



Notice of Ofcom's proposal
to exempt the use of automotive
short-range radar equipment at
24 GHz from Wireless
Telegraphy licensing

Consultation document

Issued: 21 April 2005
Closing date for responses: 23 May 2005

Contents

Section		Page
1	Summary	1
2	Notice	3
3	General Effect of the draft Wireless Telegraphy (Automotive Short Range Radar) (Exemption) Regulations 2005	6
4	Regulatory Impact Assessment	10
5	Responding to this Consultation	
Annex 1	Ofcom's consultation principles	18
Annex 2	Consultation cover sheet	19
Annex 3	Draft Wireless Telegraphy (Automotive Short Range Radar) (Exemption) (No.2) Regulations 2005	21
Annex 4	Decision 2004/545/EC – SRR in the 79GHz Band	25
Annex 5	Decision 2005/50/EC – SRR in the 24GHz Band	27
Annex 6	Exclusion Zones	33

Section 1

Summary

- 1.1 In January 2005, as part of its eSafety initiative to improve road safety in Europe, the European Commission adopted a Decision (2005/50/EC) (the "Decision") on the harmonisation of the 24 GHz range radio spectrum band (21.65 to 26.65 GHz) for the time-limited use by automotive short range radar equipment ("SRR equipment") in the community. The Decision requires that the 24 GHz band be designated and made available for SRR equipment until 30 June 2013 (the reference date). The Decision 2005/50/EC is available at Annex 4 of this document.
- 1.2 The Decision is addressed to all Member States, and the measures provided for in it should be implemented by 1st July 2005.
- 1.3 To implement the Decision Ofcom proposes to:
 - (i) make the band available for this purpose by a statutory instrument (regulations) which will permit the use of SRR equipment without the need to hold a licence under the Wireless Telegraphy Act 1949 (the "1949 Act");
 - (ii) keep this exemption available until 30 June 2013 (thereafter only use of equipment which was installed in a vehicle before this date or subsequently installed to replace such equipment will be permitted under this exemption); and
 - (iii) take steps to ensure interference is not caused to existing users of the band.
- 1.4 In order to exempt the use of the equipment Ofcom will make new regulations: the Wireless Telegraphy (Automotive Short Range Radar) (Exemption) (No.2) Regulations 2005 (the "Proposed Regulations"). The Proposed Regulations will be made in line with the measures provided for in the Decision.
- 1.5 The 79 GHz range has already been made available for the use of SRR equipment without the need to hold a licence under the 1949 Act¹, but equipment is not yet readily available. The exemption of SRR equipment in the 24 GHz range is time limited on the basis that within this timescale SRR equipment will be developed for use in the 79 GHz band. The 79 GHz Exemption Regulations are included in Annex 4 of this document.
- 1.6 The Proposed Regulations are available for comment and are included at Annex 3 of this document. A number of statutory steps have to be taken to bring the regulations into force and this consultation forms part of that process.
- 1.7 Section 2 of this document discusses the background to Ofcom's proposals and contains the notice of Ofcom's intention to make the Proposed Regulations.
- 1.8 Section 3 of this document sets out the extent of application, scope and intended effect of the draft Proposed Regulations.
- 1.9 In order to protect existing Radio Astronomy services, the Decision requires the deactivation of SRR equipment operating in the 22.21 – 24.00 GHz band within defined exclusion zones around UK Radio Astronomy sites. Details of these exclusion zones are included in Annex 6 of this document.

¹ The Wireless Telegraphy (Automotive Short Range Radar)(Exemption) Regulations 2005 S.I. 2005/353

- 1.10 A Regulatory Impact Assessment (RIA) for the Proposed Regulations is available in section 4. The RIA sets out the risks, costs and benefits of the proposals and the effects that these will have on the costs to business.
- 1.11 Comments are requested by 23 May 2005. Ofcom then intends to make the final Regulations in time to meet the EU Decision implementation date of 1 July 2005.

Section 2

Notice

Background to proposals

- 2.1 Information communications technologies and intelligent road safety systems such as SRR equipment have been identified by the European Commission's (EC) *eSafety* initiative² as a significant tool for the improvement of road safety in Europe and as one of a number of measures that could address the overall transport policy goal for reducing road fatalities in Europe by half by 2010³.
- 2.2 The Commission's policy includes the development and operation of SRR equipment in new vehicles sold within the common market at the earliest date. However, for this to happen, it is necessary to identify and make available harmonised frequency bands at a community level in order to provide industry with confidence to make the appropriate investments and enable cross border roaming.
- 2.3 Within this context, the EC issued a mandate⁴ to the European Conference of Postal and Telecommunications Administrations (CEPT) to investigate the harmonisation of spectrum for this purpose and facilitate a coordinated EU introduction of automotive SRR systems. As a result of that mandate, the 79GHz band, covering 77-81 GHz, has been identified by the CEPT as the most suitable band for the permanent development and deployment of SRR equipment. Following the results of that work the EC adopted a Decision on the harmonisation of radio spectrum in the 79GHz range for the use of automotive SRR equipment in the Community⁵. This Decision is available in Annex 4 of this document. However, automotive short-range radar technology in the 79 GHz range band is still under development and is not immediately available on a cost-effective basis. Manufacturers in the industry are aiming to promote the development of such a technology in order to make it available at the earliest possible date.
- 2.4 In its report of 9 July 2004 to the European Commission under the mandate of 5 August 2003, CEPT identified the 24 GHz range radio spectrum band as being a temporary solution which would enable the early introduction of automotive SRR in the Community to meet the objectives of the e-Safety initiative, since technology is considered sufficiently mature for operation in that band. Therefore, it recommended that Member States should take the appropriate measures based on their particular national radio spectrum situation to make sufficient radio spectrum available on a harmonised basis in the 24 GHz range

² http://europa.eu.int/information_society/programmes/esafety/index_en.htm

³ Commission Communication on a European Road Safety Action Programme, COM(2003)311, June 2nd, 2003 at http://europa.eu.int/comm/transport/road/library/rsap/com_2003_0311_en.pdf, and Council Conclusions on the European Road Safety Action Programme, June 5th, 2003

⁴ Mandate to CEPT to harmonise radio spectrum to facilitate a coordinated EU introduction of automotive short-range radar systems, August 5th 2003, at http://europa.eu.int/information_society/topics/radio_spectrum/docs/pdf/mandates/rscom0315_mandate_srr.pdf

⁵ Decision 2004/545/EC at http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/l_241/l_24120040713en00660067.pdf

- radio spectrum band (21.65 to 26.65 GHz), while protecting existing services operating in that band from harmful interference. Following the results of this work the EC adopted a Decision on the harmonisation of the 24 GHz range radio spectrum band for the time-limited use by automotive SRR equipment in the Community⁶ (the 'Decision'). The Decision is available in Annex 5 of this document.
- 2.5 In the United Kingdom (UK), Ofcom is the relevant authority that has the power to implement the measures provided for in the Decision, into national law.
 - 2.6 Ofcom is responsible for granting wireless telegraphy licences under the 1949 Act and for making regulations exempting users of particular equipment from the requirement to hold such a licence. Under section 1 of the 1949 Act, it is an offence to install or use equipment to transmit without holding a licence granted by Ofcom, unless the use of such equipment is exempt from licensing.
 - 2.7 Ofcom considers that because "users" of SRR equipment will be vehicle drivers, licensing is impractical and cumbersome. If a licensing approach were adopted the driver of each vehicle with SRR equipment installed in it in the UK would need a wireless telegraphy licence in order to use the equipment. Licence exemption is therefore deemed more appropriate in this instance. There is however, a risk that automotive SRR will interfere with other radio services and Ofcom has put in place strategies to minimise this risk as set out in Section 3 of this document.
 - 2.8 Spectrum shall be made available in the 24GHz band for the use of automotive SRR equipment on a time limited basis in order to enable sharing with other existing and potential future users of the band.
 - 2.9 In accordance with article 2 of the Decision, the use of SRR equipment will be on a non-interference and non-protected basis.
 - 2.10 In accordance with article 7 of the Decision Ofcom intends to submit to the Commission details of the UK radio astronomy sites with their corresponding exclusion zones shown in annex 6 of this document to be protected pursuant to article 6(2) of the Decision.

Notice of proposal

- 2.11 Ofcom has an obligation to transpose EU Decision number 2005/50/EC into UK law. Therefore this consultation is purely on the basis of how we implement the Decision. Under the Communications Act 2003, Ofcom has an obligation to consult on all regulations that it makes and that is the purpose of this document.
- 2.12 Ofcom proposes to make the Wireless Telegraphy (Automotive Short Range Radar) (Exemption) (No.2) Regulations 2005 (the 'Proposed Regulations') in order to exempt the establishment, installation and use of SRR equipment in the 24 GHz range from the requirement under section 1(1) of the 1949 Act to hold a licence. The Proposed Regulations are available in Annex 3 of this document.
- 2.13 The general effect of the Proposed Regulations, including Ofcom's strategy for implementing the Decision is discussed in section 3 of this document.

⁶ Decision 2005/50/EC at http://europa.eu.int/information_society/policy/radio_spectrum/docs/ref_info/24ghz_com_decision/com_dec_24ghz_en.pdf

- 2.14 A Regulatory Impact Assessment (RIA) for the Proposed Regulations is available in section 4. The RIA sets out the risks, costs and benefits of the proposals and the effects that the proposals will have on costs to business.
- 2.15 Comments or representations with respect to the Proposed Regulations are invited by 23 May 2005. A one month consultation period reflects statutory requirements. Comments should be sent to:

Diana Kennedy
Ofcom
Riverside House
2a Southwark Bridge Road
London SE1 9HA

Diana.Kennedy@ofcom.org.uk

020 7783 4201

- 2.16 Following this consultation, Ofcom intends to make the final regulations as soon as practicable.
- 2.17 Hard copies of this notice and the Proposed Regulations can be obtained from:

Diana Kennedy
Ofcom
Riverside House
2a Southwark Bridge Road
London SE1 9HA

Diana.Kennedy@ofcom.org.uk

020 7783 4201

- 2.18 Electronic copies are also available and this notice has been placed on Ofcom's website www.ofcom.org.uk.

Section 3

General effect of the draft Wireless Telegraphy (Automotive Short Range Radar) (Exemption) (No.2) Regulations 2005

The legislative framework

- 3.1 Ofcom can exempt the establishment, installation and use of wireless telegraphy equipment by making regulations under section 1(1) of the 1949 Act and section 403(7) of the Communications Act 2003.
- 3.2 A draft of the Proposed Regulations is set out in Annex 3 of this document.

Extent of application

- 3.3 The Proposed Regulations will apply in the United Kingdom, the Channel Islands and Isle of Man, subject to formal agreement of the Island Authorities.

The Proposed Regulations

- 3.4 For the purpose of these Regulations, SRR equipment is defined in the Proposed Regulations as equipment installed in a vehicle providing radar functions for collision mitigation and traffic safety applications. The Proposed Regulations will exempt users of SRR equipment operating in the 24 GHz band (21.65GHz to 26.65GHz) which is installed before 30 June 2013 or subsequently installed to replace such equipment, from the requirement under section 1 of the 1949 Act to hold a wireless telegraphy licence.
- 3.5 The 24 GHz band will be designated in the national frequency plan for SRR equipment on a "non-interference and non-protected basis". This is the usual basis for licence exemption and means that no harmful interference may be caused to other licensed or protected users of the band and no claim may be made for protection from harmful interference received from other licensed systems or services operating in the band. This is to be reflected in the Proposed Regulations. The exemption from the requirement to hold a licence will only apply where the equipment does not cause harmful interference to other users of the band. The "non-protection" basis is implemented because the Proposed Regulations do not offer any protection to users of the equipment from harmful interference from others.
- 3.6 The exemption is provided in regulation 3 of the draft Regulations. That exemption is subject to the terms, provisions and limitations set out in regulations 4 to 10.
- 3.7 Regulation 4 provides that the equipment must have been installed in the vehicle before that vehicle is registered, placed on the market or put into service in the Community, or must be done to replace equipment so installed. This is a requirement of the Commission Decision (Article 2(3) and recital (25)). Ofcom understands that in future the DVLA will keep a record of all new vehicles which have been fitted with SRR equipment, which should assist Ofcom in ensuring that this requirement is met.

- 3.8 Regulation 5 provides that the equipment must only operate when the vehicle in which it is installed is active. This is a requirement of Article 6(1) of the Decision.
- 3.9 Regulations 6, 7 and 8 of the Proposed Regulations are intended to reflect the technical requirements of Article 4 of the Decision. Ofcom would welcome scrutiny and feedback on the proposed wording, particularly from vehicle manufacturers.
- 3.10 Regulations 9 and 10 require that equipment operating in the frequency band between 22.21 GHz and 24.00 GHz must be automatically or manually deactivated within exclusion zones which surround radio astronomy sites. This is done in order to implement Article 6 of the Decision. That Article places a time limit (30 June 2007) after which manual deactivation of equipment which was installed after this date (unless replacing equipment installed prior to this date) will no longer be permitted. In line with that, Ofcom will amend the regulations in 2007 to remove that option. The "exclusion zones" are identified in the schedule to the Proposed Regulations (see below for more detail) and in Annex 6 of this document.
- 3.11 The Decision also acknowledges that alternative interference mitigation techniques, other than exclusion zones, may be feasible that can provide equivalent protection to radio astronomy sites. Article 6 of the Decision provides for such techniques. Ofcom, in implementing the Decision and exempting the establishment, installation and use of 24 GHz Automotive SRR equipment, must ensure that the characteristics of each individual equipment is properly defined in the regulations. In this way we are able to provide manufacturers, suppliers, and users with a clear definition of the equipment which Ofcom considers to be exempt from licensing. Ofcom also believes that acceptable mitigation techniques need to be identified in cooperation with other Community members to ensure that the harmonisation objectives of the Decision are not compromised.
- 3.12 Ofcom proposes to make regulations that mandate equipment deactivation as the means of protecting radio astronomy sites. Ofcom believes that deactivation is the technique that is currently being developed by manufacturers. Should alternative mitigation techniques be identified, Ofcom will confirm with our Community partners that these offer 'equivalent protection' to that provided by equipment deactivation and amend regulations as appropriate. In order to inform future development of these exemption regulations Ofcom invites comment on the nature of alternative mitigation techniques which should be made exempt from licensing under the auspices of the Decision. Ofcom encourages manufacturers to inform us of any other alternative techniques that they are looking to adopt, both now and in the future.

Introducing and Monitoring the Exemption of SRR Equipment

- 3.13 CEPT ECC report number 23 identified a number of services likely to be at risk from interference as a result of the introduction of SRR devices in this band as SRR will share spectrum with primary users. Technical parameters defined in the Regulations limit the characteristics of the emission by specifying power levels, frequency of operation and direction of transmission in such a way as to reduce interference to these other services. The Decision also identified a number of measures which can be taken in order to mitigate interference to these other services in the band. Ofcom's strategy for implementing these is explained below

Review Criteria

- 3.14 To protect other users of the band the Decision (in Article 5) puts in place procedures to enable a review of market penetration (the Commission requires that market penetration of vehicles using SRR equipment should remain below 7% of the total number of vehicles in circulation within a member state) and interference levels associated with SRR equipment.
- 3.15 This review mechanism is designed to ensure that the level of use of SRR equipment is not sufficient to cause interference to existing and future users of the 24 GHz band. Ofcom proposes to monitor the levels of penetration through coordination with the Department for Transport (DfT) and organisations such as The Society of Motor Manufacturers and Traders (SMMT). Ofcom will carry out annual reviews and monitor interference levels in the 24 GHz band.
- 3.16 Ofcom will submit this review data to the Commission to enable the Commission to consider the continued availability of the 24GHz band for the use of SRR equipment. The Commission plans a fundamental review based upon data supplied by EU member states, no later than 31 December 2009. Ofcom, other member states or the Commission itself may trigger a review of the Decision through the Radio Spectrum Committee at any time before the above date where necessary.

Exclusion Zones

- 3.17 Certain radio astronomy services are particularly sensitive to interference from SRR equipment. The Decision facilitates the creation of exclusion zones around radio astronomy sites as defined by member states. Within these zones the use of SRR equipment operating in the Radio Astronomy band 22.21- 24.00 GHz is not permitted under the Regulations. Within the UK there are 5 such sites that Ofcom considers it is appropriate to define exclusion zones around. Each of these exclusion zones are of limited extent (see annex 6 for details) and will not significantly impede the widespread use of SRR equipment. In line with the Decision, Ofcom will:
- mandate the automatic deactivation within exclusion zones, of SRR equipment fitted after 30 June 2007 and operating in the 22.21-24.00 GHz frequency range. Until this date devices using manual deactivation will be permitted in order to facilitate the rapid introduction of SRR devices on to the market and such devices so fitted before 30 June 2007 can continue to be used. Beyond this date manually deactivated equipment fitted after 30 June 2007 which replaces equipment installed prior to this date will also be permitted.
 - ensure through the Regulations that transmission within the exclusion zones is not permitted.
 - work with DfT and SMMT to ensure that where applicable manufacturers provide customers with the relevant information detailing the location of exclusion zones and the requirement to deactivate SRR equipment within them. Ofcom notes that expected levels of penetration of manually deactivated devices in the period up to 30 June 2007 are low thus minimising the risk of unintended interference caused by drivers of vehicles fitted with SRR equipment.
 - monitor the effectiveness of the above approach through liaison with SMMT and DfT and by reviewing levels of recorded interference at the radio astronomy sites.

- inform the Commission of the details of the exclusion zones (as required by Article 7 of the Decision).

Other Frequency Bands for Automotive SRR.

- 3.18 In March 2005 Ofcom exempted 79 GHz Automotive SRR equipment in accordance with Decision 2004/545/EC and this frequency band is now available for use by Automotive SRR applications within the UK. Devices providing similar functionality may also use a number of other frequency bands which are available in the UK for more general purposes. The frequency and terms of these exemptions are defined in the Wireless Telegraphy (Exemption) Regulations 2003 (S.I. 2003/74). The extent to which these exemptions (or general authorisations) are available more widely in Europe will vary and it is the responsibility of equipment manufacturers, suppliers, and users to check appropriate national regulations before using or supplying equipment in these markets.
- 3.19 From time to time Ofcom will amend these regulations and such changes will be the subject of further consultation.

Interference to Fixed Links

- 3.20 Ofcom recognises that there is a small but real possibility of interference to some fixed links arising from the implementation of this Decision by the Proposed Regulations. Accordingly Ofcom will assess any such interference complaints on a case by case basis and examine what engineering solutions may be available.

Amateur Radio Users

- 3.21 In response to its recent consultation on the use of Automotive Short Range Radar in the 79GHz band, Ofcom received a number of representations from the Amateur radio community on the prospect of the 24GHz band also being made available. These comments were out of the scope of that consultation but Ofcom now welcomes representations from Amateur and other users of the 24GHz band.
- 3.22 Ofcom however, reiterates the points made in response to the comments received previously, namely that the UK has no option but to implement the EC Decision and that the Commission was informed in making this Decision by compatibility work undertaken by the European Conference of Postal and Telecommunications Administrations (CEPT), which considered the wider range of other users of the band.

Section 4

Regulatory Impact Assessment –The draft Wireless Telegraphy (Automotive Short Range Radar) (Exemption) (No.2) Regulations 2005

- 4.1 The analysis presented here, when read in conjunction with the rest of this document, represents a Regulatory Impact Assessment (RIA), as defined by section 7 of the Communications Act 2003 (the 'Act'). You should send any comments on this RIA to Ofcom by the closing date for this consultation. Ofcom will consider all comments before deciding whether to implement the proposals.
- 4.2 RIAs provide a valuable way of assessing different options for regulation and showing why the preferred option was chosen. They form part of best practice policy-making and are commonly used by other regulators. This is reflected in section 7 of the Act, which means that generally Ofcom will carry out RIAs where proposals would be likely to have a significant effect on businesses or the general public, or when there is a major change in Ofcom's activities. In accordance with section 7 of the Act, in producing the RIA in this document Ofcom has had regard to such general guidance as it considers appropriate, including related Cabinet Office guidance.

Proposal, purpose and intended effect

- 4.3 Ofcom is proposing to make the Proposed Regulations in order to:
- Designate the 24GHz band for time-limited use by automotive short-range radar equipment (SRR) until 30 June 2013; and
 - Permit the use of Automotive SRR equipment without the need to hold a licence (i.e. national regulations will set the conditions for use).
- 4.4 The intended purpose of the Proposed Regulations is to facilitate the development and uptake of SRR equipment within UK, with a view to improving road safety through the use of intelligent road safety systems to both avoid and mitigate road accidents. These systems can, for example, provide collision warnings, warnings about excessive speed, or assist with safe following.
- 4.5 Research into the road safety initiatives has identified information communications technologies and intelligent road safety systems, such as those based around SRR equipment, as one of the most important tools in achieving the EC road safety goal of reducing road fatalities in Europe by half by 2010. With this in mind, the European Commission Decision 2005/50/EC has designated the 24GHz band as the harmonised band for time-limited use until June 2013 by this equipment.

Benefits and costs

Designating 24GHz band for SRR equipment

- 4.6 In 2000, road accidents killed over 40,000 people in the EU and injured more than 1.7 million, at an estimated cost of €160 billion (equivalent to 2% of Gross Domestic Product). In the UK alone there were approaching 4,000 fatalities in 2000 and this number has remained broadly constant since then. For example,

- in 2002, 3,431 people were killed and 299,174 were injured in road accidents in the UK.
- 4.7 The Department for Transport (DfT) provides estimates of the value generated (i.e. benefits) from preventing road fatalities and injuries. Its estimates for 2002, which include both the economic and social benefits generated from preventing road accident casualties, indicate an average benefit of £40,290 per casualty prevented (this is the average over fatalities, serious and slight injuries). Therefore, preventing only 1% of the casualties in the UK in 2002 would have been expected to benefit the UK economy and its citizens by £122 million (in 2002 prices). This estimate only includes the benefits from preventing casualties hence will under-estimate the total benefits to the UK economy. Other benefits which would accrue from accident prevention include a reduction in vehicle damage costs in damage-only accidents. These benefits could be significant, for example, the DfT estimated that damage-only accidents cost £4,951 million in 2002.
- 4.8 Using estimates of the rate of uptake of road safety technology in new vehicles (for example, the rate of update for Anti-lock Braking (ABS) and Electronic Stability Programme (ESP) systems) an estimate of the proportion of the vehicle stock which may be fitted with SRR equipment has been derived. This evidence suggests that between 2010 and 2014 the percentage of the total vehicle stock fitted with this equipment in both the 24GHz and 79GHz bands may increase from 1% to 13%. Based on this information, and assuming conservatively that this equipment may only be successful in stopping 5% to 10% of accidents involving vehicles with the equipment installed, the net present value of the benefits from using automotive SRR devices are estimated to range from £139 to £279 million over this period.
- 4.9 Whilst the results presented above are only indicative in nature, as it is not possible to provide precise quantification of the reduction in road casualties which would be achieved through the use of SRR equipment in the 79GHz and 24GHz bands, the results obtained indicate that significant benefits can be achieved by relatively limited reductions in the number of accidents.
- 4.10 Despite the lack of precise quantitative indications there is evidence to suggest that the impact of automotive SRR equipment on road accident rates may be significant. Road safety initiatives, such as improved crashworthiness, mandating the wearing of seatbelts, and the introduction of air bags and improved braking systems (such as ABS), have resulted in the number of deaths in the EU falling year on year whilst road use has increased significantly. However, the EU eSafety forum considers that the contribution of these conventional safety measures is reaching its limit and that intelligent vehicle safety (IVS) systems are a necessary development for further reductions in the level of road fatalities.
- 4.11 This is supported by research into the cause of accidents, which has shown that in almost 75% of all accidents human behaviour is the sole cause. Therefore, equipment which corrects for human error would be expected to have an appreciable impact upon the incidence of accidents. Further to this, estimates by the US National Highway Traffic Safety Agency suggest that accidents caused by lane changes and lane departures, which are two of the most important causes of road deaths, would be expected to fall by 50% due to the introduction of IVS systems. A study completed in the Netherlands estimated that the introduction of this technology would be expected to reduce all side impact accidents by 37% and all single vehicle accidents due to lane departures by 24%.

- 4.12 Therefore, the evidence presented above suggests that significant benefits could accrue from the time-limited use of the 24GHz spectrum to provide SRR equipment for use in IVS systems. Harmonisation of the use of this band and the allocation of the 79GHz band for future SRR systems would be expected to increase these benefits through faster development of the technology and continuity of road safety protection when travelling throughout the EU.
- 4.13 The technology underlying IVS systems is currently costly (for example, the cost to automotive manufactures of the systems which are currently on the market is in the region of €2,000 per vehicle). This cost, when compared to the price of middle and bottom of the range vehicles, would be expected to act as a limiting factor upon the uptake of these systems in the immediate future. One variable which would assist in reducing the cost of these systems is the volume of production. The fixed costs involved in developing these systems (due to, for example, the research and development required) means that increasing the production volume would be expected to lower the unit price of these systems. Harmonising the spectrum bands for the use of this equipment across Europe would assist in allowing manufacturers to generate higher volumes for this equipment. It may even be the case that Europe-wide production volumes represent the minimum efficient scale of production for the development of some IVS systems.
- 4.14 In comparison to the benefits, the costs of regulating this band for use of SRR equipment are likely to be limited. Although the 24GHz frequency range is heavily used in the UK for a wide range of applications, including primary allocations for Fixed Services, Radio Astronomy Services, Earth Exploration Satellite Services and Amateur users, due to a variety of factors such as low initial usage of these devices, the likelihood of time-limited SRR use causing harmful interference to other services in the 24 GHz band is expected to be low.
- 4.15 Compatibility studies with the primary services (mainly Fixed Service, Radio Astronomy Service and Earth Exploration Satellite Service) conducted within CEPT and described in ECC Report 23 concluded that the deployment of 24 GHz SRR would not be feasible in the long term since an unlimited deployment of automotive short-range radar systems in the 24 GHz band will create unacceptable harmful interference to these existing radio applications operating in this band. Therefore, in accordance with the studies carried out by CEPT and the requirements of the Decision, in order to protect these services it is required that the total number of vehicles registered, placed on the market or put into service equipped with 24 GHz automotive short-range radar does not exceed the level of 7% of the total number of vehicles in circulation in each Member State. It is not presently anticipated that this threshold will be reached before the reference date of 30 June 2013 and Ofcom will monitor penetration levels annually in the meantime.
- 4.16 In addition it was also requirement that Automotive short-range radar equipment put into service in the Community shall ensure protection of the radio astronomy stations operating in the radio spectrum band 22.21 to 24.00 GHz through automatic deactivation or another method of providing equivalent protection for these stations, without driver intervention in a defined exclusion zone. Furthermore manual deactivation will be permitted until July 2007 in order to enable the rapid development and operation of early SRR devices.
- 4.17 In the UK the 24 GHz band is also used for radar speed meter control which contributes to traffic safety. CEPT concluded that compatibility is possible under certain conditions, principally by decoupling the centre frequencies of the two systems by at least 25 MHz, and that the risk of harmful interference is low and

will not create false speed measurements. Manufacturers of vehicles using automotive short-range radar systems have also committed themselves to continue taking appropriate steps to ensure that the risk of interference to radar speed meters is minimal. The reliability of radar speed meter equipment is therefore not expected to be affected by the operation of automotive short-range radar to any significant extent.

- 4.18 Broadcast Satellite services use the 24GHz band for services in the direction Earth to space. Following compatibility studies relevant national administrations have concluded that no compatibility problems exist if emissions of short-range radar are limited to no more than -61.3 dbm/MHz below 22 GHz.
- 4.19 With regard to other services operating in the 24GHz band (e.g. amateur, amateur satellite and short range devices) the assumption made in CEPT ECC Report 23 was that the introduction of 24GHz SRR devices was not likely to present an interference potential to these services.

Allowing licence exempt use of SRR equipment in the 24GHz band

- 4.20 The users of SRR equipment within this band will be individual vehicle owners. Given the number of vehicles within the UK the cost of imposing a licensing regime on use of this band would be expected to be significant, both on the licensing body and upon individual users. These costs could accrue from both administering the licensing regime and from a smaller reduction in casualties if licensing acted as a barrier to use of the technology.
- 4.21 These costs would need to be assessed against the possible benefits of licensing rather than allowing licence exempt use. There are several reasons to suggest that these benefits would be small in magnitude:
- 4.22 Firstly, studies have shown that with the appropriate mitigation techniques, automatic deactivation in Radio Astronomy Service (RAS) exclusion zones and the time-limited designation of the band for SRR services, interference will be minimised to other users of this band. Secondly, there are reasons to suggest that any interference that would be caused by this technology (both in terms of in-band and out-of-band interference) would be both minimal and transitory in nature; the SRR equipment uses wide-band technology, the radar travels only limited distances, and (except in the vicinity of busy roads) will be present in a particular locality for a limited period of time (as a vehicle passes through).
- 4.23 This suggests that, in qualitative terms, the costs of a licensing regime would be expected to outweigh the benefits of licensing rather than allowing licence exempt use.

Risk assessment

- 4.24 The risk of doing nothing is that the development and uptake of SRR equipment, and the IVS systems which use it, would be significantly hampered within the UK. This could impose significant costs in terms of additional road fatalities and injuries on UK roads. Other costs which could be imposed by doing nothing could be a lack of harmonisation on the spectrum used by this technology and the resulting limitation on both the rate of development and uptake of these systems, and on the road safety benefits for UK citizens when travelling throughout the EU.
- 4.25 There is also a risk that designating this spectrum band for licence exempt use by SRR equipment could limit the future uses of other users of this band during the limited timeframe of this allocation. The uncertainty surrounding other potential future technologies makes the magnitude of this risk difficult to

- quantify. However, the time limited allocation and some of the characteristics of this technology mentioned above could be thought to mitigate the risk of precluding (at least some) other future uses: namely the limited distance travelled by this radar equipment and the mobile nature of its use in conjunction with the limitation on numbers deployed may allow other possible future uses of this band to co-exist with SRR equipment.
- 4.26 Thirdly, there is a risk that the benefits of uptake of this technology may be overstated. The value of preventing accidents is largely determined by the estimate of the human cost of injuries based on estimates of willingness to pay. This calculation will be subject to a margin of error and therefore, could result in an overstatement of the possible benefits. However, the human cost, is only one element of the benefit of preventing casualties, and even if the human/social benefits are excluded from the calculation, the estimate of the benefit generated over the period 2010 and 2014 if the percentage of the total vehicle stock fitted with this equipment increases from 1% to 13% over this period is still between £35 and £71 million (in net present value terms).
- 4.27 Additionally, there are other factors which suggests that the benefits based on the DfT's value of preventing road casualties may be an under estimate of the total benefits. Firstly, these figures do not include damage only accidents for which the DfT estimated a value of prevention of £4,951 million in 2002. Secondly, these benefits do not include the value generated to the UK economy of any expansion the automotive telematics industry. Thirdly, whilst the benefits calculation takes account of the growth in the total vehicle stock, the ratio of accidents to vehicles is assumed to remain stable. It could be assumed that as the vehicle stock increases, and as roads become more congested, the ratio of the number of vehicles to the number of accidents may increase.
- 4.28 There is a risk that the proposals for limiting the impact of SRR on other users of this band are unsuccessful and SRR use of the 24GHz band creates interference for other uses. Given the significant infrastructure investment involved in the other uses of this band, such as fixed links and RAS, undue interference could impose significant costs on these users. However there are a number of measures which Ofcom could take to mitigate this risk.
- 4.29 Studies carried out by CEPT on behalf of the EC suggest that interference could occur to other services if the numbers of devices on the market increases above the 7% threshold. In order to reduce this risk the EC have mandated that member states should actively monitor the usage of the band through the timely verification of the total number of vehicles registered, placed on the market or put into service equipped with 24 GHz automotive short-range radar. This data will be collected on a yearly basis and shall be used to verify that the number of SRR devices on the market in the UK does not exceed the level of 7% of the total number of vehicles in circulation.
- 4.30 In addition the risk of harmful interference to RAS has been reduced by implementing automatic de-activation of devices within defined exclusion zones. The EC dispensation to allow systems with manual de-activation by the users when they are entering the exclusion zones may result in unintended interference by equipment users. However, Ofcom is taking steps to ensure that equipment manufacturers alert drivers to the location of the exclusion zones and the requirement to manually deactivate their SRR equipment when driving within these zones. Risk of interference is further reduced by the fact that manual de-activation will only be permitted until June 2007 during which time the penetration of SRR equipment is expected to be very low.

- 4.31 Finally, there is a risk that designating the 24GHz band for use by SRR equipment could discourage the development of SRR radars operating in 79GHz. The radar technology required to exploit the 79GHz band is still under development, and it may be a number of years before the SRR equipment which can operate in that band becomes available. However, the 7% limit on the total vehicle stock which can use SRR devices is expected to mitigate this risk by providing an incentive for the development of technology in the 79GHz band.

Conclusions

- 4.32 Indicative estimates of the benefits which may accrue from use of SRR equipment in the 24GHz on a time limited basis in combination with an allocation in 79GHz band suggest that these benefits are significant. However, the costs of regulating this are likely to be minimal in the short to medium term but would be expected to increase significantly if the number of devices in the 24GHz band exceeded the threshold recommended in the EC Decision.
- 4.33 Qualitative assessment of the likely costs and benefits from allowing licence exempt use of the 24GHz band rather than imposing a licensing regime suggests that the costs of a licensing regime would be expected to outweigh the benefits of licensing rather than allowing licence exempt use.
- 4.34 Analysis of the risks involved in the proposed regulation of this band indicates that the risk of doing nothing may be significant. The other potentially significant risks identified with the proposal are in relation to the possible interference to primary services already operating in the band (mainly Fixed Service, Radio Astronomy Service and Earth Exploration Satellite Service). These risks have been taken into account when proposing the time-limited nature of the allocation in addition to the mitigation techniques that have been proposed therefore we consider the risks are limited in nature hence are not viewed to be significant in the short term. We also consider that the proposed review process and collection of data on the numbers deployed as well as operational experience means that the long terms risks can be quantified and dealt with by using pre-emptive action if necessary. The other risks identified are also considered to have mitigating factors and/or are limited in nature; hence they are also not viewed to be significant.

Section 5

Responding to this consultation

How to respond

Ofcom invites written views and comments on the issues raised in this document, to be made by **5pm on 23 May 2005**.

Ofcom strongly prefers to receive responses as e-mail attachments, in Microsoft Word format, as this helps us to process the responses quickly and efficiently. We would also be grateful if you could assist us by completing a response cover sheet (see Annex 2); among other things to indicate whether or not there are confidentiality issues. The cover sheet can be downloaded from the 'Consultations' section of our website.

Please can you send your response to Diana.Kennedy@ofcom.org.uk.

Responses may alternatively be posted or faxed to the address below, marked with the title of the consultation.

Diana Kennedy
Ofcom
Riverside House
2a Southwark Bridge Road
London SE1 9HA

Fax: 020 7783 4103

Note that we do not need a hard copy in addition to an electronic version. Also note that Ofcom will not routinely acknowledge receipt of responses.

It would help if you can explain why you hold your views, and how Ofcom's proposals would impact on you.

Further information

If you want to discuss the issues raised in this consultation, or need advice on the appropriate form of response, please contact Russell Kent-Smith on 020 7981 3104 or Helen Damms on 020 7981 3214.

Confidentiality

Ofcom thinks it is important for everyone interested in an issue to see the views expressed by consultation respondents. We will therefore usually publish all responses on our website, www.ofcom.org.uk, ideally on receipt (when respondents confirm on their response cover sheet that this is acceptable).

All comments will be treated as non-confidential unless respondents specify that part or all of the response is confidential and should not be disclosed. Please place any confidential parts of a response in a separate annex, so that non-confidential parts may be published along with the respondent's identity. Ofcom reserves its power to disclose certain confidential information where this is necessary to fulfil its functions, although in practice it would do so only in limited circumstances.

Please also note that copyright and all other intellectual property in responses will be assumed to be assigned to Ofcom unless specifically retained.

Next steps

Following the end of the consultation period, Ofcom intends to finalise, make and publish (through HMSO) the Regulations, to take effect on 1 July 2005 and will publish an announcement and/or statement on the Ofcom website.

Please note that you can register to get automatic notifications of when Ofcom documents are published, at http://www.ofcom.org.uk/static/subscribe/select_list.htm.

Ofcom's consultation processes

Ofcom is keen to make responding to consultations easy, and has published some consultation principles (see Annex 1) which it seeks to follow, including on the length of consultations.

If you have any comments or suggestions on how Ofcom conducts its consultations, please call our consultation helpdesk on 020 7981 3003 or e-mail us at consult@ofcom.org.uk. We would particularly welcome thoughts on how Ofcom could more effectively seek the views of those groups or individuals, such as small businesses or particular types of residential consumers, whose views are less likely to be obtained in a formal consultation.

If you would like to discuss these issues, or Ofcom's consultation processes more generally, you can alternatively contact Philip Rutnam, Partner, Competition and Strategic Resources, who is Ofcom's consultation champion:

Philip Rutnam
Ofcom
Riverside House
2A Southwark Bridge Road
London SE1 9HA
Tel: 020 7981 3585
Fax: 020 7981 3333
E-mail: philip.rutnam@ofcom.org.uk

Annex 1

Ofcom's consultation principles

Ofcom has published the following seven principles that it will follow for each public written consultation:

Before the consultation

1. Where possible, we will hold informal talks with people and organisations before announcing a big consultation to find out whether we are thinking in the right direction. If we do not have enough time to do this, we will hold an open meeting to explain our proposals shortly after announcing the consultation.

During the consultation

2. We will be clear about who we are consulting, why, on what questions and for how long.
3. We will make the consultation document as short and simple as possible with a summary of no more than two pages. We will try to make it as easy as possible to give us a written response. If the consultation is complicated, we may provide a shortened version for smaller organisations or individuals who would otherwise not be able to spare the time to share their views.
4. We will normally allow ten weeks for responses, other than on dispute resolution.
5. There will be a person within Ofcom who will be in charge of making sure we follow our own guidelines and reach out to the largest number of people and organisations interested in the outcome of our decisions. This individual (who we call the consultation champion) will also be the main person to contact with views on the way we run our consultations.
6. If we are not able to follow one of these principles, we will explain why. This may be because a particular issue is urgent. If we need to reduce the amount of time we have set aside for a consultation, we will let those concerned know beforehand that this is a 'red flag consultation' which needs their urgent attention.

After the consultation

7. We will look at each response carefully and with an open mind. We will give reasons for our decisions and will give an account of how the views of those concerned helped shape those decisions.

Annex 2

Consultation response cover sheet

A2.1 In the interests of transparency, we will publish all consultation responses in full on our website, www.ofcom.org.uk, unless a respondent specifies that all or part of their response is confidential. We will also refer to the contents of a response when explaining our decision, unless we are asked not to.

A2.2 We have produced a cover sheet for responses (see below) and would be very grateful if you could send one with your response. This will speed up our processing of responses, and help to maintain confidentiality by allowing you to state very clearly what you don't want to be published. We will keep your completed cover sheets confidential.

A2.3 The quality of consultation can be enhanced by publishing responses before the consultation period closes. In particular, this can help those individuals and organisations with limited resources or familiarity with the issues to respond in a more informed way. Therefore Ofcom would encourage respondents to confirm on the response cover sheet that Ofcom can publish their responses upon receipt.

A2.4 We strongly prefer to receive responses in the form of a Microsoft Word attachment to an email. Our website therefore includes an electronic copy of this cover sheet, which you can download from the 'Consultations' section of our website.

A2.5 Please put any confidential parts of your response in a separate annex to your response, so that they are clearly identified. This can include information such as your personal background and experience. If you want your name, contact details, or job title to remain confidential, please provide them in your cover sheet only so that we don't have to edit your response.

Cover sheet for response to an Ofcom consultation

BASIC DETAILS

Consultation title:

To (Ofcom contact):

Name of respondent:

Representing (self or organisation/s):

Address (if not received by email):

CONFIDENTIALITY

What do you want Ofcom to keep confidential?

Nothing	<input type="checkbox"/>	Name/contact details/ job title	<input type="checkbox"/>
Whole response	<input type="checkbox"/>	Organisation	<input type="checkbox"/>
Part of the response	<input type="checkbox"/>	If there is no separate annex, which parts?	

If you want part of your response, your name or your organisation to be confidential, can Ofcom still publish a reference to the contents of your response (including, for any confidential parts, a general summary that does not disclose the specific information or enable you to be identified)?

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response. It can be published in full on Ofcom's website, unless otherwise specified on this cover sheet, and all intellectual property rights in the response vest with Ofcom. If I have sent my response by email, Ofcom can disregard any standard email text about not disclosing email contents and attachments.

Ofcom can publish my response: on receipt once the consultation ends

Name

Signed (if hard copy)

Annex 3

STATUTORY INSTRUMENTS

2005 No. XXXX

ELECTRONIC COMMUNICATIONS

The Wireless Telegraphy (Automotive Short Range Radar) (Exemption) (No.2) Regulations 2005

Made - - - - [] 2005

Coming into force - - [] 2005

Whereas the Office of Communications (“OFCOM”) have under section 403(4)(a) of the Communications Act 2003⁽⁷⁾ (“the 2003 Act”), as applied by section 16(1A) of the Wireless Telegraphy Act 1949⁽⁸⁾ (“the 1949 Act”), given notice of their proposal to make these Regulations and, under section 403(4)(b) of the 2003 Act, as applied by section 16(1A) of the 1949 Act, published notice of their proposal and have considered the representations made to them before the time specified in the notice⁽⁹⁾;

Now, therefore, OFCOM, in exercise of the powers conferred upon them by section 1(1) of the 1949 Act⁽¹⁰⁾ hereby make the following Regulations—

Citation, commencement and extent

1. These Regulations may be cited as the Wireless Telegraphy (Automotive Short Range Radar) (Exemption) (No.2) Regulations 2005 and shall come into force on [] 2005.

Interpretation

2. In these Regulations —

- (a) “equipment” means equipment providing vehicle radar functions for collision mitigation and traffic safety applications;
- (b) “dBm” means decibel milliWatt;

⁽⁷⁾ 2003 c. 21.

⁽⁸⁾ 1949 c. 54.

⁽⁹⁾ Section 16(1A) of the 1949 Act does not extend to the Channel Islands so the procedures set out in section 403 of the 2003 Act, which it applies, are not requirements in so far as these Regulations extend to the Channel Islands.

⁽¹⁰⁾ Section 1(1) was extended to the Channel Islands by S.I. 1952/1900, as amended by S.I. 1967/1279, S.I. 1974/691 and S.I. 1997/284 and to the Isle of Man by S.I. 1952/1899, as amended by S.I. 1967/1280 and S.I. 1997/285. Section 1(1) was amended by the Communications Act 2003 (c. 21), by section 406 and Schedule 17, paragraphs 6(1) and (2). These amendments were extended to Jersey by S.I. 2003/3197 article 6, to the Bailiwick of Guernsey by S.I. 2003/3195 article 6 and to the Isle of Man by S.I. 2003/3198 article 6. There are other amendments to section 1(1) not relevant to these Regulations.

- (c) “dBm/MHz” means decibel milliWatt per megahertz;
- (d) “duty cycle” means the ratio of time during any one hour period when equipment is actively transmitting;
- (e) “eirp” means effective isotropically radiated power;
- (f) “exclusion zone” means an area which includes all places within a distance specified in the Schedule from the location (expressed by longitude and latitude coordinates) of the radio astronomy stations specified in the same line in the Schedule; and
- (g) “vehicle” has the meaning given by Article 2 of Council Directive 70/156/EEC on the approximation of the laws of Member States relating to the type-approval of motor vehicles and their trailers⁽¹¹⁾.

Exemption

3. Subject to the terms, provisions and limitations in regulations 4 to 10, the establishment or installation of equipment in a vehicle and the use of equipment so established or installed is hereby exempt from the provisions of section 1(1) of the Wireless Telegraphy Act 1949.

Terms, provisions and limitations

4. The establishment or installation must be in a vehicle which has not yet been registered, placed on the market or put into service in the Community, or must be done to replace equipment so established or installed.

5. Equipment must —

- (a) only operate when the vehicle in which it is established or installed is active;
- (b) only operate in the frequency band between 21.65 gigahertz and 26.65 gigahertz; and
- (c) must not cause undue interference to other users of the frequency band between 21.65 gigahertz and 26.65 gigahertz.

6. Transmissions from any part of the equipment which operates using ultra wide band techniques must —

- (a) at frequencies between 22 gigahertz and 26.65 gigahertz have a mean power density no greater than -41.3 dBm/MHz eirp and a peak power density no greater than 0 dBm in any 50 megahertz; and
- (b) at frequencies between 21.64 gigahertz and 22 gigahertz have a mean power density no greater than -61.3 dBm/MHz eirp and a peak power density no greater than 0 dBm in any 50 megahertz.

7. Any component of equipment which operates using narrow band must —

- (a) only operate in the frequency band between 24.05 gigahertz and 24.25 gigahertz;
- (b) transmit with a peak power no greater than 20 dBm eirp; and
- (c) where transmitting with a peak power greater than -10 dBm eirp have a duty cycle which does not exceed 10%.

8. Any part of equipment which operates in the frequency range between 23.6 gigahertz and 24.0 gigahertz shall attenuate power emissions that appear 30 degrees or greater above the horizontal plane by at least 25 dB.

9. Equipment operating in the frequency band between 22.21 gigahertz and 24.00 gigahertz —

- (a) shall not be capable of operation when the vehicle in which it is established or installed is within an exclusion zone; or
- (b) shall otherwise be capable of manual deactivation.

⁽¹¹⁾ OJ No L 42, 23.02.70, p1

10. Where equipment operating in the frequency band between 22.21 gigahertz and 24.00 gigahertz does not automatically cease to operate when a vehicle in which it is established or installed is within an exclusion zone, users shall manually deactivate the equipment so that the equipment ceases to operate while the vehicle is within an exclusion zone.

Chief Executive of the Office of Communications
For and by authority of the Office of Communications

SCHEDULE 1 EXCLUSION ZONES

<i>Radio Astronomy Site</i>	<i>Location</i>	<i>Distance</i>
Jodrell Bank	02° 18'26" W 53° 14'10" N	9 kilometres
Cambridge	00° 02'20" E 52° 09'59" N	9 kilometres
Darnhall	02° 32'03" W 53° 09'22" N	5 kilometres
Pickmere	02° 26'38" W 53° 17'18" N	5 kilometres
Knockin	02° 59'45" W 52° 47'24" N	5 kilometres

EXPLANATORY NOTE

(This note is not part of the Regulations)

These Regulations exempt the establishment or installation of automotive short range radar equipment in a vehicle and the use of automotive short range radar equipment so established or installed from the requirement to be licensed under section 1(1) of the Wireless Telegraphy Act 1949 (c. 54).

The equipment must [].

These Regulations implement the Commission Decision 2005/50/EC⁽¹²⁾ of 17th January 2005 on the harmonisation of the 24 GHz radio spectrum band for the time-limited use by automotive short-range radar equipment in the Community.

A full regulatory impact assessment and report of the effect that these Regulations will have on the costs to business is available to the public from the OFCOM Library at Riverside House, 2a Southwark Bridge Road, London SE1 9HA (Tel: 020 7981 3000) or on the OFCOM internet web site at www.ofcom.org.uk. Copies of the report have also been placed in the libraries of both Houses of Parliament.

⁽¹²⁾ OJ No L 21, 25.1.05, p15

Annex 4

L 241/66

EN

Official Journal of the European Union

13.7.2004

COMMISSION

COMMISSION DECISION

of 8 July 2004

on the harmonisation of radio spectrum in the 79 GHz range for the use of automotive short-range radar equipment in the Community

(notified under document number C(2004) 2591)

(Text with EEA relevance)

(2004/545/EC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

delay and on a stable and permanent basis, so as to provide confidence to industry to make the necessary investments.

Having regard to the Treaty establishing the European Community,

- (3) With a view to such harmonisation, a mandate⁽⁴⁾ was issued on 5 August 2003 by the Commission to the European Conference of Postal and Telecommunications Administrations (CEPT), pursuant to Article 4(2) of Decision 676/2002/EC, to harmonise radio spectrum and to facilitate a coordinated introduction of automotive short-range radar (SRR) systems.

Having regard to Decision No 676/2002/EC of the European Parliament and of the Council of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community (Radio Spectrum Decision)⁽¹⁾, and in particular Article 4(3) thereof,

- (4) As a result of that mandate, the 79 GHz range band has been identified by the CEPT, acting through its Electronic Communications Committee (the ECC), as the most suitable band for long-term and permanent development and deployment of short-range radar. The ECC has concluded that operation of the band should proceed on a non-interference and non-protected basis, in accordance with Radio Regulations adopted by the International Telecommunications Union and pursuant to technical specifications set out by the ECC in its decision of 19 March 2004.

Whereas:

- (1) In its Communication to the Council and the European Parliament of 15 September 2003, entitled 'Information and Communications technologies for safe and intelligent vehicles'⁽²⁾, the Commission announced its intention to improve road safety in Europe, to be known as the eSafety initiative. Such improvements can in particular be achieved by using new information communications technologies and intelligent road safety systems such as automotive short-range radar equipment (SRR). The Council also called on 5 December 2003, in its Conclusions on road safety⁽³⁾, for the improvement of vehicle safety through the promotion of new technologies such as electronic safety.

- (5) The results of the work carried out pursuant to the mandate given to CEPT as regards identification of a long-term and permanent band for short-range radar are acceptable and should be made applicable in the Community in order to ensure the availability and efficient use of the radio spectrum necessary for the establishment and functioning of the internal market. The use of short-range radar in the 79 GHz band should therefore be allowed as soon as possible and by 1 January 2005 at the latest so as to encourage the industry to develop, manufacture and market SRR equipment operating on that band.

- (2) The rapid and coordinated development and deployment of short-range radar within the Community requires that harmonised radio frequency bands be available without

⁽¹⁾ OJ L 108, 24.4.2002, p. 1.

⁽²⁾ COM(2003) 542.

⁽³⁾ 15058/03 TRANS 307.

⁽⁴⁾ Mandate to CEPT to harmonise radio spectrum to facilitate a coordinated EU introduction of automotive short-range radar systems.

- (6) Short-range radar should be used with due consideration to health and safety of the user and any other person, taking in particular account the Council Recommendation 1999/519/EC of 12 July 1999 on the limitation to exposure of the general public to electromagnetic fields (0 to 300 GHz) ⁽¹⁾ and Article 3.1(a) of 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 ⁽²⁾.
- (7) The measures provided for in this Decision are in accordance with the opinion of the Radio Spectrum Committee,

HAS ADOPTED THIS DECISION:

Article 1

The purpose of this Decision is to harmonise the conditions for the availability and efficient use of the 79 GHz range radio spectrum band for automotive short-range radar equipment.

Article 2

For the purposes of this Decision, the following definitions shall apply:

- (a) '79 GHz range radio spectrum band' shall mean the frequency range between 77 and 81 gigahertz;
- (b) 'automotive Short-Range Radar equipment' shall mean equipment providing road vehicle based radar functions for collision mitigation and traffic safety applications;

- (c) a 'non-interference and non-protected basis' shall mean that no harmful interference may be caused to other users of the band and that no claim may be made for protection from harmful interference received from other systems or services operators operating in that band.

Article 3

The 79 GHz range radio spectrum band shall be designated and made available for automotive short-range radar equipment as soon as possible and no later than 1 January 2005, on a non-interference and non-protected basis.

The maximum mean power density shall be of -3 dBm/MHz effective isotropic radiated power (e.i.r.p.) associated with a peak limit of 55 dBm e.i.r.p.

The maximum mean power density outside a vehicle resulting from the operation of one short-range radar shall not exceed -9 dBm/MHz e.i.r.p.

Article 4

This Decision is addressed to the Member States.

Done at Brussels, 8 July 2004.

For the Commission

Erkki LIIKANEN

Member of the Commission

⁽¹⁾ OJ L 199, 30.7.1999, p. 59.

⁽²⁾ OJ L 91, 7.4.1999, p. 10; Directive as amended by Regulation (EC) No 1882/2003 (OJ L 284, 31.10.2003, p. 10).

Annex 5

25.1.2005

EN

Official Journal of the European Union

L 2

COMMISSION

COMMISSION DECISION

of 17 January 2005

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

(notified under document number C(2005) 34)

(Text with EEA relevance)

(2005/50/EC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to Decision No 676/2002/EC of the European Parliament and of the Council of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community (Radio Spectrum Decision)⁽¹⁾, and in particular Article 4(3) thereof,

Whereas:

(1) The Commission communication to the Council and the European Parliament of 2 June 2003 on 'European Road Safety Action Programme — Halving the number of road accident victims in the European Union by 2010: a shared responsibility'⁽²⁾ sets out a coherent approach to road safety in the European Union. Furthermore, in its communication to the Council and the European Parliament of 15 September 2003, entitled 'Information and communications technologies for safe and intelligent vehicles'⁽³⁾, the Commission announced its intention to improve road safety in Europe, to be known as the eSafety initiative, by using new information and communications technologies and intelligent road safety systems, such as automotive short-range radar equipment. On 5 December 2003 in its conclusions on road safety⁽⁴⁾ the Council also called for the improvement of vehicle safety by the promotion of new technologies such as electronic safety.

⁽¹⁾ OJ L 108, 24.4.2002, p. 1.

⁽²⁾ COM(2003) 311.

⁽³⁾ COM(2003) 542.

⁽⁴⁾ Conclusions of the Council of the European Union on road safety, 15058/03 TRANS 307.

(2) The rapid and coordinated development and deployment of automotive short-range radar within the Community require a harmonised radio frequency band to be available for this application in the Community with delay and on a stable basis, in order to provide necessary confidence for industry to make necessary investments.

(3) On 5 August 2003, with a view to such harmonisation the Commission issued a mandate, pursuant to Article 4(2) of Decision No 676/2002/EC, to the European Conference of Postal and Telecommunications Administrations (CEPT), to harmonise the radio spectrum and facilitate a coordinated introduction of automotive short-range radar.

(4) As a result of that mandate, the 79 GHz range band has been identified by CEPT as the most suitable band for long term development and deployment of automotive short-range radar, with the introduction of this measure by January 2005 at the latest. The Commission then adopted Decision 2004/545/EC of 8 July 2004 on the harmonisation of the radio spectrum in the 79 GHz range for the use of automotive short-range radar equipment in the Community⁽⁵⁾.

(5) However, automotive short-range radar technology in the 79 GHz range band is still under development and is not immediately available on a cost-effective basis, although it is understood that the industry will promote the development of such a technology in order to make it available at the earliest possible date.

⁽⁵⁾ OJ L 241, 13.7.2004, p. 66.

- (6) In its report of 9 July 2004 to the European Commission under the mandate of 5 August 2003, CEPT identified the 24 GHz range radio spectrum band as being a temporary solution which would enable the early introduction of automotive short-range radar in the Community to meet the objectives of the e-Safety initiative, since technology is considered sufficiently mature for operation in that band. Therefore, Member States should take the appropriate measures based on their particular national radio spectrum situation to make sufficient radio spectrum available on a harmonised basis in the 24 GHz range radio spectrum band (21,65 to 26,65 GHz), while protecting existing services operating in that band from harmful interference.
- (7) According to footnote 5.340 of the Radio Regulations of the ITU, all emissions are prohibited in the band 23,6 to 24,0 GHz, in order to protect the use on a primary basis of this band by the radio astronomy, earth exploration satellite and space research passive services. This prohibition is justified by the fact that harmful interference to these services by emissions in the band cannot be tolerated.
- (8) Footnote 5.340 is subject to national implementation and may be applied in conjunction with Article 4.4 of the Radio Regulations, pursuant to which no frequency may be assigned to a station in derogation of the Radio Regulations, except on the express condition that such a station, when using such a frequency assignment, shall not cause harmful interference to a station operating in accordance with the provision of the ITU rules. Therefore, in its report to the Commission, CEPT pointed out that footnote 5.340 does not strictly prevent administrations from using bands falling under the footnote, provided that they are neither impacting services of other administrations nor trying to have international recognition under the ITU of such use.
- (9) The 23,6 to 24,0 GHz frequency band is of primary interest for the scientific and meteorological communities to measure water vapour content essential for temperature measurements for the earth exploration satellite service. In particular, this frequency plays an important role in the Global Monitoring for Environment and Security initiative (GMES) aiming at an operational European warning system. The 22,21 to 24,00 GHz frequency range is also needed to measure spectral lines of ammonia and water as well as continuum observations for the radio astronomy service.
- (10) The bands 21,2 to 23,6 GHz and 24,5 to 26,5 GHz are allocated to the fixed service on a primary basis in the ITU Radio Regulations and are extensively used by fixed links to meet the infrastructure requirement for existing 2G and 3G mobile networks and to develop broadband fixed wireless networks.
- (11) Based on studies of compatibility between automotive short-range radar and fixed services, earth exploration satellite services and radio astronomy services, CEPT has concluded that an unlimited deployment of automotive short-range radar systems in the 24 GHz range radio spectrum band will create unacceptable harmful interference to existing radio applications operating in this band. Considering ITU Radio Regulations and the importance of these services, any introduction of automotive short-range radar at 24 GHz could be made only on condition that these services in the band are sufficiently protected. In this respect, while the signal emanating from automotive short-range radar equipment is extremely low in most of the 24 GHz frequency range, it is important to take into account the cumulative effect of the use of many devices, which individually might not cause harmful interference.
- (12) According to CEPT, existing applications operating in or around the 24 GHz band would increasingly suffer significant levels of harmful interference if a certain level of penetration of vehicles using the 24 GHz range radio spectrum band for automotive short-range radars were to be exceeded. CEPT concluded in particular that sharing between earth exploration satellite services and automotive short-range radar could only be feasible on a temporary basis if the percentage of vehicles equipped with 24 GHz automotive short-range radar was limited to 7,0% in each national market. While this percentage has been calculated on the basis of earth exploration satellite pixels, national markets are used as the reference against which to calculate the threshold, as this represents the most effective means of carrying out this monitoring.
- (13) Furthermore, the CEPT report concluded that to maintain the protection requirements of the fixed service, sharing with automotive short-range radar could only be feasible on a temporary basis if the percentage of vehicles equipped with automotive short-range radar within sight of a fixed service receiver was limited to less than 10%.
- (14) It is therefore presumed on the basis of the work carried out by CEPT that harmful interference should not be caused to other users of the band where the total number of vehicles registered, placed on the market or put into service equipped with 24 GHz automotive short-range radar does not exceed the level of 7% of the total number of vehicles in circulation in each Member State.
- (15) It is not presently anticipated that this threshold will be reached before the reference date of 30 June 2013.

- (16) Several Member States also use the 24 GHz range radio spectrum band for radar speed meter control which contributes to traffic safety. Following compatibility studies with automotive short-range radar of a number of these devices operating in Europe, CEPT has concluded that compatibility is possible under certain conditions, principally by decoupling the centre frequencies of the two systems by at least 25 MHz, and that the risk of harmful interference is low and will not create false speed measurements. Manufacturers of vehicles using automotive short-range radar systems have also committed themselves to continue taking appropriate steps to ensure that the risk of interference to radar speed meters is minimal. The reliability of radar speed meter equipment will therefore not be affected by the operation of automotive short-range radar to any significant extent.
- (17) Some Member States will in the future use the band 21,4 to 22,0 GHz for broadcast satellite services in the direction space-to-earth. Following compatibility studies, relevant national administrations have concluded that no compatibility problems exist if the emissions of automotive short-range radar are limited to no more than $-61,3$ dBm/MHz for frequencies below 22 GHz.
- (18) The above presumptions and precautions need to be kept under ongoing objective and proportionate review by the Commission assisted by the Member States, in order to assess on the basis of concrete evidence whether the threshold of 7% will be breached in any national market before the reference date, whether harmful interference has been or is likely to be caused within a short period of time to other users of the band by the breach of the threshold of 7% in any national market, or whether harmful interference has been caused to other users of the band even below the threshold.
- (19) Therefore, as a result of information that becomes available as part of the review process, modifications to the present Decision may turn out to be necessary, in particular to ensure that there is no harmful interference caused to other users of the band.
- (20) Accordingly, there can be no expectation that the band of 24 GHz will continue to be available for automotive short-range radar until the reference date, if any of the abovementioned presumptions prove not to be valid at any time.
- (21) In order to facilitate and render more effective the monitoring of the use of the 24 GHz band and the review process, Member States may decide to draw more directly upon manufacturers and importers for information required in relation to the review process.
- (22) As reported by CEPT, sharing between automotive short-range radar and the radio astronomy service within the 22,21 to 24,00 GHz band could lead to harmful interference for the latter if short-range radar-equipped vehicles were allowed to operate unhindered within a certain distance from each radio astronomy station. Therefore, and bearing in mind that 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⁽¹⁾ requires that radio equipment must be constructed so as to avoid harmful interference, automotive short-range radar systems operating in bands used by radio astronomy in the 22,21 to 24,00 GHz range should be deactivated when moving within these areas. The relevant radio astronomy stations and their associated exclusion zones should be defined and justified by national administrations.
- (23) In order to be effective and reliable, such deactivation is best done automatically. However, to allow an early implementation of automotive short-range radar in 24 GHz, a limited amount of transmitters with manual deactivation can be allowed as, with such a limited deployment, the probability of causing harmful interference to the radio astronomy service is expected to remain low.
- (24) The temporary introduction of automotive short-range radar in the 24 GHz range radio spectrum band has an exceptional character and must not be considered as a precedent for the possible introduction of other applications in the bands where ITU Radio Regulations footnote 5.340 applies, be it for temporary or permanent use. Moreover, automotive short-range radar must not be considered as a safety-of-life service within the meaning of the ITU Radio Regulations and must operate on a non-interference and non-protected basis. Furthermore, automotive short-range radar should not constrain the future development in the use of the 24 GHz band of applications which are protected by footnote 5.340.
- (25) The placing on the market and operation of 24 GHz automotive short-range radar equipment in a stand-alone mode or retrofitted in vehicles already on the market would not be compatible with the objective of avoiding harmful interference to existing radio applications operating in this band, since it could lead to an uncontrolled proliferation of such equipment. In contrast, it should be easier to control the use of automotive short-range radar systems in the 24 GHz band solely as part of a complex integration of the electrical harness, automotive design and software package of a vehicle and originally installed in the new vehicle, or as replacement of original vehicle-mounted automotive short-range radar equipment.
- ⁽¹⁾ OJ L 91, 7.4.1999, p. 10. Directive as last amended by Regulation (EC) No 1882/2003 (OJ L 284, 31.10.2003, p. 1).

(26) This Decision will apply taking into account and without prejudice to Council Directive 70/156/EEC of 6 February 1970 on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers⁽¹⁾ and to Directive 1999/5/EC.

(27) The measures provided for in this Decision are in accordance with the opinion of the Radio Spectrum Committee,

HAS ADOPTED THIS DECISION:

Article 1

The purpose of this Decision is to harmonise the conditions for the availability and efficient use of the 24 GHz range radio spectrum band for automotive short-range radar equipment.

Article 2

For the purposes of this Decision, the following definitions shall apply:

1. '24 GHz range radio spectrum band' means the 24,15 +/- 2,50 GHz frequency band;
2. 'automotive short-range radar equipment' means equipment providing road vehicle-based radar functions for collision mitigation and traffic safety applications;
3. 'automotive short-range radar equipment put into service in the Community' means automotive short-range radar equipment originally installed or replacing one so installed in a vehicle which will be or which has been registered, placed on the market or put into service in the Community;
4. 'on non-interference and non-protected basis' means that no harmful interference may be caused to other users of the band and that no claim may be made for protection from harmful interference received from other systems or services operating in that band;
5. 'reference date' means 30 June 2013;
6. 'transition date' means 30 June 2007;
7. 'vehicle' means any vehicle as defined by Article 2 of Directive 70/156/EEC;
8. 'deactivation' means the termination of emissions by automotive short-range radar equipment;
9. 'exclusion zone' means the area around a radio astronomy station defined by a radius equivalent to a specific distance from the station;

⁽¹⁾ OJ L 42, 23.2.1970, p. 1. Directive as last amended by Commission Directive 2004/104/EC (OJ L 337, 13.11.2004, p. 13).

10. 'duty cycle' means the ratio of time during any one-hour period when equipment is actively transmitting.

Article 3

The 24 GHz range radio spectrum band shall be designated and made available as soon as possible and no later than 1 July 2005, on a non-interference and non-protected basis, for automotive short-range radar equipment put into service in the Community which complies with the conditions laid down in Articles 4 and 6.

The 24 GHz range radio spectrum band shall remain so available until the reference date, subject to the provisions of Article 5.

After that date, the 24 GHz range radio spectrum band shall cease to be available for automotive short-range radar equipment mounted on any vehicle except where that equipment was originally installed, or is replacing equipment so installed, in a vehicle registered, placed on the market or put into service before that date in the Community.

Article 4

The 24 GHz range radio spectrum band shall be available for the ultra-wide band part of automotive short-range radar equipment with a maximum mean power density of -41,3 dBm/MHz effective isotropic radiated power (e.i.r.p.) and peak power density of 0 dBm/50MHz e.i.r.p., except for frequencies below 22 GHz, where the maximum mean power density shall be limited to -61,3 dBm/MHz e.i.r.p.

The 24,05 to 24,25 GHz radio spectrum band is designated for the narrow-band emission mode/component, which may consist of an unmodulated carrier, with a maximum peak power of 20 dBm e.i.r.p. and a duty cycle limited to 10% for peak emissions higher than -10 dBm e.i.r.p.

Emissions within the 23,6-24,0 GHz band that appear 30° or greater above the horizontal plane shall be attenuated by at least 25 dB for automotive short-range radar equipment placed on the market before 2010 and thereafter by at least 30 dB.

Article 5

1. The continued availability of the 24 GHz range radio spectrum band for automotive short-range radar applications shall be kept under active scrutiny to ensure that the main premise of opening this band to such systems remains valid, which is that no harmful interference is caused to other users of the band, in particular through the timely verification of:

- (a) the total number of vehicles registered, placed on the market or put into service equipped with 24 GHz automotive short-range radar in each Member State, to verify that this number does not exceed the level of 7 % of the total number of vehicles in circulation in each Member State;
- (b) whether adequate information has been made available by Member States or by manufacturers and importers regarding the number of 24 GHz short-range radar-equipped vehicles for the purpose of monitoring effectively the use of the 24 GHz band by automotive short-range radar equipment;
- (c) whether the individual or cumulative use of 24 GHz automotive short-range radar is causing or is likely to cause within a short period of time harmful interference to other users in the 24 GHz band or in adjacent bands in at least one Member State, whether or not the threshold referred to in (a) has been reached;
- (d) the continuing appropriateness of the reference date.

2. In addition to the review process in paragraph 1, a fundamental review shall be carried out by 31 December 2009 at the latest to verify the continuing relevance of the initial assumptions concerning the operation of automotive short-range radar in the 24 GHz range radio spectrum band, as well as to verify whether the development of automotive short-range radar technology in the 79 GHz range is progressing in such a way as to ensure that automotive short-range radar applications operating in this radio spectrum band will be readily available by 1 July 2013.

3. The fundamental review may be triggered by a reasoned request by a member of the Radio Spectrum Committee, or at the Commission's own initiative.

4. The Member States shall assist the Commission to carry out the reviews referred to in paragraphs 1 and 2 by ensuring that the necessary information is collected and provided to the Commission in a timely manner, in particular the information set out in the Annex.

Article 6

1. Automotive short-range radar equipment mounted on vehicles shall only operate when the vehicle is active.

2. Automotive short-range radar equipment put into service in the Community shall ensure protection of the radio astronomy stations operating in the radio spectrum band 22,21 to 24,00 GHz defined in Article 7 through automatic deactivation in a defined exclusion zone or via another method providing equivalent protection for these stations without driver intervention.

3. By way of derogation to paragraph 2, manual deactivation will be accepted for automotive short-range radar equipment put into service in the Community operating in the 24 GHz range radio spectrum band before the transition date.

Article 7

Each Member State shall determine the relevant national radio astronomy stations to be protected pursuant to Article 6(2) in its territory and the characteristics of the exclusion zones pertaining to each station. This information, supported by appropriate justification, shall be notified to the Commission within six months of adoption of this Decision, and published in the *Official Journal of the European Union*.

Article 8

This Decision is addressed to the Member States.

Done at Brussels, 17 January 2005.

For the Commission
Viviane REDING
Member of the Commission

ANNEX

Information required for monitoring the use of the 24 GHz range radio spectrum band by automotive short-range radar

This Annex establishes the data required to verify the penetration rate of automotive vehicles equipped with short-range radar in each Member State of the European Union in accordance with Article 5. This data shall be used to calculate the proportion of vehicles equipped with short-range radar using the 24 GHz range radio spectrum compared to the total number of vehicles in circulation in each Member State.

The following data shall be collected on a yearly basis:

- (1) the number of vehicles equipped with short-range radar using the 24 GHz range radio spectrum band produced and/or placed on the market and/or registered for the first time during the reference year in the Community;
- (2) the number of vehicles equipped with short-range radar using the 24 GHz range radio spectrum band imported from outside the Community during the reference year;
- (3) the total number of vehicles in circulation during the reference year.

All data shall be accompanied by an evaluation of the uncertainty related to the information.

In addition to the above data, any other relevant information which would assist the Commission in maintaining an adequate overview on the continued use of the 24 GHz range radio spectrum band by automotive short-range radar devices shall be made available in a timely fashion, including information on:

- current and future market trends, both within and outside the Community,
- after-market sales and retrofitting of equipment,
- the state of progress of alternative technologies and applications, notably automotive short-range radar operating in the 79 GHz range radio spectrum band according to Decision 2004/545/EC.

Annex 6

24 GHz Exclusion Zones around UK Radio Astronomy Sites

The exclusion zone radius for each UK radio telescope has been calculated on the basis of the following criteria:-

- An ITU-R Recommendation RA.769 radio astronomy protection level of -215 dBW/(m².Hz) for single dish spectral line observations and a protection level of -208 dBW/(m².Hz) for continuum measurements made on radio telescopes operating in the MERLIN network.
- Standard radio telescope antenna gain of 0dBi (RA.769)
- Propagation model P452
- Additional local loss increasing with distance @ 1dB per km
- UWB e.i.r.p -41.3dBm/MHz (-71.3dBW/MHz)
- Maximum density of 24 GHz devices of 1 per square km

Five of the six major UK radio telescopes perform observations around 24 GHz and can be divided into two categories; The most sensitive measurements are undertaken with single dish radio telescopes at Jodrell Bank and Cambridge, while measurements at Knockin, Pickmere and Darnhall are undertaken with the radio telescopes linked in the more resilient MERLIN array of networked sites.

After considering all these factors the exclusion radii have been determined to be 9 km for sites used for single dish measurements and 5 km at the networked sites.

OBSERVATORY	LOCATION		EXCLUSION ZONE RADIUS (km)
Jodrell Bank	02° 18'26" W	53° 14'10" N	9
Cambridge	00° 02'20" E	52° 09'59" N	9
Darnhall	02° 32'03" W	53° 09'22" N	5
Pickmere	02° 26'38" W	53° 17'18" N	5
Knockin	02° 59'45" W	52° 47'24" N	5

For illustrative purposes only these zones are shown on the following maps.

Map 1 - Pickmere



Map Images © Crown copyright. All rights reserved.
Licensee: Ofcom; licence number: 100018047; published: 2005.

Map 2 - Darnhall



Map Images © Crown copyright. All rights reserved.
Licensee: Ofcom; licence number: 100018047; published: 2005.

Map 3 – Knockin



Map Images © Crown copyright. All rights reserved.
Licensee: Ofcom; licence number: 100018047; published: 2005.

Map 4 – Jodrell Bank



Map Images © Crown copyright. All rights reserved.
Licensee: Ofcom; licence number: 100018047; published: 2005.

Map 5 – Cambridge



Map Images © Crown copyright. All rights reserved.
Licensee: Ofcom; licence number: 100018047; published: 2005.