

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)

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)<sup>(1)</sup>, 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<sup>(2)</sup> 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 radio-communication services.

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- (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.
- (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<sup>2</sup> 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<sup>(3)</sup> (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,

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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*

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## ANNEX

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**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)	0,0 (until 31 December 2010)
	-70,0 (beyond 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

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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	<i>until 31 December 2010</i>	-41,3 provided that techniques to mitigate aggregate interference are applied that provide at least equivalent performance to the techniques described in harmonised 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)
	<i>beyond 31 December 2010</i>	-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 harmonised 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

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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 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
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 harmonised 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.

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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 harmonised standards adopted under Directive 1999/5/EC.

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- (1) [OJ L 108, 24.4.2002, p. 1.](#)
- (2) [OJ L 55, 23.2.2007, p. 33.](#)
- (3) [OJ L 91, 7.4.1999, p. 10.](#)



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**Changes and effects yet to be applied to :**

- Decision implicit repeal by [EUDN 2019/785](#) Decision
- Decision revoked by [S.I. 2018/1385 Sch. 2 para. 16](#)