UK Public Consultation Document

"Use of Licence-Exempt Spectrum For Provision of Public Telecommunication Services"

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CONSULTATION DOCUMENT

Use of Licence-Exempt Spectrum
For Provision of Public Telecommunication Services

October 2001

The Radiocommunications agency is an Executive Agency of the Department of Trade and Industry.

The Agency's website is located at www.radio.gov.uk

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1. EXECUTIVE SUMMARY

1.1 This consultation document concerns a proposal by the Radiocommunications Agency to relax, or remove where practical, the current prohibition on the use of licence-exempt spectrum for the provision of public telecommunication services by way of business.

1.2 All use of radio spectrum is subject to licensing under the Wireless Telegraphy Act (1949) unless specifically exempt by Regulations. Radio equipment that is exempt from licensing under existing Exemption Regulations includes most low powered short-range devices and mobile terminals used with public networks. Current Exemption Regulations (SI 1999 930) specifically prevent the use of licence-exempt frequency bands for the provision of services to third parties by way of business.

1.3 The Radiocommunciations Agency has received a number of requests from industry, principally from representatives within the Agency's Mobile Services Committee (MSC) and including operators, manufacturers and small businesses, for an amendment to the current Regulations to allow licence-exempt spectrum to be used to provide commercial services. There are two principal arguments for considering this. First, there is currently an unfulfilled need for very short range broadband extensions to existing public networks, to provide for example full internet access in areas of particularly dense use such as airport lounges. Second, emerging radio technologies are designed to allow operation of large numbers of compatible devices without causing mutual interference. Such devices are said to be "polite" and self-protecting as they routinely monitor the presence of other radio transmissions within the allocated channel before transmitting, in an effort to avoid mutual interference.

1.4 RA, in consultation with the DTI Communication and Information Industries Directorate (CIID) and OFTEL, has identified a number of issues to be considered before commercial services in licence-exempt bands can be permitted. These may be summarised as:

- ?? the effects on existing private users of licence-exempt spectrum, particularly the likelihood of causing interference;
- ?? the ability for the available spectrum to support the anticipated increased demand; and
- ?? the need to avoid unfair competition with licensed operators, particularly in the light of recent auctions of mobile spectrum.

1.5 This consultation document seeks views from users of the radio spectrum on the implications of the change in regulations in each of the bands identified in Appendix B of the document.

1.6 Further background to this consultation is included in Part 2. Current regulations, including the general requirements for licensing under the Wireless Telegraphy Act, and the exemption from licensing of certain categories of equipment, are explained in Part 3. The scope of the proposal to amend the existing exemption regulations are

given in Part 4, with three possible options described in Part 5. The document concludes in part 6 by identifying a range of issues that arise from the proposals, and based on these, responses are invited to a number of specific questions.

Regulatory Impact Assessment (RIA)

1.7 The Agency is required to complete and publish a Regulatory Impact Assessment (RIA) before any changes are made to Exemption Regulations. A draft RIA is attached at **Appendix C** and this will be developed in the light of responses to this consultation. Comments on the draft RIA are therefore particularly welcome.

1.8 Responses to this consultation should be sent, to arrive no later than **Friday 11th January 2002**, to:

Mrs. Sallyanne Miller
Technology Sectors Unit
Radiocommunications Agency
10R/2E
Wyndham House
189 Marsh Wall
London E14 9SX
Or, alternatively, electronically to: Technology.Sectors@ra.gsi.gov.uk

1.9 Any comments or complaints about the conduct of this consultation should be addressed to :

Julia Fraser
Information and Publicity Manager
Radiocommuncations Agency
9Y/14B
Wyndham House
189 Marsh Wall
London E14 9SX
Or, alternatively, electronically to: Julia.fraser@ra.gsi.gov.uk

Publication of responses

1.10 Respondents to this consultation should note that in the interests of open government:

?? Unless confidentiality is expressly requested, individual responses will be placed in the public domain in printed or electronic form, together with the names and contact details of authors. Respondents are requested to make it very clear if they wish to keep some or all of their response confidential.

?? Unconditional permission to publish responses will be assumed unless the author expressly states otherwise.

?? Any copyright attached to responses will be assumed to have been relinquished unless it is expressly reserved.

?? The provisions of the Data Protection Act will apply to information in electronic form.

2. BACKGROUND

2.1 The Radiocommunications Agency (RA) has received requests from industry, principally within its Mobile Services Committee (MSC), to review two specific areas of concern regarding existing licence-exempt radio spectrum:

i) congestion, and consequent interference problems which currently exist in some bands, and are likely to increase in the future;

ii) the current regulations concerning licence exemption which specifically prohibit the use of licence-exempt spectrum for the provision of public telecommunication services by way of business.

2.2 Industry members within the MSC have advised the Agency that they consider that both these issues may be resolved, provided that:

?? equipment continues to conform to power limitations restricting its range; and
?? it is designed to be self- protecting and polite in operation, using techniques to identify available channels before transmitting.

2.3 New types of radio technologies are already available that utilise protocols for dynamically controlling access to spectrum and these enable similar equipment to operate satisfactorily even when within interfering range. Examples are Radio Local Area Networks (RLANS) and High Performance RLANS (HIPERLANS). These technologies have the potential to be deployed either as private networks or as part of a shared publicly available network.

2.4 In October 1999, the Agency issued a consultation document entitled "*Short Range, High Data Rate, Nomadic Equipment Operating in the Frequency Range 5.15 to 5.875 GHz*". The purpose of the consultation was, broadly, to seek views on the need for interoperable equipment; spectrum allocation and band planning, and a licensing regime. As a consequence of this earlier consultation, an industry led forum was established with the assistance of the Agency and which became known as the *UK 5GHz Advisory Group* (5GAG). The 5GAG delivered its final report jointly to the Agency and the DTI during February 2001 and a copy is available on the Agency's website (www.radio.gov.uk)

2.5 In response to recommendations made in the 5GAG Final Report, the Agency intends to publish, in October 2001, specific proposals on spectrum allocation and technical requirements for short range, high data rate equipment operating in the band 5.15 to 5.875 GHz.

2.6 One of the recommendations of the 5GAG was that 5GHz bands should be made available for public use, and both traditional public and private operation should be permitted and exempt from WT Act licensing. Changes to regulations to allow public, as well as private use of licence-exempt spectrum, as proposed by the 5GAG in respect of the 5GHz bands, and more generally by industry members of the MSC, raise a number of issues that the Agency considers require further consultation. These are the subject of Part 6 of this document.

Distinguishing between private and public use

2.7 For the purposes of this consultation, a **private radio system** may be regarded as a self-provided radio system for the licensee's own use. This may include use by partners and/or contractors working for the licensee. A **public radio system** is considered in this context to be a radio system provided commercially for use by third parties. A more complete definition used by the Agency for private and public radio systems respectively is given in Appendix A.

Independent study to be commissioned by the Agency during this consultation

2.8 The Agency intends, during the current consultation period, to commission an independent study to provide advice on the possible implications arising from the proposed change in regulations. Broadly, the study is expected to:

?? quantify the impact on **all** users of the radio spectrum of different strategies towards the management of licence-exempt spectrum and, in particular, relaxing the regulations and licensing requirements enabling public service use of the licence-exempt bands, and

?? to identify optimum spectrum management strategies for licence-exempt bands that might include technical constraints to support the most efficient use of the available spectrum.

3. REQUIREMENTS OF THE WIRELESS TELEGRAPHY ACT AND EXISTING EXEMPTION REGULATIONS

3.1 In the UK, licences for using radio or radio equipment for communications or other purposes are issued under the provisions of the Wireless Telegraphy Act 1949 (the WT Act) and associated legislation. The WT Act prohibits any person establishing or using any equipment except under the authority of a licence, unless the equipment has been exempted by Regulation made by the Secretary of State. Licences which are granted under the WT Act may give permission to transmit, provided the licence holder adheres to the conditions of the licence.

3.2 Some types of radio equipment have been exempted from the requirement for a licence, by Regulations made under Section 1 of the WT Act. Use of specified types of device without a licence is on the understanding that the equipment shall not be provided with the same protection from interference that would otherwise be available to licensed services.

3.3 Licence Exemption Regulations cite categories of equipment and state conditions that apply in order for the exemption to be effective and not result in interference to other authorised services. The Agency is required under the Radio and Telecommunication Terminal Equipment (RTTE) Directive, to notify potential manufacturers and suppliers of the necessary Interface Requirements for particular frequency bands and applications. The Licence Exemption Regulations refer to the relevant UK Radio Interface Requirements (IRs) that specify the frequencies of operation, powers and other technical parameters for devices that are exempt from licensing. These conditions are generally lighter than those applying to equipment that requires a licence, for which there are separate IRs.

3.4 The majority of Exemption Regulations apply to domestic equipment, such as cordless telephones, mobile phone handsets, short range "walkie-talkie" radios known as PMR 446, and a variety of miscellaneous short-range devices (SRDs), for example motor vehicle radio key entry systems, model control apparatus, and radio hearing aids. Factors involved in determining whether or not equipment should be licence-exempt include:

?? The frequency allocated to the equipment

?? The power of transmission

?? The use to which equipment is put

?? Compliance of the equipment with UK Radio Interface Requirements

?? The need for the equipment to be protected from interference from other authorised users.

3.5 Currently the Licence Exemption Regulations are comprised of The Wireless Telegraphy (Exemption) Regulations SI 1999 No. 930 as amended by The Wireless Telegraphy (Exemption) (Amendment) Regulations SI 2000 No. 1012 and The Wireless Telegraphy (Exemption) (Amendment) Regulations 2001 SI 2001 No. 730.

3.6 Existing Licence Exemption Regulations specifically exclude systems used to provide a service to third parties by way of business. Statutory Instrument SI 1999 930 states:

"The exemption … shall not apply to relevant apparatus which is established, installed or used to provide or to be capable of providing a wireless telegraphy link between telecommunication apparatus or a telecommunication system and other such apparatus or system, by means of which a telecommunication service is provided by way of business to another person."

The WT Act Public Access Cordless Telephony Licence (PACT)

3.7 The WT Act "Public Access Cordless Telephony Licence" (PACT) is available for telecommunication operators who wish to provide cordless services to business users on a commercial basis, using the radio spectrum designated to DECT (Digital European Cordless Telephony) and DECT technology. The services provided may consist of both voice and/ or data applications. The licence applies only to the provisions of services to a third party. Businesses that provide their own services using DECT may do so under the relevant Exemption Regulation.

Telecommunication Act (T Act) Licences

3.8 All telecommunication systems operating in the UK are subject to the provisions of the Telecommunication Act (1984). The requirements of the T Act are separate from the requirements of the WT Act although licences under both Acts are currently required to operate a telecommunication service using radio spectrum. Compliance with the requirements of one Act does not obviate the need to comply with both or in any way denote compliance to both.

3.9 In order to offer third party services an operator must either hold an individual T Act licence or take advantage of a T Act Class Licence and abide by the conditions attached to that licence. A Class Licence contains general conditions for the operation of the system; is not issued to individuals; and does not command a fee. Class Licences usually contain restrictions on the size and extent of the telecommunication system covered by the licence and the services which can be offered under it. They are not appropriate for the running of national systems. The two T Act licences most likely to apply to the provision of public mobile wireless services in licence-exempt spectrum are the Mobile Public Telecommunication Operator (PTO) Licence and the Cordless Class Licence (CCL).

The T Act Cordless Class Licence (CCL)

3.10 The CCL is the last T Act licence to be updated following the implementation of the EU Licensing Directive in the UK in 1999. It is being revised to take into account the requirements of the Directive (e.g. minimal, consistent and transparent licensing) and the needs of operators who wish to operate under the CCL but have not been able to do so because the current licence may be too restrictive. The most significant proposed changes are to make the licence "technology neutral" and to remove the restrictions on serving residential premises. The DTI is currently consulting on the revision of the CCL and copies of the consultation documentation can be found on the DTI website at: www.dti.gov.uk. The consultation process will close on 2 November 2001. It should be noted that operators who hold an appropriate WT Act licence could also use the CCL in licensed bands. Details about PTO licences, including copies of the mobile PTO licence template can also be found on the DTI website: www.dti.gov.uk/cii/…

4. SCOPE OF THIS CONSULTATION

4.1 This consultation covers all the existing licence-exempt frequency bands. These bands are listed in Appendix B. Views are welcome on the implications of the change in regulations in each of the bands in Appendix B but it is expected that the effects of the proposals will be most pronounced in the following bands:

- The PMR 446 band
- The DECT band at 1880 to 1900 MHz
- The designated third generation (3G) licence-exempt band at 2010 to 2025 MHz
- The 2400 to 2483.5 MHz band
- The bands 5.15 to 5.35 GHz; 5.47 to 5.725 GHz and the 5.725 to 5.875 GHz band

4.2 Further details regarding the current conditions of use of SRD bands in general in the UK can be found in the Agency's Information Sheet RA114 and Interface Requirements IR2005 and IR2030, all of which are available on the Agency's website www.radio.gov.uk.

4.3 Conditions placed in the Licence Exemption Regulations, and licences issued under section 1(1) of the Wireless Telegraphy Act 1949, are intended to manage access to the scarce radio spectrum resource, whilst minimising the risk of interference between users.

5. POSSIBLE REGULATORY SCENARIOS

5.1 There are three possible scenarios for the future regulation of licence-exempt use of spectrum for the provision of public telecommunication services. Under each scenario, equipment would continue to be required to meet the appropriate UK Interface Requirements. Respondents are asked to consider whether certain scenarios are more applicable to particular frequency bands identified in Appendix B.

Scenario 1 The current regulations remain substantially unchanged. Provision of public telecommunication services in licence-exempt spectrum is permitted but strictly controlled through issue of individual licences granted under the WT Act. Licences are only issued subject to minimal impact on existing services.

Scenario 2 The provision of public telecommunication services is permitted for certain specific and limited types of applications. Different conditions of use are set for public and private systems, to preserve spectrum and limit congestion. For example, licence-exempt use of spectrum for the provision of public telecommunication services is allowed but limited to indoor applications only. A light licensing regime is maintained for public services but licence exemption continues to apply to private use.

Scenario 3 The provision of public telecommunication services is permitted in licence-exempt spectrum without a WT Act licence, but with base station registration.

6 ISSUES TO BE ADDRESSED BEFORE ANY CHANGES ARE MADE TO EXISTING REGULATIONS

6.1 The Agency considers that the main issues arising from the proposal to allow public telecommunication services to use licence-exempt spectrum can be summarised as a need to understand:-

- ?? the overall economic benefit
- ?? the potential for interference to existing users
- ?? the possibility of congestion in licence-exempt spectrum
- ?? the types of third party services that could be offered
- ?? the quality of service that could be offered
- ?? the implications of competition with operators that use, and pay for, licensed spectrum
- ?? the likely timescales for introduction of the proposed policy in each of the bands identified.

6.2 Respondents are invited to submit comments on the issues in paragraph 6.1 above, within the context of each of the possible regulatory scenarios outlined in paragraph 5.1. The Agency would also welcome comment on any additional issues not identified within this document that respondents feel should be considered before any changes are made to existing Licence Exemption Regulations.

Overall Economic Benefit

6.3 The Agency expects that there would be considerable overall economic benefit in relaxing, or where possible removing, the current prohibition on use of licence-exempt spectrum for the provision of public telecommunication services. It would nevertheless welcome the views of industry; existing telecommunication operators, and present users of licence-exempt frequency bands.

Q1: What are the potential gains and benefits to the UK of allowing commercial services in licence-exempt bands, in terms of new innovative services (business models), promoting competition, and making Britain the best place to do e-business?

Potential for interference to existing users

6.4 It is a requirement of the RTTE Directive that all equipment placed on the market, and taken into service, makes effective use of the radio spectrum so as to avoid harmful interference. This requirement must have regard to the use of equipment in the same, and adjacent, frequency bands. Removing the prohibition on the use of licence-exempt spectrum for the provision of third party services will increase the use of the spectrum and raise the potential for interference to existing users of licence-exempt bands (including licensed users) and adjacent allocations.

6.5 The use of licence-exempt spectrum is on a non-interference non-protected basis. This means that users of licence-exempt spectrum must not cause interference to other authorised spectrum users, nor can they claim protection from interference from such services. Complaints of interference by users of licence-exempt spectrum are generally not investigated.

6.6 The principle of non-protection of users of licence-exempt spectrum is a well-established policy and it is very unlikely that this policy will be changed. The basis of charging for spectrum in regulated bands is that it provides access to a scarce resource of a certain implied quality. As soon as spectrum is de-regulated it becomes available to all (accepting that certain restrictions still apply) and thus ceases to be scarce. Likewise, the quality of licence-exempt spectrum cannot be maintained as more and more users compete for access in an uncoordinated manner.

Q2: Will the introduction of public telecommunication services into existing licence-exempt frequency bands, within the conditions of use identified in Appendix B, result in unacceptable levels of interference to existing users, and if so, in what geographic locations might this be expected?

Likelihood of congestion

6.7 The effect of the proposals may be a significant increase in the number of systems, and associated equipment, operating in some parts of the licence-exempt spectrum at any given location. This may result in those parts of the spectrum becoming congested in certain areas and at certain times.

Q3: Would the introduction of public telecommunication services, into existing licence-exempt allocations and within the current conditions of use identified in Appendix B, result in congestion of the frequency bands?

Q4: In bands where channel access techniques have been identified for specific services, will these techniques be sufficient to avoid future congestion? If not, please give information about other techniques that might be applicable.

Types of third party services that might be offered

6.8 The Agency is interested in determining the types of service that might be offered by public telecommunication systems in each of the bands identified in Appendix B. It is expected that any third party services would be complementary to, rather than in competition with, existing public telecommunication operators, or that they would offer highly localised, possibly niche services. The Agency is aware for example, of a number of community based and small scale IT/internet access projects that may benefit from a change in policy on the use of licence-exempt spectrum.

Q5: What type of public telecommunication services could be offered in licence-exempt spectrum and what is the anticipated market potential?

Quality of service

6.9 Currently, most public telecommunication services operate in high quality spectrum, which is usually allocated to the licensee on an exclusive basis. The licensee is free to plan this spectrum in accordance with their business plan. The exclusivity of the spectrum enables the licensee to have confidence in the quality of services he or she can provide. Spectrum pricing and auctions encourage the user to maximise the economic potential of this spectrum. In the case of cellular, this has lead to over 43 million[1] subscribers to modern mobile telecommunication services in the UK in 2001.

6.10 Licence-Exempt spectrum is not exclusive, and is generally shared with many other disparate users. It would be very difficult for a network to be planned in the usual way, as activity in the band is not predictable and use of the spectrum in any given area cannot be co-ordinated. Instead of a quality of service guarantee, services could only be provided on a "best efforts" basis.

Q6 : Assuming that there would be a lower quality of service available from public telecommunication services using licence-exempt spectrum, compared to those using licensed spectrum, how could potential end users be informed of this?

6.11 Respondents and future users of licence-exempt spectrum should also note that some of the bands listed in Appendix B are shared with ISM (Industrial, Scientific and Medical) applications. The ITU Radio Regulations defines ISM as "*industrial,*

[1] Source: *Effective Communication Review*, Office of Telecommunications, Statement, September 2001

scientific and medical (ISM) applications (of radio frequency energy*): Operation of equipment or appliances designed to generate and use locally radio frequency energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of telecommunication*." Typical ISM applications include microwave ovens and RF heating/curing equipment. The radio environment in these bands may be particularly harsh in some areas.

Q7: Which, if any, frequency bands identified in Appendix B are not suitable for the introduction of public telecommunication services and why?

Competition between operators using licensed, and licence-exempt, spectrum

6.12 Currently, providers of public telecommunication services are licensed to use radio spectrum as part of their networks. Allowing licence-exempt use of spectrum for the provision of public telecommunication systems would open the way to competition for business in the same market as licensed telecommunication services. One example is the possibility that licence-exempt low power 5GHz Fixed Wireless Access (FWA) services would compete with licensed Public Fixed Wireless Access (PFWA) operating in bands below 11GHz, and Broadband Fixed Wireless Access (BFWA) at 28GHz.

6.13 Competition between public telecommunication services using licence-exempt and licensed spectrum raises two main issues. Firstly, licensed operators have to pay licence fees that may have a substantial impact on their overall costs and hence on the charges they make to customers, while operators using licence-exempt spectrum would not be liable for licence fees for spectrum use. Secondly, the quality of spectrum used by operators of public telecommunication services using licence-exempt bands will be lower than that used by operators using licensed spectrum. This may impact on the quality of service that operators of licence-exempt spectrum can offer.

Q8: Are there any potential problems associated with allowing commercial services in licence-exempt spectrum?

Timescales

6.14 The Agency's intention, subject to the outcome of the present consultation, is to introduce revised regulations to permit the introduction of public services in the new 5GHz allocations in early 2002. Implementation of revised regulations in other licence-exempt allocations may require further consultation and extended timescales because of the existing use of the bands.

Q9: Assuming that public telecommunication services are permitted in licence-exempt spectrum, what would be considered suitable time scales for making these changes in each of the bands identified in Appendix B?

7. SUMMARY OF QUESTIONS

Q1: ***What are the potential gains and benefits to the UK of allowing commercial services in licence-exempt bands, in terms of new innovative services (business models), promoting competition, and making Britain the best place to do e-business?***

Q2: ***Will the introduction of public telecommunication services into existing licence-exempt frequency bands, within the conditions of use identified in Appendix B, result in unacceptable levels of interference to existing users, and if so, in what geographic locations might this be expected?***

Q3: ***Would the introduction of public telecommunication services, into existing licence -exempt allocations, and within the current conditions of use identified in Appendix B, result in congestion of the frequency bands?***

Q4: ***In bands where channel access techniques have been identified for specific services, will these techniques be sufficient to avoid future congestion? If not, please give information about other techniques that might be applicable.***

Q5: ***What type of public telecommunication services could be offered in licence-exempt spectrum and what is the anticipated market potential?***

Q6 : ***Assuming that there would be a lower quality of service available from public telecommunication services using licence-exempt spectrum, compared to those using licensed spectrum, how could potential end users be informed of this?***

Q7: ***Which, if any, frequency bands identified in Appendix B are not suitable for the introduction of public telecommunication services and why?***

Q8: ***Are there any potential problems associated with allowing commercial services in licence-exempt spectrum?***

Q9: ***Assuming that public telecommunication services are permitted in licence-exempt spectrum, what would be considered suitable time scales for making these changes in each of the bands identified in Appendix B?***

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APPENDIX A

RADIOCOMMUNICATION AGENCY ADMINISTRATIVE DEFINITIONS OF PRIVATE AND PUBLIC RADIO SYSTEMS

Private Radio System

A private radio system is one where the purpose and the exclusive benefit of use of the radio system is solely in the interests of the licensee's business. This may include use by third parties such as contractors where the work/radio use of that third party is on behalf of the licensee and does not include any radio traffic that is not connected with the business of the licensee. Such systems may interconnect with telecommunication systems such as the Public Switched Telephone Networks (PSTN), provided that the only traffic which is carried over the radio element of the communications path is concerned solely with the business of the licensee, who will receive no payment, consideration or other benefit from any third party in respect of the provision of radio communication facilities.

Public Radio System

A public radio system is one where the beneficiary of the system might not be the licensee or anyone concerned with the business of the licensee. The licensee may receive a payment, consideration or other benefit, either directly through a contractually managed fee or indirectly through standing charges levied at point of sale of any equipment to be connected to the system or by any other means, in payment for the service of providing and maintaining the radio facility for use by third parties.

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APPENDIX B

FREQUENCY BANDS

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APPENDIX B

Table 1: - LICENCE-EXEMPT BANDS FOR CONSIDERATION

Analogue Cordless Telephone	CT1	1642 - 1782 kHz (base) 47.45625 - 47.54375 MHz (mobile)
Digital Cellular Telephones	UMTS Licence-Exempt	2010 – 2025 MHz
Digital Cordless Telephones	DECT	1880 - 1900 MHz
HIPERLANs	5 GHz	5.150-5.350 GHz, 5.470-5.725 GHz and 5.725-5.875 GHz.
PMR 446	PMR 446	446.00625 - 446.09375 MHz
RLANs	2400 MHz	2400 to 2487.5 MHz
Short Range Device Bands	SRDs	**See table 2**

Table 2: - FREQUENCY BANDS USED BY SHORT RANGE DEVICES IN THE UK

Frequency Range	**Typical Licence-exempt SRD Applications**	**Shared With licensed services**	**Conditions of Use appropriate to specific SRD Applications**
9 to 180 kHz and 240 to 315 kHz	RFID Anti-theft alarms Inductive communications (e.g. hearing aid loops) Metal detectors	Band is heavily used by established licensed services Radionavigation Fixed Maritime Mobile Broadcasting	Inductive applications only Unsuitable for short range wideband wireless applications. ETSI Standard EN 300 330 CEPT/ERC Rec 70-03 UK Interface Requirement 2030

Frequency Range	Typical Licence-exempt SRD Applications	Shared With licensed services	Conditions of Use appropriate to specific SRD Applications
300 to 2000 kHz	Medical applications	Band is heavily used by established licensed services Radionavigation Maritime Mobile Broadcasting Fixed Land Mobile Radiolocation Amateur	Inductive medical applications only Unsuitable for short range wideband wireless applications. ETSI Standard EN 300 330 UK Interface Requirement 2030
2 to 30 MHz	RFID Anti-theft alarms Railway applications Medical Applications General Telemetry & Telecommand (T&T) Model Control	Band is heavily used by established licensed services. Radionavigation Maritime Mobile Broadcasting Radio Amateurs Land Mobile Met-Aids Fixed	Below 27MHz, inductive applications only. Unsuitable for short range wideband wireless applications. ETSI Standard EN 300 330 or EN 300 220 CEPT/ERC Rec 70-03 UK Interface Requirement 2030

Frequency Range	Typical Licence-exempt SRD Applications	Shared With licensed services	Conditions of Use appropriate to specific SRD Applications
34.9 to 35 MHz and 35.3 to 35.5 MHz	Social alarms Databuoys Model control	Radiolocation Space research Shared with MoD and civil radar systems	EN 300 220 UK Interface Requirement 2030
40.66 to 40.7 MHz	General purpose telemetry & telecommand. Model Control	Mobile Shared with MoD	Unsuitable for short range wideband wireless applications. EN 300 220 CEPT/ERC Rec 70-03 UK Interface Requirement 2030
49.82 to 49.98 MHz	General purpose SRDs One of main consumer bands for SRDs. Typical applications include domestic baby monitors, remote control for toys, and low price walkie-talkies.	Mobile	EN 300 220 UK Interface Requirement 2030

Frequency Range	Typical Licence-exempt SRD Applications	Shared With licensed services	Conditions of Use appropriate to specific SRD Applications
161.275 MHz	Marine alarms	Maritime Mobile	SRD application limited to marine applications EN 300 220 UK Interface Requirement 2030
173.7 to 174 MHz 173.35 to 175.1 MHz	Lone worker alarms General purpose and industrial telemetry & telecommand. Fixed alarms General purpose telemetry & telecommand plus voice Medical & biological Radio microphones Hearing aids	Mobile	Up to 10 mW erp, 12.5 & 25 kHz channels Wideband permitted between 173.2375 and 173.35 kHz. EN 300 220 UK Interface Requirement 2030
402 to 405 MHz	Medical T&T	Met-aids Space operation Fixed Mobile Band used for radio sondes	.Medical applications limited to very low power implants. EN 300 220 CEPT/ERC Rec 70-03 UK Interface Requirement 2030

Frequency Range	Typical Licence-exempt SRD Applications	Shared With licensed services	Conditions of Use appropriate to specific SRD Applications
417.9 to 418.1 MHz	General telemetry & telecommand	Mobile Fixed services Radio Amateurs History of interference problems between SRDs and licensed services.	The SRD band is likely to be withdrawn if TETRA services are introduced. EN 300 220 UK Interface Requirement 2030
433.05 to 434.79 MHz	General purpose telemetry & telecommand Model control telemetry	Fixed Mobile Amateur History of interference problems between SRDs and licensed services.	Not suitable for applications requiring high duty cycle. For wideband applications a maximum of 10% DC is imposed. The ERO/MG and SE PT 24 are looking at the feasibility of introducing 100% narrow band channels at the band edges. Primary services transmit high powers compared with SRDs. EN 300 220 CEPT/ERC Rec 70-03 UK Interface Requirement 2030

Frequency Range	Typical Licence-exempt SRD Applications	Shared With licensed services	Conditions of Use appropriate to specific SRD Applications
458.5 to 458.95 MHz 458.96 to 459.1 MHz 458.5 to 459.5 MHz	Industrial/Commercial telemetry & telecommand Social alarms General purpose alarms Lone worker alarms Fixed alarms Medical T&T Model control	Fixed services Mobile Paging	458.5 to 458.95 MHz is the main band in the UK for narrow band T&T EN 300 220 UK Interface Requirement 2030
862 to 870 MHz	Cordless Audio Devices Radio Microphones General purpose telemetry & telecommand Social alarms General purpose alarms	Fixed services Mobile A FHSS tracking system has been licensed in the band	FM PT 37 recommended this band for SRD applications. Also the phasing out of CT technologies in this band, including CT 2 (864 to 868 MHz). SE24 currently studying compatibility issues concerned with FHSS technology in 862 to 870 MHz band. It is unlikely that SRDs will be allowed below 863 MHz. EN 300 220 CEPT/ERC Rec 70-03 UK Interface Requirement 2030

Frequency Range	Typical Licence-exempt SRD Applications	Shared With licensed services	Conditions of Use appropriate to specific SRD Applications
1389 to 1399 MHz	CCTV Domestic videosenders	Fixed Mobile	Radioastronomy services have to be protected. Only CCTV allowed. EN 300 440 UK Interface Requirement 2030
2400 to 2483.5 MHz	2 CCTV Domestic videosenders Movement detection & alert. Railway applications Automatic vehicle identification Short range indoor data links General telemetry & telecommand RLANS	ENG/OB Fixed services Mobile Radio amateurs This band is heavily used by services seeking global harmonisation. The SRD/RFID Industry use this band for tagging/logistic purposes, to keep track of items on a global basis, such as shipping containers and airline baggage. The wholesale industry are seeking 4 Watt systems in order to trace produce from the grower/manufacturer all the way through the distribution chain to the retail outlet. The higher power is required because passive tags are required and read/write ranges up to about 2 metres.	EN 300 440 EN 300 761 ETS 300 328 CEPT/ERC Rec 70-03 UK Interface Requirement 2030

Frequency Range	Typical Licence-exempt SRD Applications	Shared With licensed services	Conditions of Use appropriate to specific SRD Applications
5725 to 5850 MHz	Road transport & traffic telematics General purpose telemetry & telecommand Short range indoor data links. Movement detectors CCTV	Radiolocation Radio Amateurs Mobile Fixed satellite Some trial systems for Road Toll applications. No decision yet on long term allocation. There are some private road toll schemes.	EN 300 440 CEPT/ERC Rec 70-03 ERC/DEC/(92)02 UK Interface Requirement 2030 If road tolling is implemented then other applications will either need to avoid the band 5805 to 5815 MHz or will need to be planned to avoid interference.
10.577 to 10.597 GHz	Short range indoor data links Movement detection (e.g. traffic light sensors)	Fixed Mobile	EN 300 440 CEPT/ERC Rec 70-03 UK Interface Requirement 2030
10.675 to 10.699 GHz	Short range indoor data links Movement detection	Earth exploration satellite Radioastronomy Space research	SRDs restricted to indoor use only EN 300 440 CEPT/ERC Rec 70-03 UK Interface Requirement 2030

Frequency Range	Typical Licence-exempt SRD Applications	Shared With licensed services	Conditions of Use appropriate to specific SRD Applications
13.5 to 14 GHz	Movement detection	Government use. Radiolocation Radionavigation Space research	SRD use for movement detection agreed only EN 300 440 CEPT/ERC Rec 70-03 UK Interface Requirement 2030
24.15 to 24.25 GHz 24.25 to 24.35 GHz	Movement detection (e.g. traffic light sensors) Speed detection devices Radar level gauges	Radiolocation Radio amateurs Fixed services Speed detection devices	Civil use has to avoid the band below 24.15 GHz. EN 300 440 CEPT/ERC Rec 70-03 UK Interface Requirement 2030
63 to 64 GHz 76 to 77 GHz	Road transport & traffic telematics	Fixed services Radiolocation	Vehicle to roadside and vehicle to vehicle communications Vehicle radar or traffic monitoring. EN 300 674 EN301 091 CEPT/ERC Rec 70-03 ERC/DEC/(92)02 UK Interface Requirement 2030
60 to 63 GHz 122 to 123 GHz 244 to 246 GHz	General purpose devices		Under consideration