

EN 301 893: Broadband Radio Access Networks (BRAN); 5 GHz high performance RLAN; Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive.

ETS 300 131: Radio Equipment and Systems (RES); Common air interface specification to be used for the interworking between cordless telephone apparatus in the frequency band 864.1 MHz to 868.1 MHz, including public access services.

CEPT Documentation

ERC/DEC/(01)08: ERC Decision of 12 March 2001 on harmonised frequencies, technical characteristics and exemption from individual licensing of Short Range Devices used for Movement Detection and Alert operating in the frequency band 2400 - 2483.5 MHz.

ERC/DEC/(01)11: ERC Decision of 12 March 2001 on harmonised frequencies, technical characteristics and exemption from individual licensing of Short Range Devices used for Flying Model control operating in the frequency band 34.995 - 35.225 MHz.

ERC/DEC/(01)12: ERC Decision of 12 March 2001 on harmonised frequencies, technical characteristics and exemption from individual licensing of Short Range Devices used for Model control operating in the frequencies 40.665, 40.675, 40.685 and 40.695 MHz.

ERC/DEC/(01)17: ERC Decision of 12 March 2001 amended 9 December 2011 on harmonised frequencies, technical characteristics and exemption from individual licensing of Short Range Devices used for Ultra Low Power Active Medical Implants operating in the frequency band 402 - 405 MHz.

ECC/DEC/(04)03: ECC Decision of 19 March 2004 on the frequency band 77-81 GHz to be designated for the use of Automotive Short Range Radars

ECC/DEC/(04)08: ECC Decision of 9 July 2004 on the harmonised use of the 5 GHz frequency bands for the implementation of Wireless Access Systems including Radio Local Area Networks (WAS/RLANs)

ECC/DEC/(04)10: ECC Decision of 12 November 2004 amended 1 June 2012 on the frequency bands to be designated for the temporary introduction of Automotive Short Range Radars (SRR) (2004/545/EC) and (2005/50/EC), amended by 2011/485/EU

ECC/DEC/(05)02: ECC Decision of 18 March 2005 on the use of the frequency band 169.4-169.8125 MHz.

ECC/DEC/(05)12: ECC Decision of 28 October 2005 on harmonised frequencies, technical characteristics, exemption from individual licensing and free carriage and use of digital PMR 446 applications operating in the frequency band 446.1- 446.2 MHz.

ECC/DEC/(06)04: ECC Decision of 24 March 2006 amended 9 December2011 on the harmonised conditions for devices using UWB technology in bands below 10.6 GHz.

ECC/DEC/(07)01: ECC Decision of 30 March 2007 on specific Material Sensing devices using Ultra-Wideband (UWB) Technology.

ECC/DEC/(12)03: ECC Decision of 2 November 2012 on the harmonised conditions for UWB applications onboard aircraft.

ECC/REC/(06)04: Use of the band 5725 – 5875 for Broadband Fixed Wireless Access (BFWA).

ERC/REC/70-03: Relating to the use of Short Range Devices (SRD).

European Legislation

Commission Decision 2013/752/EU amending Decision 2006/771/EC on harmonisation of the radio spectrum for use by short-range devices.

Commission Decision 2011/829/EU amending Decision 2006/771/EC on harmonisation of the radio spectrum for use by short-range devices.

Commission decision 2009/343/EC amending Decision 2007/131/EC on allowing the use of the radio spectrum for equipment using ultra-wideband technology in a harmonized way in the Community.

Commission Decision 2007/131/EC on allowing the use of the radio spectrum for equipment using ultra-wideband technology in a harmonised manner in the Community.

Commission Decision 2007/90/EC amending Decision 2005/513/EC on the harmonised use of radio spectrum in the 5 GHz frequency band for the implementation of Wireless Access Systems including Radio Local Area Networks (WAS/RLANs).

Commission Decision 2006/804/EC on harmonisation of the radio spectrum for radio frequency identification (RFID) devices operating in the ultra high frequency (UHF) band.

Commission Decision 2006/771/EC, amended by 2008/432/EC, 2009/381/EC, 2010/368/EU and 2013/752/EU on the harmonisation of the radio spectrum for use by short-range devices.

Commission Decision 2005/513/EC on the Harmonised use of radio spectrum in the 5 GHz frequency band for the implementation of Wireless Access Systems including Radio Local Area Networks (WAS/RLANs).

Commission Decision 2005/50/EC amended by 2011/485/EU on the harmonisation of the 24 GHz range radio spectrum band for the time-limited use by automotive short-range radar equipment in the Community.

Commission Decision 2004/545/EC on the harmonisation of radio spectrum in the 79 GHz range for the use of automotive short-range radar equipment in the Community.

Commission Decision 2001/148/EC on the application of Article 3(3)(e) of Directive 1999/5/EC to avalanche beacons.

Please Note that all documentation is subject to updates and revision.