Commission for
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General

Permitted Short Range Devices in Ireland

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Document Revision History

Document Version	Date	Nature of Revision
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

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 08/90[2]).

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 - 1988), 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.

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.

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[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 available at http://europa.eu.int/comm/enterprise/rtte/dir99-5.htm .

[2] http://www.comreg.ie/_fileupload/publications/ComReg_0890.pdf

[3] http://europa.eu.int/comm/enterprise/newapproach/standardization/harmstds/reflist/radiotte.html

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 at http://www.ero.dk/rtte. 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. Radio equipment that uses frequency bands whose use is not harmonised throughout the European Community must be notified to ComReg under the Article 6.4 process. Information on this process may be found in ComReg document 00/61R[5].

11. 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.

12. 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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15. 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.

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[4] http://europa.eu.int/comm/enterprise/rtte/decision/class-en.pdf

[5] http://www.comreg.ie/_fileupload/publications/odtr0061R.pdf

2 Introduction

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 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.

Short Range Devices operate on a non-interference and non-protected basis in Ireland. SRDs that operate in accordance with the requirements laid down 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).

The interface requirements for SRDs are detailed in Tables 1 - 15 as follows:

Table 1: Non-Specific Short Range Devices
Table 2: Wideband Data Transmission Systems (incl. WAS/RLANs)
Table 3: Road Transport and Traffic Telematics (RTTT)
Table 4: Equipment for Detecting Movement and Alert
Table 5: Alarms
Table 6: Model Control
Table 7: Inductive Applications
Table 8: Radio Microphones
Table 9: Radio Frequency Identification Applications (RFID)
Table 10: Wireless Applications in Healthcare
Table 11: Wireless Audio Applications
Table 12: Automotive Applications
Table 13: Tracking, Tracing and Data Acquisition Devices
Table 14: Railway Applications
Table 15: Ultra-Wideband Applications
Table 16: Miscellaneous Applications

The legislation and documentation relevant to SRDs is listed in Section 3 of this document.

3 Interface Requirements for Short Range Devices

Table 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.

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	42 dBµA/m @ 10m	-	EN 300 330	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/REC 70-03
13.553 – 13.567 MHz	42 dBµA/m @ 10m	-	EN 300 330	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/REC 70-03
26.957 – 27.283 MHz	42 dBµA/m @ 10m or 10 mW Effective Radiated Power (ERP)	-	EN 300 220, EN 300 330	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/DEC/(01)02 ERC/REC 70-03
40.660 – 40.700 MHz	10 mW ERP	-	EN 300 220	National Legislation S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/DEC/(01)03 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).

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**
49.82 – 49.98 MHz*	10 mW ERP	-	EN 300 220	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006
138.20 - 138.45 MHz	10 mW e.r.p.	Duty cycle[7] <1.0%	EN 300 220	National Legislation: S.I. 160 of 2006 S.I. 405 of 2002 Other references: ERC/REC 70-03
173.2125 – 173.2375 MHz*	10 mW ERP	Channel Spacing ≤ 25kHz	EN 300 220	Telecommand only National Legislation: S.I. 405 of 2002 S.I. 160 of 2006
173.2375 – 173.275 MHz*	100 mW ERP	Channel Spacing ≤ 25kHz	EN 300 220	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006
433.050 – 434.790 MHz	10 mW ERP	Duty Cycle[7] ≤ 10 %	EN 300 220	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ECC/DEC(04)02 ERC/REC 70-03
433.050 – 434.790 MHz	1 mW ERP (-13 dBm/10 kHz for wideband modulation with a bandwidth greater than 250 kHz)	Duty Cycle[7] ≤ 100 %	EN 300 220	National Legislation S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ECC/DEC(04)02 ERC/REC 70-03
434.040 – 434.790 MHz	10 mW ERP	Duty Cycle[7] ≤ 100 % Channel Spacing ≤ 25 kHz	EN 300 220	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ECC/DEC(04)02 ERC/REC 70-03

* Not included in ERC/REC/70-03 – National SRD solution only.

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

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*	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 10)** National Legislation: S.I. 405 of 2002 S.I. 160 of 2006
458.8375 – 458.9875 MHz*	500 mW ERP	Channel Spacing ≤ 25 kHz	EN 300 220	**Please note adjacent band use for ECG monitoring in hospitals (see Table 10)** On site telemetry/telecommand only. Paging systems operating on 458.850 MHz to be phased out. National Legislation: S.I. 405 of 2002 S.I. 160 of 2006
863 - 870 MHz	25 mW ERP	Duty Cycle[7] ≤ 0.1 % (note 1, 4 and 5). Channel Spacing ≤ 100 kHz for 47 or more channels (note 2)	EN 300 220	See note 3 FHSS Modulation National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/REC 70-03
	25 mW ERP Power density : -4.5 dBm/100 kHz (note 7)	Duty Cycle[7] ≤ 0.1 % (note 1, 4 and 5)	EN 300 220	See note 3 DSSS and other wideband modulations other than FHSS National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/REC 70-03

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 (Cont'd)	25 mW ERP	Duty Cycle[7] ≤ 0.1 % (note 1, 4 and 5) Channel Spacing ≤ 100 kHz (note 2 and 6)	EN 300 220	See note 3 Narrow/wide-band Modulation National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/REC 70-03
868.000 - 868.600 MHz	25 mW ERP	Duty Cycle[7] ≤ 1 %. (note 1)	EN 300 220	Narrow/wide-band Modulation No channel spacing. However the whole stated frequency band may be used (see note 2). National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/DEC/(01)04 ERC/REC 70-03
868.700 - 869.200 MHz	25 mW ERP	Duty Cycle[7] ≤ 0.1 %. (note 1)	EN 300 220	Narrow/wide-band Modulation No channel spacing. However the whole stated frequency band may be used (see note 2). National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/DEC/(01)04 ERC/REC 70-03
869.400 - 869.650 MHz	500 mW ERP	Duty Cycle[7] ≤ 10 %. (note 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 National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/DEC/(01)04 ERC/REC 70-03

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	5 mW ERP	Up to 100% duty cycle Voice applications allowed with advanced mitigation techniques	EN 300 220	Narrow/wide-band Modulation No channel spacing but the whole stated frequency band may be used. National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/DEC/(01)04 ERC/REC 70-03
2400 - 2483.5 MHz	10 mW Equivalent Isotropic Radiated Power (EIRP)	-	EN 300 440	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/REC 70-03
5725 - 5875 MHz	25 mW EIRP	-	EN 300 440	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/REC 70-03
24.00 - 24.25 GHz	100 mW EIRP	-	EN 300 440	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/REC 70-03
61.0 - 61.5 GHz	100 mW EIRP	-	To be decided	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/REC 70-03

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**
122 – 123 GHz	100 mW e.i.r.p.	-	-	National Legislation: S.I. 160 of 2006 S.I. 405 of 2002 Other references: ERC/REC 70-03
244 – 246 GHz	100 mW e.i.r.p.	-	-	National Legislation: S.I. 160 of 2006 S.I. 405 of 2002 Other references: ERC/REC 70-03

Note 1: For single frequency devices the duty cycle limit applies, unless Listen Before Talk (LBT) or an equally efficient mitigation technique which gives adequate protection to other users of the radio spectrum is used.
For FHSS, DSSS or AFA devices, the duty cycle applies to the total transmission unless LBT or an equally efficient mitigation technique which gives adequate protection to other users of the radio spectrum is used.

Note 2: The preferred channel spacing is 100 kHz allowing for a subdivision into 50 kHz or 25 kHz.

Note 3: Sub-bands for alarms are excluded (see Table 5)

Note 4: Duty cycle may be increased to 1% if the band is limited to 865 – 868 MHz.

Note 5: For other wide-band modulation than FHSS and DSSS 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 e.r.p.

Note 6: For other narrow-band modulation with a bandwidth of 50 kHz to 200 kHz, the band is limited to 865.5 – 867.5 MHz.

Note 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.

Table 2: 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.

Interface Requirements for Wideband Data Transmission Systems				
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	-	EN 300 328	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/DEC/(01)07 ERC/REC 70-03
5150 – 5250 MHz	200 mW EIRP (Max mean) Power Density (Max mean EIRP): 10 mW/MHz in any 1 MHz band	Indoor use only	EN 301 893	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2007/90/EC Decision 2005/513/EC Other references: ECC/DEC/(04)08 ERC/REC 70-03
5250 – 5350 MHz	200 mW EIRP (Max mean) Power Density (Max mean EIRP): 10 mW/MHz in any 1 MHz band	Indoor use only DFS/TPC per ECC/DEC/(04)08 and EN 301 893	EN 301 893	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2007/90/EC Decision 2005/513/EC Other references: ECC/DEC/(04)08 ERC/REC 70-03
5470 – 5725 MHz	1 W EIRP (Max mean) Power Density (Max mean EIRP): 50 mW/MHz in any 1 MHz band	DFS/TPC per ECC/DEC/(04)08 and EN 301 893	EN 301 893	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2007/90/EC Decision 2005/513/EC Other references: ECC/DEC/(04)08 ERC/REC 70-03
5725 – 5875 MHz*	2 W EIRP (Max mean) Power Density (Max mean EIRP): 100mW/MHz	-	EN 301 489-4 EN 301 753	Registration Required+ National Legislation: S.I. 405 of 2002 S.I. 160 of 2006

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

* Not included in ERC/REC/70-03 – National SRD solution only.

Interface Requirements for Wideband Data Transmission Systems				
Mandatory Requirements			**Information**	
Frequency Band	**Maximum Permitted Radiated Power/Field Strength**	**Mitigation Requirements**	**Reference Standards**	**Relevant Documents/Other notes**
17.1 – 17.3 GHz	100 mW EIRP	-	To be agreed	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03

Table 3: 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.

Interface Requirements for Road Transport and Traffic Telematics			
Mandatory Requirements		**Information**	
Frequency Band	**Maximum Permitted Radiated Power/Field Strength**	**Reference Standards**	**Relevant Documents/Other notes**
5795 – 5805 MHz	2 W EIRP	EN 300 674 ES 200 674	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 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 National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ECC/DEC/(02)01 ERC/REC 70-03
63 – 64 GHz	To be decided	To be decided	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ECC/DEC/(02)01 ERC/REC 70-03
76 – 77 GHz	55 dBm EIRP (peak)	EN 301 091	Power level 55 dBm peak power e.i.r.p. -50 dBm average power - 23.5 dBm average power for pulse radar only. Vehicle and infrastructure radar systems National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ECC/DEC/(02)01 ERC/REC 70-03

Table 4: Interface Requirements for Equipment for Detecting Movement and Alert

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.

Interface Requirements for Equipment for Detecting Movement and Alert			
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	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/DEC/(01)08 ERC/REC 70-03
9200 – 9500 MHz	25 mW EIRP	EN 300 440	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03
9500 – 9975 MHz	25 mW EIRP	EN 300 440	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03
10.4 - 10.42 GHz	500 mW EIRP	EN 300 440	Legal references: S.I. 405 of 2002 S.I. 160 of 2006
10.5 – 10.6 GHz	25 mW EIRP	EN 300 440	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03
13.4 – 14 GHz	25 mW EIRP	EN 300 440	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03
24.05 – 24.25 GHz	100 mW EIRP	EN 300 440	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03
4.5 – 7.0 GHz[†]	-41.3 dBm/MHz e.i.r.p. [†]	-	Tank Level Probing Radar (TLPR) only National Legislation: S.I. 160 of 2006 S.I. 405 of 2002 Other references: ERC/REC 70-03

[†] 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 e.i.r.p. for the 4.5 – 7.0 GHz band, +30 dBm e.i.r.p. for the 8.5 – 10.6 GHz band, and +43 dBm e.i.r.p. for the 24.05 - 27.0 GHz, 57 - 64 GHz and 75 - 85 GHz bands.

Interface Requirements for Equipment for Detecting Movement and Alert			
Mandatory Requirements		**Information**	
Frequency Band	**Maximum Permitted Radiated Power/Field Strength**	**Reference Standards**	**Relevant Documents/Other notes**
8.5 – 10.6 GHz†	-41.3 dBm/MHz e.i.r.p. †	-	Tank Level Probing Radar (TLPR) only National Legislation: S.I. 160 of 2006 S.I. 405 of 2002 Other references: ERC/REC 70-03
24.05 – 27.0 GHz†	-41.3 dBm/MHz e.i.r.p. †	-	Tank Level Probing Radar (TLPR) only National Legislation: S.I. 160 of 2006 S.I. 405 of 2002 Other references: ERC/REC 70-03
57 – 64 GHz†	-41.3 dBm/MHz e.i.r.p.†	-	Tank Level Probing Radar (TLPR) only National Legislation: S.I. 160 of 2006 S.I. 405 of 2002 Other references: ERC/REC 70-03
75 – 85 GHz†	-41.3 dBm/MHz e.i.r.p†.	-	Tank Level Probing Radar (TLPR) only National Legislation: S.I. 160 of 2006 S.I. 405 of 2002 Other references: ERC/REC 70-03

Table 5: 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.

Interface Requirements for Alarms				
Mandatory Requirements			**Information**	
Frequency Band	**Maximum Permitted Radiated Power/Field Strength**	**Mitigation Requirements**	**Reference Standards**	**Relevant Documents/Other notes**
169.4750 – 169.4875 MHz	10 mW ERP	Duty Cycle[7] < 0.1 % Channel Spacing: 12.5 kHz	EN 300 220	Social Alarms[9] – exclusive use National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2005/928/EC Decision 2008/673/EC. Other references: ECC/DEC/(05)02 ERC/REC 70-03
169.5875 – 169.6000 MHz	10 mW ERP	Duty Cycle[7] < 0.1 % Channel Spacing: 12.5 kHz	EN 300 220	Social Alarms[9]– exclusive use National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2005/928/EC Decision 2008/673/EC. Other references: ECC/DEC/(05)02 ERC/REC 70-03
868.6 – 868.7 MHz	10 mW ERP	Duty Cycle[7] < 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	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/DEC/(01)09 ERC/REC 70-03
869.200 – 869.250 MHz	10 mW ERP	Duty Cycle[7] < 0.1 % Channel Spacing: 25 kHz	EN 300 220	Social Alarms[8] National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/REC 70-03

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

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[7] < 0.1 % Channel Spacing: 25 kHz	EN 300 220	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/DEC/(01)09 ERC/REC 70-03
869.3 – 869.4 MHz	10 mW ERP	Duty Cycle[7] < 1 % Channel Spacing: 25 kHz	EN 300 220	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/REC 70-03
869.650 – 869.700 MHz	25 mW ERP	Duty Cycle[7] < 10 % Channel Spacing: 25 kHz	EN 300 220	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/DEC/(01)09 ERC/REC 70-03

Table 6: 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.

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	100 mW ERP	Channel Spacing: 10 kHz	EN 300 220	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/DEC/(01)10 ERC/REC 70-03
34.945 – 35.305 MHz	100 mW ERP	Channel Spacing: 10 kHz	EN 300 220	Flying Models only National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/DEC/(01)11 ERC/REC 70-03
40.660 – 40.700 MHz	100 mW ERP	Channel Spacing: 10 kHz	EN 300 220	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/DEC/(01)12 ERC/REC 70-03

Table 7: Interface Requirements for Inductive Applications[9]

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.

Interface Requirements for Inductive Applications			
Mandatory Requirements		**Information**	
Frequency Band	**Maximum Permitted Radiated Power/Field Strength**	**Reference Standards**	**Relevant Documents/Other notes**
9 – 59.75 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 National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/DEC/(01)13 ERC/REC 70-03
59.75 – 60.25 kHz	42 dBµA/m @ 10 m	EN 300 330	In case of external antennas only loop coil antennas may be employed. National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/DEC/(01)13 ERC/REC 70-03
60.25 – 70.00 kHz	69 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 National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/DEC/(01)13 ERC/REC 70-03

[9] This category covers, for example, devices for car immobilisation, animal identification, alarm systems, cable detection, waste management, personal identication, 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.

Interface Requirements for Inductive Applications			
Mandatory Requirements		**Information**	
Frequency Band	**Maximum Permitted Radiated Power/Field Strength**	**Reference Standards**	**Relevant Documents/Other notes**
70 – 119 kHz	42 dBμA/m @ 10 m	EN 300 330	In case of external antennas only loop coil antennas may be employed. National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/DEC/(01)13 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 30kHz National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/DEC/(01)13 ERC/REC 70-03
135 – 140 kHz	42 dBμA/m @ 10 m	EN 300 330	In case of external antennas only loop coil antennas may be employed. National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Decision 2006/771/EC Decision 2008/432/EC 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. National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/REC 70-03

Interface Requirements for Inductive Applications			
Mandatory Requirements		**Information**	
Frequency Band	**Maximum Permitted Radiated Power/Field Strength**	**Reference Standards**	**Relevant Documents/Other notes**
148.5 – 1600 kHz*	-5 dBµA/m @ 10 m	EN 300 330	In case of external antennas only loop coil antennas may be employed. National Legislation: S.I. 405 of 2002 S.I. 160 of 2006
285 – 400 kHz*	38 dBµA/m @ 10 m	EN 300 330	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006
1650 – 1950 kHz*	8 dBµA/m @ 10 m	EN 300 330	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006
1805 – 2200 kHz*	-8 dBµA/m @ 10 m	EN 300 330	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006
2540 – 3560 kHz*	-8 dBµA/m @ 10 m	EN 300 330	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006
3155 – 3400 kHz	13.5 dBµA/m @ 10 m	EN 300 330	In case of external antennas only loop coil antennas may be employed. National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/REC 70-03
6765 – 6795 kHz	42 dBµA/m @ 10 m	EN 300 330	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/REC 70-03
7400 – 8800 kHz	9 dBµA/m @ 10 m	EN 300 330	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/DEC/(01)15 ERC/REC 70-03

* Not included in ERC/REC/70-03 – National SRD solution only

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	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/REC 70-03
13.553 – 13.567 MHz	42 dBμA/m @ 10 m	EN 300 330	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Other references: ERC/REC 70-03
13.553 – 13.567 MHz	60 dBμA/m @ 10 m	EN 300 330	For RFID and EAS only National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/REC 70-03
26.957 – 27.283 MHz	42 dBμA/m @ 10 m	EN 300 330	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/DEC/(01)16, ERC/REC 70-03

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) National Legislation: S.I. 160 of 2006 S.I. 405 of 2002 European Legislation: Decision 2006/771/EC Decision 2008/432/EC 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) National Legislation: S.I. 160 of 2006 S.I. 405 of 2002 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/REC 70-03
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. National Legislation: S.I. 160 of 2006 S.I. 405 of 2002 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/REC 70-03

Table 8: Interface Requirements for Radio Microphones and Assistive Hearing 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.

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**
173.7 – 175.1 MHz	10 mW ERP	Channel Spacing: 50 kHz	EN 300 422	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03
863 – 865 MHz	10 mW ERP	Channel Spacing: 200 kHz	EN 301 357	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03
29.7 – 47.0 MHz	10 mW e.r.p.	Duty cycle[7] ≤ 100 % 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. National Legislation: S.I. 160 of 2006 S.I. 405 of 2002 Other references: ERC/REC 70-03
169.4000 - 169.4750 MHz	10 mW e.i.r.p	Duty cycle[7] ≤ 100 % Max 50 kHz	EN 300 422	Aids for the hearing impaired. National Legislation: S.I. 160 of 2006 S.I. 405 of 2002 European Legislation: Decision 2005/928/EC Decision 2008/673/EC Other references: ECC/DEC(05)02 ERC/REC 70-03

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**
169.4875 - 169.5875 MHz	10 mW e.i.r.p	Duty cycle[7] ≤ 100 % Max 50 kHz	EN 300 422	Aids for the hearing impaired – exclusive use. National Legislation: S.I. 160 of 2006 S.I. 405 of 2002 European Legislation: Decision 2005/928/EC Decision 2008/673/EC Other references: ECC/DEC(05)02 ERC/REC 70-03

Table 9: 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.

Interface Requirements for Radio Frequency Identification Applications				
Mandatory Requirements			**Information**	
Frequency Band	**Maximum Permitted Radiated Power/Field Strength**	**Mitigation Requirements**	**Reference Standards**	**Relevant Documents/Other notes**
865 – 865.6 MHz	100 mW ERP	LBT or equally efficient mitigation technique which gives adequate protection to other users of the radio spectrum. Channel Spacing: 200 kHz	EN 302 208	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03
865.6 – 867.6 MHz	2 W ERP	LBT or equally efficient mitigation technique which gives adequate protection to other users of the radio spectrum. Channel Spacing: 200 kHz	EN 302 208	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03
867.6 – 868 MHz	500 mW ERP	LBT or an equally efficient mitigation technique which gives adequate protection to other users of the radio spectrum. Channel Spacing: 200 kHz	EN 302 208	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03
2446 – 2454 MHz	500 mW EIRP	-	EN 300 440	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03
2446 – 2454 MHz	4 W EIRP	Duty Cycle[7] ≤ 15 % Indoor Use only	EN 300 440	Duty cycle ≤ 15 % in any 200 ms period (i.e. 30 ms on/170 ms off) National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03

Table 10: Interface Requirements for Wireless Applications in Healthcare

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.

Interface Requirements for Wireless Applications in Healthcare				
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 @ 10 m	Duty Cycle[7] < 10 %	EN 300 330	The application is for ultra low power active medical implant systems using inductive loop techniques for telemetry purposes National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/REC 70-03
315 – 600 kHz	-5 dBμA/m @ 10 m	Duty Cycle[7] < 10 %	EN 300 330	Animal implantable devices National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03
30 – 37.5 MHz	1 mW ERP	Duty Cycle[7] < 10 %	EN 300 220	The application is for Ultra Low Power medical membrane implants for blood pressure measurements National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03
402 – 405 MHz	25 μW ERP	Channel Spacing: 25kHz Other channelling restriction: Individual transmitters may combine adjacent channels for increased bandwidth with advanced mitigation techniques	EN 301 839	Active Medical Implants[10] National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/DEC/(01)17 ERC/REC 70-03

[10] 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.

Interface Requirements for Wireless Applications in Healthcare				
Mandatory Requirements			**Information**	
Frequency Band	**Maximum Permitted Radiated Power/Field Strength**	**Mitigation Requirements**	**Reference Standards**	**Relevant Documents/Other notes**
458.6375 – 458.8375 MHz*	10 mW ERP	Channel Spacing: 25 kHz	EN 300 220	**ECG monitoring only** National Legislation: S.I. 405 of 2002 S.I. 160 of 2006
401 – 402 MHz	25 μW e.r.p.	Duty cycle ≤ 0.1% unless devices use LBT or equally efficient mitigation technique in which case there is no duty cycle restriction (see Note 2). Channel spacing 25kHz	EN 302 537	For Ultra Low Power Active Medical Implants and accessories covered by the applicable harmonised standard. Individual transmitters may combine adjacent 25kHz channels for increased bandwidth up to 100 kHz (see Note 1) National Legislation: S.I. 160 of 2006 S.I. 405 of 2002 Other references: ERC/REC 70-03
405 – 406 MHz	25 μW e.r.p.	Duty cycle ≤ 0.1% unless devices use LBT or equally efficient mitigation technique in which case there is no duty cycle restriction (see Note 2). Channel spacing 25kHz	EN 302 537	For Ultra Low Power Active Medical Implants and accessories covered by the applicable harmonised standard. Individual transmitters may combine adjacent 25kHz channels for increased bandwidth up to 100 kHz (see Note 1) National Legislation: S.I. 160 of 2006 S.I. 405 of 2002 Other references: ERC/REC 70-03

* Not included in ERC/REC/70-03 – National SRD solution only

Interface Requirements for Wireless Applications in Healthcare				
Mandatory Requirements			**Information**	
Frequency Band	**Maximum Permitted Radiated Power/Field Strength**	**Mitigation Requirements**	**Reference Standards**	**Relevant Documents/Other notes**
12.5 – 20 MHz	-7 dBμA/m @ 10m	Duty cycle < 10%	EN 300 330	This application is for ultra low power 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 National Legislation: S.I. 160 of 2006 S.I. 405 of 2002 Other references: ERC/REC 70-03

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

Note 2: Systems not providing frequency agility based on ambient RF field sensing are limited to a maximum permitted e.r.p. of 250 nanowatts with a duty cycle of ≤ 0.1%.

Table 11: Interface Requirements for Wireless Audio Applications[11]

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.

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*	10 mW ERP	-	Ref to TTE 9 (see document odtr98/62R)	Analogue cordless phones only National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03
39.925 – 40.225 MHz*	10 mW ERP	-	Ref to TTE 9 (see document odtr 98/62R)	Analogue cordless phones only National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03
49.82 – 49.98 MHz*	10 mW ERP	-	EN 300 220	Baby Monitors[12] National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03
87.5 – 108 MHz	50 nW ERP	Channel Spacing: 200 kHz	EN 301 357	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/REC 70-03

[11] 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.

* Not included in ERC/REC/70-03 – National SRD solution only.

[12] 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

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**
446.0 – 446.1 MHz	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. 405 of 2002 S.I. 160 of 2006 S.I. 93 of 1998. Other references: ERC/REC 70-03
446.1 – 446.2 MHz	500 mW ERP	6.25 kHz or 12.5 kHz channel spacing	EN 300 113 - 2 or EN 301 166 - 2	Digital PMR 446 handportable National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ECC/DEC(05)12 ERC/REC 70-03
863 – 865 MHz	10 mW ERP	-	EN 301 357	Commission Decision 2006/771/EC National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2006/771/EC Decision 2008/432/EC Other references: ERC/DEC/(01)18 ERC/REC 70-03
864.1 – 868.1 MHz	10 mW ERP	-	ETS 300 131	CT2 Cordless Phones. ECC Decision (01)02. To be withdrawn at end of 2008. National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03

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**
864.8 – 865 MHz	10 mW ERP	Channel Spacing: 50 kHz	EN 300 220	Narrow band analogue voice devices National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03
1880 – 1900 MHz[+]	250 mW ERP (Peak)	-	EN 301 406	DECT Cordless Phones National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03

[+] Not included in ERC/REC/70-03

Table 12: Interface Requirements for Automotive 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.

Interface Requirements for Automotive Applications				
Mandatory Requirements			**Information**	
Frequency Band	**Maximum Permitted Radiated Power/Field Strength**	**Mitigation Requirements**	**Reference Standards**	**Relevant Documents/Other notes**
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	Emissions within the 23.6-24 GHz band that appear 30° or greater above the horizontal plane shall be attenuated by at least 25 dB for automotive SRR placed on the market before 2010 and thereafter by at least 30 dB	EN 302 288	Temporary designation for automotive Short Range Radar (SRR) for collision mitigation and traffic safety applications only. National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2005/50/EC Other references: ECC/DEC/(04)10 ERC/REC 70-03
24.05 – 24.25 GHz	Maximum Peak Power: 20 dBm EIRP	Duty Cycle[7] ≤ 10 % (for peak emissions > -10 dBm EIRP)	EN 302 288	Temporary designation for automotive SRR for collision mitigation and traffic safety applications only. National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2005/50/EC Other references: ECC/DEC/(04)10 ERC/REC 70-03
77– 81 GHz	Max Mean Power Density: -3 dBm/MHz EIRP; Peak Limit: 55 dBm EIRP; Max Mean Power Density for one SRR (measured outside the vehicle): -9 dBm/MHz EIRP	To be decided	To be decided	Automotive Short Range Radar (SRR) for collision mitigation and traffic safety only National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: Decision 2004/545/EC Other references: ECC/DEC/(04)03 ERC/REC 70-03

Table 13: 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.

Tracking, Tracing and Data Acquisition Devices				
Mandatory requirements			**Information**	
Frequency Band	**Power Limit**	**Mitigation requirements**	**Reference standards**	**Relevant documents/ Other notes**
457 kHz	7 dBµA/m @ 10 m	Continuous Wave operation	EN 300 718	Devices for detecting avalanche victims National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 European Legislation: 2001/148/EC Other References: ECC/DEC/(04)01 ERC/REC 70-03
169.4 - 169.475 MHz	500 mW e.r.p.	Duty cycle[7] < 10% Max 50 kHz channel spacing	EN 300 220	Meter Reading National Legislation: S.I. 160 of 2006 S.I. 405 of 2002 European Legislation: Decision 2005/928/EC Decision 2008/673/EC Other references: ECC/DEC (05)02 ERC/REC 70-03
169.4 – 169.475 MHz	500 mW e.r.p.	Duty cycle[7] < 1% Max 50 kHz channel spacing	EN 300 220	Asset Tracking and Tracing National Legislation: S.I. 160 of 2006 S.I. 405 of 2002 European Legislation: Decision 2005/928/EC Decision 2008/673/EC Other references: ECC/DEC(05)02 ERC/REC 70-03

Table 14: 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.

Railway Applications				
Mandatory requirements			**Information**	
Frequency Band	**Power Limit**	**Mitigation requirements**	**Reference standards**	**Relevant documents/ Other notes**
4516 kHz	7 dBμA/m @ 10 m	-	EN 300 330	Railway Applications (Euroloop) Transmitting only on receipt of a Eurobalise signal from a train National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03
4234 kHz	9 dBμA/m at 10m	Duty cycle[7] <1%	EN 300 330	Transmitting only on receipt of a Balise/Eurobalise **t**ele-powering signal from a train. National Legislation: S.I. 160 of 2006 S.I. 405 of 2002 Other references: ERC/REC 70-03
11.1 – 16.0 MHz	-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. National Legislation: S.I. 160 of 2006 S.I. 405 of 2002 Other references: ERC/REC 70-03
27.095 MHz	42 dBμA/m @ 10 m	-	EN 300 330	Railway Application (Eurobalise) National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03

Railway Applications				
Mandatory requirements			**Information**	
2446 – 2454 MHz	500 mW EIRP	-	EN 300 761	Automatic Vehicle Identification (AVI) for Railways Transmitting only in the presence of trains National Legislation: S.I. 405 of 2002 S.I. 160 of 2006 Other references: ERC/REC 70-03

Table 15: Interface requirements for Ultra-Wideband 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.

Ultra-Wideband Applications			
Mandatory Requirements			**Information**
Frequency range (GHz)	**Maximum mean e.i.r.p. density (dBm/MHz)**	**Maximum peak e.i.r.p. density (dBm/50 MHz)**	**Relevant documents/Other notes**
Below 1.6	– 90.0	– 50.0	European Legislation: Commission Decision 2007/131/EC CEPT references: ECC/DEC(06)12 ECC/DEC(06)04
1.6 to 3.4	– 85.0	– 45.0	
3.4 to 3.8 (see Note 1)	– 80	– 40	
3.8 to 4.2	– 70.0	– 30.0	
4.2 to 4.8 (See Note 2)	– 41.3 (until 31 December 2010) – 70.0 (beyond 31 December 2010)	0.0 (until 31 December 2010) – 30.0 (beyond 31 December 2010)	
4.8 to 6.0	– 70.0	– 30.0	
6.0 to 8.5 (See Note 2)	– 41.3	0.0	
8.5 to 10.6	– 65.0	– 25.0	
Above 10.6	– 85.0	– 45.0	

Appropriate mitigation techniques

A maximum mean e.i.r.p. density of – 41.3 dBm/MHz is allowed in the 3.4 to 4.8 GHz bands provided that a low duty cycle restriction is applied in which the sum of all transmitted signals is less than 5 % of the time each second and less than 0.5 % of the time each hour, and provided that each transmitted signal does not exceed 5 milliseconds.

Equipment using ultra-wideband technology may also be allowed to use the radio spectrum with e.i.r.p. limits other than those set out in Table 14 above provided that appropriate mitigation techniques other than those set out in the first sub-paragraph are applied with the result that the equipment achieves at least an equivalent level of protection to that provided by the limits in Table 14 above.

Note 1: Technical requirements for UWB devices implementing LDC Mitigation Technique

UWB devices implementing Low Duty Cycle (LDC) are permitted to operate at a level of -41.3dBm/MHz in the frequency band 3.4 – 4.8 GHz provided they meet the following requirements:

Ton max = 5ms
Toff mean $\geq$ 38 ms (averaged over 1 second)
Σ Toff > 950 ms per second
Σ Ton < 5% per second and 0.5% per hour

Table 14a: Technical requirements for UWB devices implementing LDC Mitigation Technique

Note 2: In the case of devices installed in road and rail vehicles, operation is subject to the implementation of Transmit Power Control (TPC) with a range of 12 dB with respect to the maximum permitted radiated power. If no TPC is implemented, the maximum e.i.r.p. spectral density is -53.3 dBm/MHz.

DEFINITIONS FOR TABLE 14 AND TABLE 14a

Maximum mean e.i.r.p. spectral density

The highest signal strength measured in any direction at any frequency within the defined range. The mean e.i.r.p. spectral density is measured with a 1MHz resolution bandwidth, an RMS detector and an averaging time of 1ms or less.

Maximum peak e.i.r.p.

The highest signal strength measured in any direction at any frequency within the defined range. The peak e.i.r.p. is measured within a 50MHz bandwidth centred on the frequency at which the highest mean radiated power occurs.

Ton The duration of a burst irrespective of the number of pulses contained

Toff The time interval between 2 consecutive bursts when the UWB emission is kept idle.

Table 16: Interface Requirements for Miscellaneous Short Range Device 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.

Interface Requirements for Miscellaneous Short Range Device Applications					
Mandatory Requirements				**Information**	
Frequency Band	**Application**	**Maximum Permitted Radiated Power/Field Strength**	**Mitigation Requirements**	**Reference Standards**	**Relevant Documents/Other notes**
1349 MHz*	Video senders	500mW ERP	-	EN 300 440	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006
2400 – 2483.5 MHz*	Video Surveillance	25 mW EIRP	-	EN 300 440	National Legislation: S.I. 405 of 2002 S.I. 160 of 2006

* Not included in ERC/REC/70-03 – National SRD solution only

4 Relevant Documentation

National Legislation

Primary Legislation

Wireless Telegraphy Act 1926, as amended.

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

08/90: Radio Frequency Plan for Ireland

07/94: Short Range Devices in the 10.4 – 10.42 GHz band

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 302 537: 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 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 301 357: ElectroMagnetic Compatibility and Radio Spectrum Matters (ERM);Cordless audio devices in the range 25 MHz to 2 000 MHz;Consumer radio microphones and in-ear monitoring systems operating in the CEPT harmonized band 863 MHz to 865 MHz.

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

ECC/DEC(06)12: ECC Decision of 1 December 2006 on the harmonised conditions for devices using Ultra-Wideband (UWB) technology with Low Duty Cycle (LDC) in the frequency band 3.4-4.8 GHz.

ECC/DEC(06)04: ECC Decision of 24 March 2006 amended 6 July 2007 on the harmonised conditions for devices using UWB technology in bands below 10.6 GHz.

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

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)02: ECC Decision of 19 March 2004 on harmonised frequencies, technical characteristics and exemption from individual licensing of Non-Specific Short Range Devices operating in the frequency band 433.050-434.790 MHz excluding audio and voice applications

ECC/DEC/(02)01: ECC Decision of 15 March 2002 on the frequency bands to be designated for the coordinated introduction of Road Transport and Traffic Telematic Systems.

ERC/DEC/(01)17: ERC Decision of 12 March 2001 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.

ERC/DEC/(01)16: ERC Decision on 12 March 2001 on harmonised frequencies, technical characteristics and exemption from individual licensing of Short Range Devices used for inductive applications operating in the frequency band 26.957 - 27.283 MHz.

ERC/DEC/(01)15: ERC Decision of 12 March 2001 on harmonised frequencies, technical characteristics and exemption from individual licensing of Short Range Devices used for inductive applications operating in the frequency band 7400 - 8800 kHz.

ERC/DEC(01)13 ERC Decision of 12 March 2001 on harmonised frequencies, technical characteristics and exemption from individual licensing of Short Range Devices used for inductive applications operating in the frequency bands 9 - 59.750 kHz, 59.750 - 60.250 kHz, 60.250 - 70 kHz, 70 - 119 kHz, 119 - 135 kHz.

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)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)10: 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 26.995, 27.045, 27.095, 27.145 and 27.195 MHz.

ERC/DEC/(01)09: ERC Decision of 12 March 2001 on harmonised frequencies, technical characteristics and exemption from individual licensing of Short Range Devices used for Alarms operating in the frequency bands 868.60 - 868.7 MHz, 869.25 - 869.3 MHz, 869.65 - 869.7 MHz.

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)07: ERC Decision of 12 March 2001 on harmonised frequencies, technical characteristics and exemption from individual licensing of Short Range Devices used for Radio Local Area Networks (RLANs) operating in the frequency band 2400 - 2483.5 MHz.

ERC/DEC/(01)04: ERC Decision of 12 March 2001 on harmonised frequencies, technical characteristics and exemption from individual licensing of Non-specific Short Range Devices operating in the frequency bands 868.0 - 868.6 MHz, 868.7 - 869.2 MHz, 869.4 - 869.65 MHz, 869.7 - 870.0 MHz.

ERC/DEC/(01)03: ERC Decision of 12 March 2001 on harmonised frequencies, technical characteristics and exemption from individual licensing of Non-specific Short Range Devices operating in the frequency band 40.660 - 40.700 MHz.

ERC/DEC/(01)02: ERC Decision of 12 March 2001 on harmonised frequencies, technical characteristics and exemption from individual licensing of Non-specific Short Range Devices operating in the frequency band 26.957 - 27.283 MHz.

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

European Legislation

Commission Decision 2008/432/EC amending Decision 2006/771/EC on harmonisation of the radio spectrum for use by short-range devices.

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 on the harmonisation of the radio spectrum for use by short-range devices.

Commission Decision 2005/928/EC on the harmonisation of the 169.4-169.8125 MHz frequency band in the Community (frequency band originally designated for the ERMES paging system).

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 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.

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