Notice of Ofcom's proposal to make the Wireless Telegraphy (Ultra-Wideband Equipment) (Exemption) Regulations 2009

Consultation

Publication date: 1 July 2009

Closing Date for Responses: 4 August 2009

Contents

Section 1

Executive Summary

1.1 This document consults on draft regulations to make the Wireless Telegraphy (Ultra-Wideband Equipment) (Exemption) Regulations 2009 (the "Proposed Regulations"). The Proposed Regulations will also revoke the Wireless Telegraphy (Ultra-Wideband Equipment) (Exemption) Regulations 2007 (the "Principal Regulations") and the Wireless Telegraphy (Ultra-Wideband Equipment) (Exemption) (Amendment) Regulations 2007.

1.2 Ultra-wideband (UWB) is a generic term for technologies typically characterised by the emission of very low power radiation spread over a very large radio bandwidth. This is unlike other wireless systems, which use spectrum in discrete narrow frequency bands. UWB can transfer large amounts of data wirelessly over short distances, typically less than ten metres. Using mitigation techniques multiple pieces of UWB equipment are able to operate in the same area.

1.3 The Proposed Regulations will implement the requirements of the European Commission Decision of 21 April 2009 (2009/343/EC) (the "UWB Amendment Decision") .[1] The UWB Amendment Decision amends Decision 2007/131/EC on allowing the use of the radio spectrum for equipment using ultra-wideband technology in a harmonised manner in the Community (the "UWB Decision").[2] All Member States are required to implement the UWB Amendment Decision - a copy of which can be found in Annex 7.

1.4 We are revoking the two previous regulations from 2007 and making a new set of regulations as we believe that this will reduce the regulatory burden on stakeholders and simplify the legislation. If we made regulations that amended the current UWB Regulations, manufactures would have had to refer to three sets of regulations in order to understand the technical parameters required for licence exemption in the UK. By revoking the previous legislation, and making a new Statutory Instrument, stakeholders would only need to consult one set of regulations.

1.5 The Proposed Regulations will replace the existing technical parameters for the establishment, installation or use of UWB equipment and will enable new equipment to use UWB technology. For the purpose of this notice the word "use" in the context of UWB equipment also includes establishing or installing such equipment. The Proposed Regulations will:

- prescribe transmission limits for the use of UWB equipment in certain frequency bands where mitigation techniques are not being applied and the equipment is used either indoors, or other than indoors provided that it is not attached to a fixed installation, fixed infrastructure, fixed outdoor antenna, or an automotive vehicle or railway vehicle (the "generic transmission limits");

- provide for UWB equipment to be used at higher transmission limits than the generic transmission limits prescribed, where appropriate mitigation techniques are applied;

[1] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:105:0009:0013:EN:PDF
[2] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:055:0033:0036:EN:PDF

- provide for the use of UWB equipment in automotive and railway vehicles; and
- introduce limits to allow the use of Building Material Analysis (BMA) equipment.

1.6 An impact assessment for the Proposed Regulations is available at Annex 5 to this document. The Proposed Regulations are included in this document at Annex 6. Further copies may be obtained from www.ofcom.org.uk or from Ofcom at Riverside House, 2a Southwark Bridge Road, London SE1 9HA. Comments on the Proposed Regulations are invited by **5pm** on **4 August 2009**. Subject to consideration of responses we intend to bring the new Regulations into force by November 2009.

Section 2

Background

2.1 We are responsible for authorising civil use of the radio spectrum and achieve this by granting wireless telegraphy licences under the Wireless Telegraphy Act 2006 ("the WT Act") and by making regulations exempting users of particular equipment from the requirement to hold such a licence. Under section 8(1) of the WT Act, it is an offence to establish, install or use equipment to transmit without holding a licence granted by us unless the use of such equipment is exempted. Ofcom can exempt the establishment, installation or use of wireless telegraphy equipment by making Regulations under section 8(3) of the WT Act. Under section 8(4) of the WT Act, we must make regulations to exempt equipment if its installation or use is unlikely to cause undue interference.

2.2 In accordance with the requirements of section 122(4) and (5) of the WT Act this document gives notice of our intention to make the Proposed Regulations.

European Commission Decision on UWB

2.3 In February 2007 the European Commission adopted the UWB Decision This harmonised across the European Union (EU) the technical conditions for UWB equipment in order to eliminate barriers to the uptake of UWB equipment and created a single market that would allow manufacturers to benefit from economies of scale and allow consumers and citizens to benefit from new technologies and cheaper prices.

2.4 The Principal Regulations came into force on 13 August 2007[3] and implemented the UWB Decision in the UK. The Principal Regulations were amended on 17 August 2007 by the Wireless Telegraphy (Ultra-Wideband Equipment) (Exemption) (Amendment) Regulations 2007[4] (the "Amendment Regulations") to correct an error in the Principal Regulations.

2.5 The effect of the Principal Regulations (as amended) is to exempt the use of UWB equipment from the need to be licensed, where it does not cause or contribute to undue interference and only emits transmissions at the specified limits in certain frequencies. The equipment must also be used either indoors, or other than indoors, providing it is not attached to a fixed installation, fixed infrastructure, fixed outdoor antenna, or an automotive vehicle or railway vehicle. The Regulations also make provision for UWB equipment to be used in certain frequency bands at limits that are higher than the prescribed transmission limits for those bands, where a Low Duty Cycle ("LDC") mitigation technique is applied.

2.6 Due to changes in technologies since the UWB Decision was adopted the European Commission issued mandates to the European Conference of Postal and Telecommunications Administrations (CEPT), to undertake further compatibility studies of UWB technologies. In its report[5] the CEPT advised the European

[3] http://www.opsi.gov.uk/si/si2007/pdf/uksi_20072084_en.pdf
[4] http://www.opsi.gov.uk/si/si2007/pdf/uksi_20072440_en.pdf
[5] http://ec.europa.eu/information_society/policy/ecomm/radio_spectrum/_document_storage/rsc/rsc27_public_docs/rscom09-20%20%20cept%20report%2027%20in%20response%20to%20the%20mandate%204%20on%20uwb.pdf

Commission to amend a number of technical aspects in the UWB Decision. The report set out the technical conditions under which specific mitigation techniques, notably Detect and Avoid (DAA) and LDC, would enable UWB equipment to be operated with higher transmission powers while offering equivalent protection comparable to the existing generic limits.DAA is a set of rules that equipment uses to ensure that it does not interfere with another piece of equipment that is operating in the same area. When switched on, UWB equipment using DAA will monitor the current usage of the frequency band to detect any actively operating systems in the area. Based on the monitoring results the equipment will then select the frequency and transmission level at which to operate. When operating, DAA still monitors the frequencies for any changes and makes any necessary adjustments to the operation of the equipment. Full technical details regarding the requirements for UWB DAA can be found in ECC Report 120.[6]

2.7 The CEPT report also demonstrated that UWB equipment may be used under more stringent conditions than the generic limits in automotive and railway vehicles. This enables the current prohibition against attaching UWB equipment to automotive and railway vehicles to be relaxed to the extent that UWB equipment can now be used inside such vehicles as long as appropriate mitigation techniques are used.

2.8 Another area where the CEPT believed that the UWB Decision could be amended was to allow the use of BMA equipment, such as imaging systems. CEPT advised the European Commission that more relaxed conditions of use than those currently prescribed are feasible for BMA imaging systems. This was based on how BMA equipment operates, combined with very low deployment densities which mitigate the possibility of harmful interference to other services.

2.9 The European Commission also gave mandates to the European Telecommunications Standards Institute (ETSI) to establish a set of Harmonised Standards for UWB equipment. ETSI developed Harmonised Standard EN 302 065[7] on generic UWB equipment, Harmonised Standard EN 302 500[8] for UWB Location Tracking equipment and Harmonised standard EN 302 435[9] on BMA equipment.

2.10 Taking account of the CEPT report and the Harmonised Standards developed by ETSI the Commission decided to amend the UWB Decision in April 2009.

Licence exemption parameters for UWB equipment

2.11 The UWB Amendment Decision introduces a number of changes to the UWB Decision, these changes:

- prescribe transmission limits for the use of UWB equipment in certain frequency bands where mitigation techniques are not being applied and the equipment is used either indoors, or other than indoors provided that it is not attached to a fixed installation, fixed infrastructure, fixed outdoor antenna, or an automotive vehicle or railway vehicle (the “generic transmission limits”);

- increase the generic transmission limits from those currently allowed in the 2.7 – 3.4 GHz and 3.4 – 3.8 GHz frequency bands for the use of UWB equipment;

[6] www.erodocdb.dk/Docs/doc98/Official/Pdf/ECCRep120.pdf
[7] Version 1.1.1 was published by ETSI in February 2008.
[8] This Standard is in two parts; EN 302 500 -1 and EN 302 500-2. Versions1.2.1 of each document was published by ETSI in June 2008
[9] Version 1.2.1 was published by ETSI in April 2008.

- make it possible for UWB equipment to be used at higher transmission limits than the generic limits prescribed, provided that appropriate mitigation techniques are applied to achieve the same level of protection from interference. LDC and DAA mitigation techniques will, in particular, provide sufficient mitigation from interference when applied in certain frequency bands;

- provide for the use of UWB equipment in automotive and railway vehicles; and

- introduce limits to allow the use of BMA equipment.

Generic limits

2.12 The "generic" transmission limits are those which apply when UWB equipment is used without applying mitigation techniques, either indoors, or other than indoors provided that the equipment is not attached to a fixed installation, fixed infrastructure, fixed outdoor antenna, or an automotive vehicle or railway vehicle. These limits will remain the same for all frequency bands as they were under the UWB Decision, except for the 2.7 – 3.4 GHz and 3.4 – 3.8 GHz frequency bands. In those bands the transmission limits will increase.

2.13 Table 1 sets out the generic transmission limits in relation to the use of UWB equipment.

Table 1: Generic UWB power limits

Frequency Range (GHz)	Maximum mean e.i.r.p. density (dBm/MHz)	Maximum peak e.i.r.p. density (dBm/50MHz)
Below 1.6	-90	-50
1.6 – 2.7	-85	-45
2.7 – 3.4	-70	-36
3.4 – 3.8	-80	-40
3.8 – 4.2	-70	-30
4.2 – 4.8	-41.3 (until 31st December 2010) -70.0 (beyond 31st December 2010)	0 (until 31st December 2010) -30.0 (beyond 31st December 2010)
4.8 – 6.0	-70	-30
6.0 – 8.5	-41.3	0
8.5 – 10.6	-65	-25
Above 10.6	-85	-45

2.14 Like the UWB Decision, the UWB Amendment Decision provides for a higher level of emissions on a time-limited basis in relation to equipment operating in the 4.2 – 4.8 GHz band. Until 31 December 2010 the permitted transmission limits are 41.3dBm/MHz (maximum mean density) and 0dBm/ 50MHz (maximum peak e.i.r.p. density). After 31 December 2010, the exemption will be more restrictive and a lower emission level of -70.0dBm/MHz (maximum mean density) and -30.0 dBm/50 MHz (maximum peak e.i.r.p. density) will be permitted. We will amend the Proposed Regulations in 2010 to recognise the more restrictive emission levels that will apply from the end of 2010.

Mitigation techniques for generic use

2.15 The UWB Decision enabled higher e.i.r.p. limits to be used in the 3.4 – 4.8 GHz frequency band providing that LDC mitigation was used. It also provided discretion for Member States to allow UWB equipment to be used with different transmission limits from those prescribed in the generic limits, provided that appropriate mitigation techniques were applied to achieve an equivalent level of protection against interference. Ofcom chose not to include other appropriate mitigation techniques within the scope of the Principal Regulations on the basis that those techniques were still subject to further study.

2.16 The UWB Amendment Decision makes it a requirement for Member States to allow UWB equipment to be used at higher transmission limits than those prescribed in the generic limits, where appropriate mitigation techniques are applied. Such techniques include those described in the relevant harmonised standards adopted under Directive 1999/5/EC[10], or other mitigation techniques, provided that they achieve at least an equivalent level of protection against interference as provided by the generic limits. The harmonised standards specifically referred to in Recital 10 of the Decision are those developed by the ETSI and include EN 302 065 (on generic UWB equipment)[11]; EN 302 500 (on Location Tracking equipment)[12]; and EN 302 435 (on BMA equipment)[13].

2.17 The UWB Amendment Decision sets out two mitigation techniques which will, in particular, be presumed to provide the required level of protection against interference in certain frequency bands.

2.18 In the 3.1 – 4.8 GHz frequency band a LDC mitigation technique will be presumed to provide a level of protection that is at least equivalent to the generic limits where transmissions have a maximum e.i.r.p. density of -41.3 dBm/MHz and a maximum peak e.i.r.p. of 0 dBm measured in 50MHz; the sum of all transmitted signals is less than 5% of the time each second and less than 0.5% of the time each hour; and each transmitted signal does not exceed 5ms.

2.19 In the 3.1 – 4.8 GHz and 8.5 – 9.0 GHz frequency bands a DAA mitigation technique as described in the relevant Harmonised Standards[14] adopted under Directive 1999/5/EC will be presumed to provide a level of protection that is at least equivalent to the generic limits, where transmissions have a maximum mean e.i.r.p. density of -41.3 dBm/MHz and a maximum peak e.i.r.p. of 0 dBm measured in 50 MHz.UWB equipment in Automotive and Railway vehicles and mitigation

2.20 In the UWB Decision the use of UWB equipment was not allowed if it was attached to an automotive or railway vehicle. This was reflected in the Principal Regulations. The UWB Amendment Decision now allows for the use of UWB equipment insofar as it is used inside an automotive or railway vehicle. Accordingly, the Proposed Regulations will allow UWB equipment to be used in an automotive or railway vehicle providing that:

[10] Directive of the European Parliament and of the Council on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity, 9 March 1999.
[11] Version 1.1.1 was published by ETSI in February 2008.
[12] This Standard is in two parts; EN 302 500 -1 and EN 302 500-2. Versions1.2.1 of each document was published by ETSI in June 2008.
[13] Version 1.2.1 was published by ETSI in April 2008.
[14] The standard EN 302 065 that includes DAA is still a draft format has yet to be finalised. It is scheduled for public consultation in December 2009, further information on the process can be found here: http://webapp.etsi.org/workProgram/Report_Schedule.asp?WKI_ID=30877

- if operating at frequencies up to and including 4.2 GHz, or in the frequency band 4.8 GHz - 6.0 GHz, or at frequencies above 8.5 GHz, the transmission limits are the same as the generic transmission limits; or

- if operating in the frequency bands 4.2 GHz - 4.8 GHz or 6.0 GHz - 8.5 GHz the equipment is used with a maximum mean e.i.r.p density no greater than -41.3 dBm/MHz and a Transmitter Power Control (TPC) range of at least 12 dB is applied. If TPC is not applied then the maximum mean e.i.r.p. density allowed will be -53.3 dBm/MHz.

2.21 TPC is an interference mitigation technique that is used to control network equipment in order to prevent interference. UWB equipment that is using TPC will automatically reduce its transmission power when other UWB equipment is within range. By reducing the power to the level necessary to transmit information between pieces of UWB equipment this should reduce the risk of interference to other networks and equipment.

2.22 The UWB Amendment Decision also allows UWB equipment to be used in automotive or railway vehicles at transmission limits that are higher than, or equivalent to, those set out at paragraph 2.20 above, where appropriate mitigation techniques are applied. Again, such techniques include those described in the relevant Harmonised Standards adopted under Directive 1999/5/EC[15], or other mitigation techniques, provided that they achieve at least an equivalent level of protection against interference as provided by the generic limits.

2.23 The UWB Amendment Decision sets out two mitigation techniques which will, in particular, be presumed to provide the required level of protection against interference in certain frequency bands when equipment is used in automotive or railway vehicles.

2.24 In the 3.1 – 4.8 GHz frequency band a LDC mitigation technique will be presumed to provide a level of protection that is at least equivalent to the transmission limits set out at paragraph 2.20 above, where it is applied in the same way as set out at paragraph 2.18 above.

2.25 In the 3.1 – 4.8 GHz and 8.5 – 9.0 GHz frequency bands a DAA mitigation technique will be presumed to provide a level of protection that is at least equivalent to the transmission limits set out at paragraph 2.20 above, where transmissions have a maximum mean e.i.r.p. density of -41.3 dBm/MHz and a maximum peak e.i.r.p. of 0 dBm measured in 50 MHz, and a TPC range of at least 12dB is applied. In the absence of a TPC range being applied, the maximum e.i.r.p. density of transmissions must be no greater than -53.3 dBm/MHz.

BMA equipment and mitigation

2.26 BMA is a specific application using UWB technology to provide accurate imaging measurements. BMA imaging systems can detect or take images of pipes, wires and other structures embedded in a wall. The narrow pulses used by BMA imaging systems enable them to make measurements, allowing the identification of different materials and analysis in three-dimensions to an accuracy of one millimetre. BMA

[15] Directive of the European Parliament and of the Council on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity, 9 March 1999. The relevant Harmonised Standards are also the same as those referred to in paragraph 2.21 above.

equipment is expected to be used in a number of markets including the workplace, security, and manufacturing.

2.27 The UWB Amendment Decision allows for BMA equipment to be used in certain frequencies at the transmission limits set out in Table 2.

Table 2: Transmission limits for the use of BMA equipment

Frequency Range (GHz)	Maximum mean e.i.r.p. density (dBm/MHz)	Maximum peak e.i.r.p. density (dBm/50MHz)	Maximum total radiated power density (dBm/MHz)
Below 1.730	-85	-45	
1.730 – 2.200	-65	-25	
2.200 – 2.500	-50	-10	
2.500 – 2.690	-65	-25	
2.690 – 2.700	-55	-15	Below -65
2.700 – 3.400	-82	-42	
3.400 – 4.800	-50	-10	
4.800 – 5.000	-55	-15	Below - 65
5.000 – 8.000	-50	-10	
8.000 – 8.500	-70	-30	
Above 8.500	-85	-45	

2.28 In order to protect Radio Astronomy Services the maximum total radiated power density must be below -65 dBm/MHz in the 2.690 – 2.700 and 4.800 – 5.000 GHz frequency bands.

2.29 The UWB Amendment Decision also provides for BMA equipment to be used in certain frequency bands at higher transmissions limits where mitigation techniques are applied that provide an equivalent level of protection against interference to that provided by the limits in Table 2. In particular, the mitigation techniques applied must provide at least an equivalent level of performance to the techniques described in the harmonised standards adopted under Directive 1999/5/EC[16]. BMA equipment may then be used in the 1.215 – 1.730 GHz frequency band with a maximum mean e.i.r.p. density of -70 dBm/MHz, and in the frequency bands 2.500 – 2.690 GHz and 2.700 – 3.400 GHz with a maximum e.i.r.p. density of -50 dBm/MHz.

Next steps

2.30 Following the publication of this consultation document, stakeholders are welcome to provide their feedback. The deadline to submit responses to us is 5pm 4 August 2009. We expect to release a Statement on this consultation in September 2009, having taken into account the stakeholder responses to our proposals and to make, and bring into force, the regulations by November 2009.

[16] See footnotes 7 above.

Section 3

General effect of the Wireless Telegraphy (Ultra-Wideband Equipment) (Exemption) Regulations 2009

The legislative framework

3.1 Ofcom can exempt the establishment, installation and use of wireless telegraphy equipment by making Regulations under section 8(3) of the WT Act. We propose to implement the changes proposed in this document by making the Proposed Regulations. The Principal Regulations and the Amendment Regulations will be replaced by the Proposed Regulations.

3.2 A draft of the Proposed Regulations is included in Annex 6 of this document.

Extent of application

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

The Proposed Regulations

3.4 The proposed Regulations will implement the UWB Amendment Decision as closely as possible.

3.5 The Proposed Regulations we are now consulting on will replace the Principal and Amendment Regulations and will exempt the use of UWB equipment pursuant to section 8(3) of the WT Act. The Proposed Regulations set out the terms, provisions and limitations to be complied with for establishment, installation and use of UWB equipment (referred to simply as “use” for the purpose of this notice).. The purpose of the Proposed Regulations is to reflect developments in UWB technology and to allow greater use of radio spectrum equipment while ensuring that other spectrum users are not adversely affected.

3.6 Regulation 3 sets out the definitions which apply in this particular statutory instrument. This regulation implements Article 2 of the UWB Decision and Article 2 of the UWB Amendment Decision.

3.7 Regulation 4 exempts the establishment, installation or use of equipment complying with the specifications in regulations 5 to 7 from the need to be licensed under the WT Act. This regulation implements Article 3 of the UWB Decision and Article 1 of the UWB Amendment Decision.

3.8 Regulation 5 sets out the generic transmission limits that shall apply when the use of UWB equipment does not cause or contribute to undue interference and it is used either indoors, or other than indoors provided that it is not attached to a fixed installation, a fixed infrastructure or a fixed outdoor antenna. The exemption also applies to UWB equipment which is not attached to, or being used in, an automotive vehicle or a railway vehicle and which does not cause or contribute to undue

interference. This regulation implements Article 1 and paragraph 1.1 of the Annex of the UWB Amendment Decision.

3.9 Regulation 6 extends the exemption provided for in regulation 4 to include UWB equipment which emits transmissions at higher levels than the limits prescribed in regulation 5, where there are appropriate techniques in place to mitigate interference to other users of the electromagnetic spectrum. The techniques are, in particular, those described in the harmonised standards adopted under Article 5 of Directive 1999/5/EC (regulation 6(1)(a)), or other techniques which achieve an equivalent level of protection to that provided by the harmonised standards (regulation 6(1)(b)). It shall be presumed that, in relation to the frequencies from 3.1 GHz up to and including 4.8 GHz, the use of an LDC mitigation technique as set out in regulation 6(2) shall satisfy the requirements of regulation 6(1)(b). It shall also be presumed that, in relation to the frequencies from 3.1 GHz and up to and including 4.2 GHz, and at frequencies from 8.5 GHz and up to and including 9.0 GHz, the use of a DAA mitigation technique as set out in regulation 6(3) shall satisfy the requirements of regulation 6(1)(b). Regulation 6 implements Article 1 and paragraph 1.2 of the Annex of the UWB Amendment Decision.

3.10 Regulation 7 replicates the exemption provided for in regulation 4 for the purposes of regulations 8 and 9. It implements Article 1 and paragraph 1.3 of the Annex of the UWB Amendment Decision.

3.11 Regulation 8 sets out the general transmission limits that shall apply when the use of UWB equipment does not cause or contribute to undue interference and it is used inside an automotive vehicle or a railway vehicle. The exemption does not, however, apply to UWB equipment which is attached to the outside of such a vehicle. This regulation implements Article 1 and paragraph 1.3 of the Annex of the UWB Amendment Decision.

3.12 Regulation 9 extends the exemption provided for in regulation 7 to include UWB equipment which emits transmissions at higher levels than the limits prescribed in regulation 8, where there are appropriate techniques in place to mitigate interference to other users of the electromagnetic spectrum. The techniques are, in particular, those described in the harmonised standards adopted under Article 5 of Directive 1999/5/EC (regulation 9(1)(a)), or other techniques which achieve an equivalent level of protection to that provided by the harmonised standards (regulation 9(1)(b)). It shall be presumed that, in relation to the frequencies from 3.1 GHz up to and including 4.8 GHz, the use of an LDC mitigation technique as set out in regulation 9(2) shall satisfy the requirements of regulation 9(1)(b). It shall also be presumed that, in relation to the frequencies from 3.1 GHz and up to and including 4.2 GHz, and at frequencies from 8.5 GHz and up to and including 9.0 GHz, the use of a DAA mitigation technique as set out in regulation 9(3) shall satisfy the requirements of regulation 9(1)(b). Regulation 9 implements Article 1 and paragraph 1.3 of the Annex of the UWB Amendment Decision.

3.13 Regulation 10 replicates the exemption provided for in regulation 4 for the purposes of regulation 11. It implements Article 1 and paragraph 2 of the Annex of the UWB Amendment Decision.

3.14 Regulation 11 sets out the transmission limits that shall apply when the use of BMA equipment does not cause or contribute to undue interference and it is used in accordance with the transmissions limits prescribed in regulations 11(3) and 11(4). Regulation 11 implements Article 1 and paragraph 2 of the Annex of the UWB Amendment Decision.

3.15 The particular harmonised standards referred to in regulations 6, 9 and 11 include, in particular, the ETSI harmonised standard EN 302 065([17]) on generic UWB equipment, the ETSI harmonised standards EN 302 500-1([18]) and EN 302 500-2([19]) for UWB location tracking equipment, and the ETSI harmonised standard EN 302 435([20]). Directive 1999/5/EC may be accessed at http://www.etsi.org/WebSite/Technologies/UltraWideBand.aspx. The harmonised standards made under that Directive may be accessed at http://ec.europa.eu/enterprise/newapproach/standardization/harmstds/reflist/radiotte.html.

Do you have any comments on the Proposed Regulations that we have drafted in order to implement the UWB Amendment Decision?

([17]) Version 1.1.1 was published by ETSI in February 2008
([18]) Version 1.2.1 was published by ETSI in June 2008.
([19]) Version 1.2.1 was published by ETSI in June 2008.
([20]) Version 1.2.1 was published by ETSI in April 2008.

Annex 1

Responding to this consultation

How to respond

A1.1 We invite written views and comments on the issues raised in this document, to be made **by 5pm on 4 August 2009**.

A1.2 We strongly prefer to receive responses using the online web form at http://www.ofcom.org.uk/consult/condocs/regs2009/howtorespond/form, 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 4), to indicate whether or not there are confidentiality issues. This response coversheet is incorporated into the online web form questionnaire.

A1.3 For larger consultation responses - particularly those with supporting charts, tables or other data - please email paul.chapman@ofcom.org.uk attaching your response in Microsoft Word format, together with a consultation response coversheet.

A1.4 Responses may alternatively be posted or faxed to the address below, marked with the title of the consultation.

Paul Chapman
Floor 3
Spectrum Policy Group
Riverside House
2A Southwark Bridge Road
London SE1 9HA

Fax: 020 7981 3921

A1.5 Note that we do not need a hard copy in addition to an electronic version. Ofcom will acknowledge receipt of responses if they are submitted using the online web form but not otherwise.

A1.6 It would be helpful if your response could include direct answers to the questions asked in this document, which are listed together in annex 3. It would also help if you can explain why you hold your views and how our proposals would impact on you.

Further information

A1.7 If you want to discuss the issues and questions raised in this consultation, or need advice on the appropriate form of response, please contact Paul Chapman on 020 7981 3069.

Confidentiality

A1.8 We believe 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. If you think your response should be kept confidential, can you please specify what part or whether

all of your response should be kept confidential, and specify why. Please also place such parts in a separate annex.

A1.9 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and will try to respect this. But sometimes we will need to publish all responses, including those that are marked as confidential, in order to meet legal obligations.

A1.10 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use. Our approach on intellectual property rights is explained further on its website at http://www.ofcom.org.uk/about/accoun/disclaimer/

Next steps

A1.11 Following the end of the consultation period, we intend to publish a statement in September 2009.

A1.12 Please note that you can register to receive free mail Updates alerting you to the publications of relevant Ofcom documents. For more details please see: http://www.ofcom.org.uk/static/subscribe/select_list.htm

Ofcom's consultation processes

A1.13 We seek to ensure that responding to a consultation is easy as possible. For more information please see our consultation principles in Annex 2.

A1.14 If you have any comments or suggestions on how we conduct our 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, who are less likely to give their opinions through a formal consultation.

A1.15 If you would like to discuss these issues or Ofcom's consultation processes more generally you can alternatively contact Vicki Nash, Director Scotland, who is Ofcom's consultation champion:

A1.16 Vicki Nash
Ofcom
Sutherland House
149 St. Vincent Street
Glasgow G2 5NW

Tel: 0141 229 7401
Fax: 0141 229 7433

Email vicki.nash@ofcom.org.uk

Annex 2

Our consultation principles

A2.1 We have published the following seven principles that we will follow for each public written consultation.

Before the consultation

A2.2 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

A2.3 We will be clear about whom we are consulting, why, on what questions and for how long.

A2.4 We will make the consultation document as short and simple as possible. 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 Plain English Guide for smaller organisations or individuals who would otherwise not be able to spare the time to share their views.

A2.5 We will consult for up to 10 weeks depending on the potential impact of our proposals.

A2.6 A person within Ofcom 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. Our consultation champion will also be the main person to contact with views on the way we run our consultations.

A2.7 If we are not able to follow one of these principles, we will explain why.

After the consultation

A2.8 We think it is important for everyone interested in an issue to see the views of others during a consultation. We will usually publish all the responses we have received on our website. In our statement, we will give reasons for our decisions and will give an account of how the views of those concerned helped shape them.

Annex 3

Questions

Do you have any comments on the Proposed Regulations that we have drafted in order to implement the UWB Amendment Decision?

Annex 4

Consultation response cover sheet

A4.1 In the interests of transparency and good regulatory practice, we will publish all consultation responses in full on our website, www.ofcom.org.uk.

A4.2 We have produced a coversheet for responses (see below) and would be very grateful if you could send one with your response (this is incorporated into the online web form if you respond in this way). This will speed up our processing of responses, and help to maintain confidentiality where appropriate.

A4.3 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 complete their coversheet in a way that allows Ofcom to publish their responses upon receipt, rather than waiting until the consultation period has ended.

A4.4 We strongly prefer to receive responses via the online web form which incorporates the coversheet. If you are responding via email, post or fax you can download an electronic copy of this coversheet in Word or RTF format from the 'Consultations' section of our website at www.ofcom.org.uk/consult/.

A4.5 Please put any parts of your response you consider should be kept confidential in a separate annex to your response and include your reasons why this part of your response should not be published. This can include information such as your personal background and experience. If you want your name, address, other 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

Please tick below what part of your response you consider is confidential, giving your reasons why

Nothing ☐

Whole response ☐

Part of the response ☐

Name/contact details/job title ☐

Organisation ☐

If there is no separate annex, which parts?

If you want part of your response, your name or your organisation not to be published, 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)?

DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response that Ofcom can publish. However, in supplying this response, I understand that Ofcom may need to publish all responses, including those which are marked as confidential, in order to meet legal obligations. If I have sent my response by email, Ofcom can disregard any standard e-mail text about not disclosing email contents and attachments.

Ofcom seeks to publish responses on receipt. If your response is non-confidential (in whole or in part), and you would prefer us to publish your response only once the consultation has ended, please tick here. ☐

Name

Signed (if hard copy)

Annex 5

Impact Assessment

Introduction

A5.1 The analysis presented in this annex represents an impact assessment, as defined in section 7 of the Communications Act 2003,[21] for the Wireless Telegraphy (Ultra-wideband Equipment) (Exemption) Regulations 2009 (the "Proposed Regulations").

A5.2 You should send us any comments on this impact assessment by the closing date for this consultation. We will consider all comments before deciding whether to implement our proposals.

A5.3 Impact assessments 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. This is reflected in section 7 of the Communications Act, which means that generally we have to carry out impact assessments where our proposals would be likely to have a significant effect on businesses or the general public or when there is a major change in our activities. However, as a matter of policy, we are committed to carrying out and publishing impact assessments in relation to the great majority of our policy decisions. For further information about our approach to impact assessments, see the guidelines "Better policy-making: Ofcom's approach to impact assessment," which are on our website at www.ofcom.org.uk/consult/policy_making/guidelines.pdf.

Background

A5.4 In the UK, we are responsible for the authorising of civil use of the radio spectrum and achieve this by granting wireless telegraphy licences under the Wireless Telegraphy Act 2006 (the "WT Act") and by making Regulations exempting users of particular equipment from the requirement to hold such a licence. Under section 8(1) of the WT Act, it is an offence to install or use equipment to transmit without holding a licence granted by us, unless the use of such equipment is exempted. Section 8(3) enables us to make regulations exempting equipment from the requirement to hold a licence subject to specified terms, provisions and limitations and under Section 8(4) of the WT Act we must make regulations to exempt equipment if it is unlikely to cause undue interference.

Proposal

A5.5 This impact assessment relates to the proposal to make the Proposed Regulations. These will implement the European Commission Decision of 21 April 2009 amending Decision 2007/131/EC on allowing the use of the radio spectrum for equipment using ultra-wideband technology in a harmonised manner in the Community (2009/343/EC) (the "UWB Amendment Decision").

The citizen and/or consumer interest

A5.6 We take account of the impact of our decisions have upon both citizen and consumer interests in the markets we regulate. In proposing changes to the Principal Regulations we have considered the wider impact beyond immediate

[21] www.opsi.gov.uk/acts/acts2003/pdf/ukpga_20030021_en.pdf.

stakeholders in the radiocommunications community. We believe that the proposals will be of benefit to consumers for the following reasons:

i) The measures proposed all concern the use of radio equipment on a licence-exempt basis which reduces the regulatory and administrative burden on our stakeholders;

ii) Licence-exemption is proposed only in areas where use of equipment is unlikely to cause harmful interference to other spectrum use;

iii) They support the introduction of new and innovative technologies which will be of benefit to consumers in general.

A5.7 We are required by statute to assess the impact of all our functions, policies, projects and practices on race, disability and gender equality – an Equality Impact Assessment (EIA) is our way of fulfilling these obligations. The findings of our EIA initial screening showed that there is no relevance to equality in these proposals.

Our policy objective

A5.8 In accordance with the WT Act, we must exempt from licensing the use of specified equipment where it is not likely that such use will cause interference to other legitimate users of the radio spectrum or is contrary to an international obligation.

A5.9 As a Member State, the UK is bound by the terms of the UWB Amendment Decision and the requirement to implement it.

Options considered

A5.10 The options open to us in relation to the implementation of the UWB Amendment Decision are as follows:

- to make the Proposed Regulations that are compliant with the UWB Amendment Decision; or
- to do nothing.

Analysis of options

Make new regulations

A5.11 The most efficient route to mandatory compliance is to make the Proposed Regulations that are consistent with the UWB Amendment Decision as closely as possible.

Do nothing

A5.12 By doing nothing, we would be in breach of the UWB Amendment Decision and could be open to infraction proceedings initiated by the European Commission.

The preferred option

A5.13 The preferred option therefore is to make the Proposed Regulations as indicated in order to comply with the UWB Amendment Decision. The benefits of this option are that the UK remains compliant with European Community law.

Evaluation

A5.14 Article 4 of the UWB Decision requires that that the bands identified for UWB be kept under active scrutiny by Member States to ensure that the continued relevance of the technical conditions remain valid, and report their findings to the Commission to allow a timely review of this Decision.

A5.15 We will assist the Commission in carrying out these reviews as required.

Annex 6

Proposed Regulations

STATUTORY INSTRUMENTS

2009 No.

ELECTRONIC COMMUNICATIONS

The Wireless Telegraphy (Ultra-Wideband Equipment) (Exemption) Regulations 2009

Made - - - -	***
Coming into force - -	***

The Office of Communications ("OFCOM") make the following Regulations in exercise of the powers conferred by section 8(3) of the Wireless Telegraphy Act 2006 ([22]), ("the Act").

Before making these Regulations OFCOM have given notice of their proposal to do so in accordance with section 122(4)(a) of the Act, published notice of their proposal in accordance with 122(4)(b) of the Act and have considered the representations made to them before the time specified in that notice in accordance with section 122(4)(c) of the Act.

Citation and commencement

1. These Regulations may be cited as the Wireless Telegraphy (Ultra-Wideband Equipment)(Exemption) Regulations 2009 and shall come into force on [XXXX].

Revocation

2. The Wireless Telegraphy (Ultra-Wideband Equipment)(Exemption) Regulations 2007([23]) and the Wireless Telegraphy (Ultra-Wideband Equipment) (Exemption)(Amendment) Regulations 2007([24]) are hereby revoked.

Interpretation

3. In these regulations—

"automotive vehicle" has the meaning given for "vehicle" by Article 2 of Council Directive 70/156/EEC on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers([25]);

([22]) 2006 c.36
([23]) 2007/2084
([24]) 2007/2440
([25]) OJ No L 42, 23.2.70, p1.

"building material analysis equipment" means a field disturbance sensor that is designed to detect the location of objects within a building structure or to determine the physical properties of a building material;

"dBm" means decibel per milliWatt;

"dBm/MHz" means decibel per milliWatt per megahertz;

"e.i.r.p." means equivalent isotropic radiated power;

"equivalent transmission level" means the peak level of transmission contained within a bandwidth which is other than 50 MHz, centred on the frequency at which the highest mean radiated power occurs, and which is the relevant maximum peak e.i.r.p. scaled down by a factor of 20log(50/x)dB, where "x" is the other bandwidth expressed in MHz;

"GHz" means gigahertz;

"indoors" means inside buildings or places in which the shielding will typically provide the necessary attenuation to protect wireless telegraphy against harmful interference;

"mean e.i.r.p. density" means the mean e.i.r.p. measured with a 1 MHz resolution bandwidth, a root-mean-square detector and an averaging time of one millisecond or less;

"MHz" means megahertz;

"peak e.i.r.p." means the peak e.i.r.p. contained within a 50 MHz bandwidth centred on the frequency at which the highest mean radiated power occurs;

"radiated into the air" means those parts of the signal emitted by specific applications of ultra-wideband technology which are not absorbed by their shielding or by the material under investigation;

"railway vehicle" has the meaning given by Article 3 of EC Regulation 91/2003 of the European Parliament and of the Council of 16 December 2002 on rail transport statistics([26]);

"total radiated power density" means the mean e.i.r.p. density values measured over a sphere around the measurement scenario with a resolution of at least 15 degrees;

"transmitter power control" means a mechanism that mitigates interference on the aggregate power from a number of devices.

"ultra-wideband equipment" means a wireless telegraphy station or wireless telegraphy apparatus incorporating, as an integral part or as an accessory, technology for short-range radiocommunication involving the intentional generation and transmission of radio-frequency energy that spreads over a frequency range wider than 50 MHz, which may overlap several frequency bands allocated to wireless telegraphy.

Exemption—general use

4. The establishment, installation or use of ultra-wideband equipment complying with the terms, provisions and limitations set out in regulations 5 and 6, is hereby exempt from the provisions of section 8(1) of the Wireless Telegraphy Act 2006([27]).

Transmission limits

5.—(1) The exemption provided for in regulation 4 shall apply to ultra-wideband equipment which satisfies the conditions set out in paragraphs (2) to (7) of this regulation.

(2) The equipment is used—

(a) indoors; or

(b) other than indoors provided it is not:

(i) attached to a fixed installation;

(ii) attached to a fixed infrastructure;

([26]) OJ No L 14, 21.1.03, p1.
([27]) 2006 c.36

(iii) attached to a fixed outdoor antenna; or

(iv) attached to, or used in, an automotive vehicle or railway vehicle.

(3) The equipment does not cause or contribute to undue interference to any wireless telegraphy.

(4) The equipment only emits transmissions in compliance with the conditions prescribed in paragraph (5).

(5) The equipment only emits transmissions at frequencies up to 1.6 GHz, or above and including 1.6 GHz up to and including 10.6 GHz, or at frequencies above 10.6 GHz which:

(a) at frequencies up to 1.6 GHz when measured in any direction have:

(i) a maximum mean mean e.i.r.p. density no greater than -90.0 dBm/MHz; and

(ii) a maximum peak e.i.r.p. density no greater than -50.0 dBm or the equivalent transmission level;

(b) at frequencies above and including 1.6 GHz and up to and including 2.7 GHz when measured in any direction have:

(i) a maximum mean e.i.r.p. density no greater than -85.0 dBm/MHz; and

(ii) a maximum peak e.i.r.p. density no greater than -45.0 dBm or the equivalent transmission level;

(c) at frequencies above 2.7 GHz and up to and including 3.4 GHz when measured in any direction have:

(i) a maximum mean e.i.r.p. density no greater than -70.0 dBm/MHz; and

(ii) a maximum peak e.i.r.p. density no greater than -36.0 dBm or the equivalent transmission level;

(d) at frequencies above 3.4 GHz and up to and including 3.8 GHz when measured in any direction have:

(i) a maximum mean e.i.r.p. density no greater than -80.0 dBm/MHz; and

(ii) a maximum peak e.i.r.p. density no greater than -40.0 dBm or the equivalent transmission level;

(e) at frequencies above 3.8 GHz and up to and including 4.2 GHz when measured in any direction have:

(i) a maximum mean e.i.r.p. density no greater than -70.0 dBm/MHz; and

(ii) a maximum peak e.i.r.p. density no greater than -30.0 dBm or the equivalent transmission level;

(f) at frequencies above 4.2 GHz and up to and including 4.8 GHz when measured in any direction have:

(i) a maximum mean e.i.r.p density no greater than -41.3 dBm/MHz; and

(ii) a maximum peak e.i.r.p. density no greater than 0.0 dBm or the equivalent transmission level;

(g) at frequencies above 4.8 GHz and up to and including 6.0 GHz when measured in any direction have:

(i) a maximum mean e.i.r.p. density no greater than -70.0 dBm/MHz; and

(ii) a maximum peak e.i.r.p. density no greater than -30.0 dBm or the equivalent transmission level;

(h) at frequencies above 6.0 GHz and up to and including 8.5 GHz when measured in any direction have:

(i) a maximum mean e.i.r.p. density no greater than -41.3 dBm/MHz; and

(ii) a maximum peak e.i.r.p. density no greater than 0.0 dBm or the equivalent transmission level;

(i) at frequencies above 8.5 GHz up to and including 10.6 GHz when measured in any direction have:

(i) a maximum mean e.i.r.p. density no greater than -65.0 dBm/MHz; and

(ii) a maximum peak e.i.r.p. density no greater than -25.0 dBm or the equivalent transmission level;

(j) at frequencies above 10.6 GHz when measured in any direction have:

(i) a maximum mean e.i.r.p. density no greater than -85.0 dBm/MHz; and

(ii) a maximum peak e.i.r.p. density no greater than -45.0 dBm or the equivalent transmission level.

Transmission mitigation

6.—(1) The exemption provided for in regulation 4 shall also apply where the equipment emits transmissions which, when measured in any direction, have higher e.i.r.p. limits at particular frequencies than those prescribed in regulation 5(5) above, if—

(a) techniques for mitigating interference described in the harmonised standards adopted under Article 5 of Directive 1999/5/EC([28]) are used; or

(b) techniques for mitigating interference are used which achieve at least an equivalent level of protection to other users of the electromagnetic spectrum as provided by those limits.

(2) A mitigation technique that may be used under paragraph 6(1)(b) for equipment operating above 3.1 GHz and up to and including 4.8 GHz includes a low duty cycle mitigation technique which results in transmissions which—

(a) when measured in any direction, have a maximum mean e.i.r.p. density no greater than -41.3 dBm/MHz;

(b) the duration of each transmission does not exceed five milliseconds;

(c) the sum of all transmitted signals in any second is less than 5% of that second;

(d) the sum of all transmitted signals in any hour is less than 0.5% of that hour; and

(e) the maximum peak e.i.r.p. is no greater than 0.dBm or the equivalent transmission.

(3) A mitigation technique that may be used under paragraph 6(1)(b) also includes, for equipment operating above 3.1 GHz and up to and including 4.8 GHz and at frequencies above 8.5 and up to and including 9.0 GHz, a detect and avoid mitigation technique, which results in transmissions which—

(a) when measured in any direction, transmissions have a maximum mean e.i.r.p. density no greater than -41.3 dBm/MHz; and

(b) have a maximum peak e.i.r.p no greater than 0.dBm

Exemption—use in automotive and railway vehicles

7.The establishment, installation or use of ultra-wideband equipment complying with the terms, provisions and limitations set out in regulations 8 and 9 is hereby exempt from the provisions of section 8(1) of the Wireless Telegraphy Act 2006([29]).

Use in automotive and railway vehicles—transmission limits

8.—(1) The exemption provided for in regulation 7 shall apply to ultra-wideband equipment which satisfies the conditions set out in paragraphs (2) to (5) of this regulation.

(2) The equipment is used in an automotive vehicle or a railway vehicle.

([28]) Directive of the European Parliament and of the Council on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity, 9 March 1999.

([29]) 2006 c.36

(3) The equipment does not cause or contribute to undue interference to any wireless telegraphy.

(4) The equipment only emits transmissions at frequencies up to and including 4.2 GHz, or at frequencies between 4.8 GHz and up to and including 6.0 GHz, or at frequencies above 8.5 GHz which, when measured in any direction, have a maximum mean e.i.r.p. density and a maximum peak e.i.r.p. density no greater than the limits prescribed in regulation 5(5) above.

(5) The equipment only emits transmissions at frequencies between 4.2 GHz and up to and including 4.8 GHz and at frequencies between 6.0 GHz and up to and including 8.5 GHz which—

(a) when measured in any direction, have a maximum mean e.i.r.p density no greater than -41.3 dBm/MHz provided that—

(i) a transmitter power control range of at least 12dB is used to mitigate aggregate interference that provides at least equivalent performance to the techniques described in harmonised standards adopted under Article 5 of Directive 1999/5/EC([30]); and

(ii) the maximum peak e.i.r.p. is no greater than 0.dBm or the equivalent transmission; or

(b) in any other case, have a maximum mean e.i.r.p. density no greater than -53.3 dBm/MHz.

Use in automotive and railway vehicles—transmission mitigation

9.—o(1) The exemption provided for in regulation 7 shall also apply where the equipment emits transmissions which, when measured in any direction, have higher e.i.r.p. limits at particular frequencies than those prescribed in regulation 8(4), or have the same e.i.r.p. limits at particular frequencies as those prescribed in regulation 8(5) above, if—

(a) techniques for mitigating interference described in the harmonised standards adopted under Article 5 of Directive 1999/5/EC([31]) are used; or

(b) techniques for mitigating interference are used which achieve at least an equivalent level of protection to other users of the electromagnetic spectrum as provided by those limits.

(2) A mitigation technique that may be used under paragraph 9(1)(b) for equipment operating above 3.1 GHz and up to and including 4.8 GHz, include a low duty cycle mitigation technique which results in transmissions which—

(a) when measured in any direction, have a maximum mean e.i.r.p. density no greater than -41.3 dBm/MHz;

(b) the duration of each transmission does not exceed five milliseconds;

(c) the sum of all transmitted signals in any second is less than 5% of that second;

(d) the sum of all transmitted signals in any hour is less than 0.5% of that hour; and

(e) the maximum peak e.i.r.p. is no greater than 0.dBm or the equivalent transmission.

(3) A mitigation technique that may be used under paragraph 9(1)(b) also includes, for equipment operating above 3.1 GHz and up to and including 4.8 GHz and at frequencies above 8.5 and up to and including 9.0 GHz, a detect and avoid mitigation technique which results in transmissions which—

(a) when measured in any direction, have a maximum e.i.r.p. density no greater than -41.3 dBm/MHz provided that—

(i) a transmitter power control range of at least 12dB is used to mitigate aggregate interference; and

([30]) Directive of the European Parliament and of the Council on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity, 9 March 1999.
([31]) Ibid.

(ii) the maximum peak e.i.r.p. is no greater than 0.dBm or the equivalent transmission; or

(b) when measured in any direction, have a maximum e.i.r.p. density no greater than -53.3 dBm/MHz.

Exemption—building material analysis equipment

10. The establishment, installation or use of ultra-wideband equipment complying with the terms, provisions and limitations set out in regulation 10 is hereby exempt from the provisions of section 8(1) of the Wireless Telegraphy Act 2006([32]).

Building material analysis equipment

11.—(1) The exemption provided for in regulation 10 shall apply to building material analysis equipment which satisfies the conditions set out in paragraphs (2) to (4) of this regulation.

(2) The equipment does not cause or contribute to undue interference to any wireless telegraphy.

(3) The equipment only emits signals that are radiated into the air that do not exceed the following limits—

(a) at frequencies up to and including 1.215 GHz when measured in any direction have:

(i) a maximum mean e.i.r.p. density no greater than -85 dBm/MHz; and

(ii) a maximum peak e.i.r.p. density no greater than -45.0 MHz or the equivalent transmission level;

(b) at frequencies between 1.73 GHz and up to and including 2.200 GHz when measured in any direction have:

(i) a maximum mean e.i.r.p. density no greater than -65 dBm/MHz; and

(ii) a maximum peak e.i.r.p. density no greater than -25 dBm/MHz;

(c) at frequencies between 2.2 GHz and up to and including 2.5 GHz when measured in any direction have:

(i) a maximum mean e.i.r.p. density no greater than -50 dBm/MHz; and

(ii) a maximum peak e.i.r.p. density no greater than -10 dBm/MHz;

(d) at frequencies between 2.69 GHz and up to and including 2.7 GHz when measured in any direction have:

(i) a maximum mean e.i.r.p. density no greater than -55 dBm/MHz;

(ii) a maximum peak e.i.r.p. density no greater than -15 dBm/MHz; and

(iii) a maximum total radiated power density below -65 dBm/MHz;

(e) at frequencies between 3.4 GHz and up to and including 4.8 GHz when measured in any direction have:

(i) a maximum mean e.i.r.p. density no greater than -50 dBm/MHz; and

(ii) a maximum peak e.i.r.p. density no greater than -10 dBm/MHz;

(f) at frequencies between 4.8 GHz up to and including 5.0 GHz when measured in any direction have:

(i) a maximum mean e.i.r.p. density no greater than -55 dBm/MHz;

(ii) a maximum peak e.i.r.p. density no greater than -15 dBm/MHz; and

(iii) a maximum total radiated power density below -65dBm/MHz;

(g) at frequencies between 5.0 GHz and up to and including 8.0 GHz when measured in any direction have:

([32]) 2006 c.36

(i) a maximum mean e.i.r.p. density no greater than -50 dBm/MHz; and

(ii) a maximum peak e.i.r.p. density no greater than -10 dBm/MHz;

(h) at frequencies between 8.0 GHz and up to and including 8.5 GHz when measured in any direction have:

(i) a maximum mean e.i.r.p. density no greater than -70 dBm/MHz; and

(ii) a maximum peak e.i.r.p. density no greater than -30 dBm/MHz;

(i) at frequencies above 8.5 GHz when measured in any direction have:

(i) a maximum mean e.i.r.p. density no greater than -85 dBm/MHz; and

(ii) a maximum peak e.i.r.p. density no greater than -45 dBm/MHz.

(4) The equipment only emits signals that are radiated into the air that do not exceed the following limits:

(a) at frequencies between—

(i) 1.215 GHz and up to and including 1.73 GHz when measured in any direction have:

(aa) a maximum mean e.i.r.p. density no greater than -85 dBm/MHz; and

(bb) a maximum peak e.i.r.p. density no greater than -45 dBm/MHz;

(ii) 2.5 GHz and up to and including 2.69 GHz when measured in any direction have:

(aa) a maximum mean e.i.r.p. density no greater than -65 dBm/MHz; and

(bb) a maximum peak e.i.r.p. density no greater than -25 dBm/MHz;

(iii) 2.7 GHz and up to and including 3.4 GHz when measured in any direction have:

(aa) a maximum mean e.i.r.p. density no greater than -82 dBm/MHz; and

(bb) a maximum peak e.i.r.p. density no greater than -42 dBm/MHz; or

(b) at frequencies between 1.215 GHz and up to and including 1.73 GHz when measured in any direction, a maximum mean e.i.r.p. density no greater than -70 dBm/MHz provided that techniques are used to mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards adopted under Article 5 of Directive 1999/5/EC([33]); or

(c) at frequencies between 2.5 up to and including 2.69 GHz and at frequencies between 2.7 GHz up to and including 3.4 GHz, a maximum e.i.r.p. density no greater than -50 dBm/MHz provided that techniques are used to mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards adopted under Article 5 of Directive 1999/5/EC([34]).

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

EXPLANATORY NOTE

(This note is not part of the Regulations)

([33]) Directive of the European Parliament and of the Council on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity, 9 March 1999.
([34]) Ibid. .

Annex 7

UWB Amendment Decision

25.4.2009 EN Official Journal of the European Union L 105/9

II

(Acts adopted under the EC Treaty/Euratom Treaty whose publication is not obligatory)

DECISIONS

COMMISSION

COMMISSION DECISION

of 21 April 2009

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

(notified under document number C(2009) 2787)

(Text with EEA relevance)

(2009/343/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) Commission Decision 2007/131/EC of 21 February 2007 on allowing the use of the radio spectrum for equipment using ultra-wideband technology in a harmonised manner in the Community [2] harmonises the technical conditions for radio equipment using ultra-wideband technology in the Community, ensuring that the radio spectrum is available across the European Community pursuant to harmonised conditions, eliminating barriers to the uptake of ultra-wideband technology and creating an effective single market for such systems with consequent economies of scale and benefits to the consumer.

(2) Rapid changes in technology and in the use of the radio spectrum need to be adequately reflected in the regulation of ultra-wide band technology, in order for European society to benefit from the introduction of innovative applications based on this technology, whilst ensuring that other spectrum users are not adversely affected. Decision 2007/131/EC should therefore be amended accordingly.

(3) For this reason, the Commission issued additional mandates pursuant to Decision No 676/2002/EC to the European Conference of Postal and Telecommunications Administrations (CEPT), to undertake further compatibility studies of ultra-wideband technology with radiocommunication services.

(4) In its reports submitted in response to these mandates, the CEPT advised the Commission to amend a number of technical aspects in Decision 2007/131/EC.

(5) The additional studies by CEPT clarified the technical conditions under which specific mitigation techniques, notably detect and avoid (DAA) and low duty cycle (LDC), enable ultra-wide band equipment to be operated with higher transmission powers while offering equivalent protection comparable to the existing ultra-wide band generic limits.

(6) The CEPT studies also demonstrated that ultra-wide band equipment may be used under more stringent conditions than the generic limits in automotive and railway vehicles. Such conditions may be relaxed as long as mitigation techniques, such as those mentioned above, are used in these vehicles.

[1] OJ L 108, 24.4.2002, p. 1.
[2] OJ L 55, 23.2.2007, p. 33.

(7) Building material analysis (BMA) imaging systems can provide a host of innovative applications in detecting or taking images of pipes, wires and of other intra-wall structures in residential or commercial constructions. A common set of spectrum-access conditions for BMA equipment should assist those undertakings which want to provide related professional services using these applications across borders in the Community.

(8) CEPT has advised the Commission that more relaxed conditions of use than the generic limits are to be feasible for BMA systems, given that their modes of operation, combined with their very low deployment densities and activity factors, further mitigate the possibility of harmful interference to radio-communication services.

(9) The CEPT technical studies under the Commission mandates on BMA applications assume use in structures that are dense and thick enough to absorb most signals transmitted by the imaging system. These compatibility studies include, *inter alia*, the presumption that BMA equipment should cease transmission within ten seconds of the interruption of normal operation. Furthermore, although BMA devices may be sold as a consumer product, a maximum density of 6,7 BMA units/km^2 are assumed to be used in the aggregate interference studies.

(10) Pursuant to 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] (the R & TTE Directive), the Commission has given mandates (M/329 and M/407) to the European standardisation organisations to establish a set of harmonised standards covering ultra-wideband applications to be recognised under this Directive, and resulting in a presumption of conformity with its requirements. In response to mandates M/329 and M/407 from the EC, the ETSI has developed harmonised standard EN 302 065 on generic UWB equipment, harmonised standard EN 302 500 for UWB location tracking equipment and harmonised standard EN 302 435 on BMA equipment.

(11) These respective harmonised standards describe in detail how equipment operating in frequency bands allocated by this Decision should operate and how this equipment can be tested for compliance with the limits stated in the harmonised standards.

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

HAS ADOPTED THIS DECISION:

Article 1

Decision 2007/131/EC is amended as follows:

1. The Annex to Decision 2007/131/EC is replaced by the Annex to this Decision.

2. In Article 2, the following points 10 and 11 are added:

'10. "building material analysis" (BMA) means a field disturbance sensor that is designed to detect the location of objects within a building structure or to determine the physical properties of a building material;

11. "radiated into the air" means those parts of the signal emitted by specific applications of ultra-wideband technology which are not absorbed by their shielding or by the material under investigation.'.

Article 2

This Decision shall apply from 30 June 2009.

Article 3

This Decision is addressed to the Member States.

Done at Brussels, 21 April 2009.

For the Commission
Viviane REDING
Member of the Commission

[1] OJ L 91, 7.4.1999, p. 10.

ANNEX

'ANNEX

Maximum e.i.r.p. densities and appropriate mitigation techniques

1. GENERIC UWB USAGE

1.1. **Maximum e.i.r.p. densities**

Frequency range (GHz)	Maximum mean e.i.r.p. density (dBm/MHz)	Maximum peak e.i.r.p. density (dBm/50MHz)
Below 1,6	– 90,0	– 50,0
1,6 to 2,7	– 85,0	– 45,0
2,7 to 3,4	– 70,0	– 36,0
3,4 to 3,8	– 80,0	– 40,0
3,8 to 4,2	– 70,0	– 30,0
4,2 to 4,8	– 41,3 *(until 31 December 2010)* – 70,0 *(beyond 31 December 2010)*	0,0 *(until 31 December 2010)* – 30,0 *(beyond 31 December 2010)*
4,8 to 6,0	– 70,0	– 30,0
6,0 to 8,5	– 41,3	0,0
8,5 to 10,6	– 65,0	– 25,0
Above 10,6	– 85,0	– 45,0

1.2. **Appropriate mitigation techniques**

Equipment using ultra-wideband technology shall also be allowed to use the radio spectrum with higher e.i.r.p. limits than mentioned in the table in section 1.1 when applying additional mitigation techniques as described in the relevant harmonised standards adopted under Directive 1999/5/EC or other mitigation techniques on condition that it achieves at least an equivalent level of protection as provided by the limits in the table in section 1.1. The following mitigation techniques are presumed to provide such protection:

1.2.1. *"Low duty cycle" (LDC) mitigation*

A maximum mean e.i.r.p. density of – 41,3 dBm/MHz and a maximum peak e.i.r.p. of 0 dBm measured in 50 MHz shall be allowed in the 3,1–4,8 GHz bands provided that a low duty cycle restriction is applied in which the sum of all transmitted signals is less than 5 % of the time each second and less than 0,5 % of the time each hour, and provided that each transmitted signal does not exceed 5 ms.

1.2.2. *"Detect and avoid" (DAA) mitigation*

A maximum mean e.i.r.p. density of – 41,3 dBm/MHz and a maximum peak e.i.r.p. of 0 dBm measured in 50 MHz shall be allowed in the 3,1–4,8 GHz and 8,5–9,0 GHz bands provided that a detect and avoid (DAA) mitigation technique as described in the relevant harmonised standards adopted under Directive 1999/5/EC is used.

1.3. **Operation of equipment using ultra-wideband technology in automotive and railway vehicles**

In derogation to Article 3 of this Decision, use of ultra-wideband equipment shall also be allowed in automotive and railway vehicles when in accordance with the following parameters.

1.3.1. *Maximum e.i.r.p. densities for operation of ultra-wideband technology in automotive and railway vehicles*

Equipment using ultra-wideband technology in automotive and railway vehicles shall be allowed to use the radio spectrum with the e.i.r.p. limits given in section 1.1 provided that for the bands 4,2–4,8 GHz and 6,0–8,5 GHz the following parameters are applied:

Frequency range (GHz)		Maximum mean e.i.r.p. density (dBm/MHz)
4,2 to 4,8	*until 31 December 2010*	– 41,3 provided that techniques to mitigate aggregate interference are applied that provide at least equivalent performance to the techniques described in harmonized standards adopted under Directive 1999/5/EC must be used. These require a transmitter power control (TPC) range of at least 12 dB. – 53,3 (otherwise)
	beyond 31 December 2010	– 70,0
6,0 to 8,5		– 41,3 provided that techniques to mitigate aggregate interference are applied that provide at least equivalent performance to the techniques described in harmonized standards adopted under Directive 1999/5/EC must be used. These require a transmitter power control (TPC) range of at least 12 dB. – 53,3 (otherwise)

1.3.2. *Appropriate mitigation techniques in automotive and railway vehicles*

Operation of equipment using ultra-wideband technology in automotive and railway vehicles shall also be allowed with other e.i.r.p. limits than mentioned in section 1.3.1 when applying additional mitigation techniques as described in the relevant harmonized standards adopted under Directive 1999/5/EC or other mitigation techniques on condition that it achieves at least an equivalent level of protection as provided by the limits in the previous tables. The following mitigation techniques are presumed to provide such protection:

1.3.2.1. "Low duty cycle" (LDC) mitigation

The operation of equipment using ultra-wideband technology in automotive and railway vehicles which applies the LDC mitigation technique in the 3,1–4,8 GHz band as described in section 1.2.1, shall be allowed with the same e.i.r.p. limits as described in that section 1.2.1. The e.i.r.p. limits mentioned in section 1.1 shall apply for the other frequency ranges.

1.3.2.2. "Detect and avoid" (DAA) mitigation

The operation of equipment using ultra-wideband technology in automotive and railway vehicles which applies the DAA mitigation technique in the 3,1–4,8 GHz and 8,5–9,0 GHz bands shall be allowed with an e.i.r.p. limit of – 41,3 dBm/MHz provided that techniques to mitigate interference are applied that provide at least equivalent performance to the techniques described in harmonised standards adopted under Directive 1999/5/EC. These require a transmitter power control (TPC) range of at least 12 dB. In other cases an e.i.r.p. limit of – 53,3 dBm/MHz applies.

2. SPECIFIC UWB USAGE

Signals that are radiated into the air that do not exceed the limits in the table below shall be allowed.

2.1. Building material analysis (BMA)

Frequency range (MHz)	Maximum mean e.i.r.p. density (dBm/MHz)	Maximum peak e.i.r.p. density (dBm/50 MHz)
Below 1 730	– 85	– 45
1 730 to 2 200	– 65	– 25

Frequency range (MHz)	Maximum mean e.i.r.p. density (dBm/MHz)	Maximum peak e.i.r.p. density (dBm/50 MHz)
2 200 to 2 500	– 50	– 10
2 500 to 2 690	– 65	– 25
2 690 to 2 700	– 55	– 15
2 700 to 3 400	– 82	– 42
3 400 to 4 800	– 50	– 10
4 800 to 5 000	– 55	– 15
5 000 to 8 000	– 50	– 10
8 000 to 8 500	– 70	– 30
Above 8 500	– 85	– 45

BMA equipment using mitigation techniques that provide at least equivalent performance to the techniques described in the relevant harmonized standards adopted under Directive 1999/5/EC, is permitted to operate in frequency ranges 1,215 to 1,73 GHz, with a maximum mean e.i.r.p. density of – 70 dBm/MHz, and in the frequency ranges 2,5 to 2,69 GHz and 2,7 to 3,4 GHz, with a maximum mean e.i.r.p. density of – 50 dBm/MHz on condition that at least an equivalent level of protection as provided by the limits in the above table is achieved.

In order to protect Radio Astronomy Services; in the frequency range 2,69 GHz to 2,70 GHz and in the frequency range 4,8 to 5 GHz; the total radiated power density has to be below – 65 dBm/MHz as described in the relevant harmonized standards adopted under Directive 1999/5/EC.'

Annex 8

Glossary

BMA	Building Material Analysis
CEPT	European Conference of Postal and Telecommunications Administrations
DAA	Detect and Avoid
e.i.r.p.	equivalent isotropic radiated power
ETSI	European Telecommunications Standards Institute
EU	European Union
GHz	Gigahertz
LDC	Low Duty Cycle
TPC	Transmitter Power Control
UWB	Ultra-wideband
WT Act	Wireless Telegraphy Act 2006