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STATUTORY INSTRUMENTS

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**2015 No. 591**

**ELECTRONIC COMMUNICATIONS**

**The Wireless Telegraphy (Ultra-Wideband  
Equipment) (Exemption) Regulations 2015**

*Made* - - - - *9th March 2015*

*Coming into force* - - *25th March 2015*

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<sup>(1)</sup> (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 section 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.

**PART 1**

**INTRODUCTORY**

**Citation and commencement**

1. These Regulations may be cited as the Wireless Telegraphy (Ultra-Wideband Equipment) (Exemption) Regulations 2015 and shall come into force on 25th March 2015.

**Revocation**

2. The Wireless Telegraphy (Ultra-Wideband Equipment) (Exemption) Regulations 2009<sup>(2)</sup> and The Wireless Telegraphy (Ultra-Wideband Equipment) (Exemption) (Amendment) Regulations 2010<sup>(3)</sup> are hereby revoked.

**Interpretation**

3. In these regulations—

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(1) [2006 c. 36](#). Section 8(3) was extended to the Bailiwick of Guernsey by article 2 of the Wireless Telegraphy (Guernsey) Order 2006 ([S.I. 2006/3325](#)); and to the Bailiwick of Jersey by article 2 of the Wireless Telegraphy (Jersey) Order 2006 ([S.I. 2006/3324](#)); and to the Isle of Man by article 2 of the Wireless Telegraphy (Isle of Man) Order 2007 ([S.I. 2007/278](#)).

(2) [S.I. 2009/2517](#)

(3) [S.I. 2010/2761](#)

“automotive vehicle” has the meaning given for “vehicle” by Article 3 of Council [Directive 2007/46/EC](#) of 5 September 2007 establishing a framework for the approval of motor vehicles and their trailers, and of systems, components and separate technical units for such vehicles(4);

“building material analysis device” means a type of material sensing device that is designed to detect the location of objects within a building structure or to determine the physical properties of building material;

“dB” means decibel;

“dBm” means decibels of power referenced to one milliWatt;

“dBm/MHz” means decibels of power referenced to one milliWatt per megahertz;

“detect and avoid mitigation technique” means a technique which is used to detect other transmissions and avoid interference with those transmissions;

“e.i.r.p.” means equivalent isotropic radiated power, which is the product of the power supplied to an antenna and the absolute or isotropic antenna gain in a given direction relative to an isotropic antenna;

“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  $20\log(50/x)$ dB, where “x” is the bandwidth expressed in MHz;

“ETSI” means European Telecommunications Standards Institute;

“exterior limit” is the maximum mean power spectral density for emissions measured outside a vehicle at elevation angles higher than 0 degrees as described in harmonised standard EN302 065-3(5);

“GHz” means gigahertz;

“harmonised standard” means an ETSI standard for ultra-wideband equipment whose reference numbers have been published in the Official Journal of the European Union under Article 5 of Council [Directive 1999/5/EC](#) on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity(6);

“horizontal plane” means a horizontal plane with a tolerance of -20 degrees to 30 degrees elevation;

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

“listen before talk” is a mechanism that detects whether other operating system are transmitting prior to transmission in order to reduce the likelihood of interference between operating systems;

“location tracking system” means a system intended for location tracking of people and objects;

“low duty cycle mitigation technique” means a technique which is used to limit the length of time of transmissions made from ultra-wideband equipment;

“material sensing device” means a radiodetermination device designed to detect the location of objects within a structure or to determine the physical properties of a material;

“maximum mean power spectral density” means the maximum mean e.i.r.p. of a radio device under test at a particular frequency with the average power per unit bandwidth centred on that frequency, radiated in the direction of the maximum level;

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(4) OJ No L 263, 9.10.2007, p 5. There are amendments to Council [Directive 2007/46/EC](#) not relevant to these regulations.

(5) EN 302 065-3 (Version 1.1.1) published in April 2014.

(6) OJ No L 911, 7.4.1999, p10. Article 5 was amended by Regulation (EC) No 596/2009 of the European Parliament and of the Council, OJ L 188, 18.07.2009, p10. There are other amendments to Council [Directive 1999/5/EC](#) not relevant to these regulations.

“MHz” means megahertz;

“peak power” means the peak e.i.r.p. contained within a 50 MHz bandwidth at the frequency at which the highest mean radiated power occurs, radiated in the direction of the maximum level;

“railway vehicle” has the meaning given by Article 3 of Regulation (EC) No 91/2003 of the European Parliament and of the Council of 16 December 2002 on rail transport statistics(7);

“the Act” means the Wireless Telegraphy Act 2006;

“total power control” means a mechanism to reduce the amount of power to that necessary for successful communication;

“total radiated power spectral density” means the average of the mean power spectral density values measured over a sphere around the measurement scenario contained within harmonised standard EN302 435-1(8) with a resolution of at least 15 degrees between each measurement point;

“transmit power control mitigation technique” means a technique that mitigates interference arising from the aggregate power from a number of items of ultra-wideband equipment by reducing the amount of power necessary for those apparatus to operate; and

“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.

## PART 2

### GENERAL USE OF ULTRA-WIDEBAND EQUIPMENT

#### Exemption

4. The establishment, installation or use of ultra-wideband equipment complying with the terms, provisions and limitations in regulation 5 is hereby exempt from the provisions of section 8(1) of the Act.

#### Terms, provisions and limitations

5.—(1) The exemption provided for in regulation 4 shall apply to ultra-wideband equipment which complies with the requirements of paragraphs (2) to (4) of this regulation.

(2) The ultra-wideband equipment must be used—

- (a) indoors; or
- (b) other than indoors provided it is not attached to—
  - (i) a fixed installation;
  - (ii) fixed infrastructure; or
  - (iii) a fixed outdoor antenna.

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(7) OJ No L 14, 21.1.03, p1. Article 3 was amended by [Commission Regulation \(EC\) No 1192/2003](#) amending Regulation (EC) No 91/2003 of the European Parliament and of the Council on rail transport statistics, OJ No L 167, 4.7.2003, p13. Regulation (EC) No 91/2003 has also been amended by [Commission Regulation \(EC\) No 1304/2007](#), OJ No L 290, 8.11.07, p14 and by Regulation (EC) No 219/2009 of the European Parliament and of the Council, OJ L 87, 31.3.09, p109.

(8) EN 302 435-1 (Version 1.3.1) published in December 2009.

(3) The ultra-wideband equipment must not cause or contribute to undue interference to other users of the electromagnetic spectrum.

(4) The ultra-wideband equipment must emit transmissions which are in accordance with the condition in regulation 6.

### **Transmission limits**

6. The condition referred to in regulation 5(4) is that the ultra-wideband equipment only emits transmissions which—

- (a) in frequencies up to 1.6 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -90.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -50.0 dBm or the equivalent transmission level;
- (b) in the frequency band 1.6 GHz to 2.7 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -85.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -45.0 dBm or the equivalent transmission level;
- (c) in the frequency band 2.7 GHz to 3.1 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -70.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -36.0 dBm or the equivalent transmission level;
- (d) in the frequency band 3.1 GHz to 3.4 GHz when measured in any direction—
  - (i) have a maximum mean power spectral density—
    - (aa) no greater than -70.0 dBm/MHz; or
    - (bb) no greater than -41.3 dBm/MHz provided that one of the two techniques referred to in regulation 7 is used to mitigate interference to other users of the electromagnetic spectrum; and
  - (ii) have a maximum peak power—
    - (aa) no greater than -36.0 dBm or the equivalent transmission level; or
    - (bb) no greater than 0 dBm or the equivalent transmission level provided that one of the two techniques referred to in regulation 7 is used to mitigate interference to other users of the electromagnetic spectrum;
- (e) in the frequency band 3.4 GHz to 3.8 GHz when measured in any direction—
  - (i) have a maximum mean power spectral density—
    - (aa) no greater than -80.0 dBm/MHz; or
    - (bb) no greater than -41.3 dBm/MHz provided that one of the two techniques referred to in regulation 7 is used to mitigate interference to other users of the electromagnetic spectrum; and
  - (ii) have a maximum peak power—
    - (aa) no greater than -40.0 dBm or the equivalent transmission level; or
    - (bb) no greater than 0.0 dBm or the equivalent transmission level provided that one of the two techniques referred to in regulation 7 is used to mitigate interference to other users of the electromagnetic spectrum;
- (f) in the frequency band 3.8 GHz to 4.8 GHz when measured in any direction—

- (i) have a maximum mean power spectral density—
  - (aa) no greater than -70.0 dBm/MHz; or
  - (bb) no greater than -41.3 dBm/MHz provided that one of the two techniques referred to in regulation 7 is used to mitigate interference to other users of the electromagnetic spectrum; and
- (ii) have a maximum peak power—
  - (aa) no greater than -30.0 dBm or the equivalent transmission level; or
  - (bb) no greater than 0.0 dBm or the equivalent transmission level provided that one of the two techniques set out in regulation 7 is used to mitigate interference to other users of the electromagnetic spectrum;
- (g) in the frequency band 4.8 GHz to 6.0 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -70.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -30.0 dBm or the equivalent transmission level;
- (h) in the frequency band 6.0 GHz to 8.5 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -41.3 dBm/MHz; and
  - (ii) a maximum peak power no greater than 0.0 dBm or the equivalent transmission level;
- (i) in the frequency band 8.5 GHz to 9 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density—
    - (aa) no greater than -65.0 dBm/MHz; or
    - (bb) no greater than -41.3 dBm/MHz provided that the technique referred to in regulation 7(b) is used to mitigate interference to other users of the electromagnetic spectrum; and
  - (ii) have a maximum peak power—
    - (aa) no greater than -25.0 dBm or the equivalent transmission level; or
    - (bb) no greater than 0.0 dBm or the equivalent transmission level provided that the technique referred to in regulation 7(b) is used to mitigate interference to other users of the electromagnetic spectrum;
- (j) in the frequency band 9 GHz to 10.6 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -65.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -25.0 dBm or the equivalent transmission level; and
- (k) in frequency bands above 10.6 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -85.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -45.0 dBm or the equivalent transmission level.

### **Mitigation techniques**

- 7. The mitigation techniques referred to in regulation 6 are—
  - (a) the low duty cycle mitigation technique and its limits described in harmonised standard EN 302 065-1(9); and

- (b) the detect and avoid mitigation technique and its limits described in harmonised standard EN 302 065-1.

## PART 3

### USE OF ULTRA-WIDEBAND EQUIPMENT IN LOCATION TRACKING SYSTEMS

#### Exemption

8. The establishment, installation or use of ultra-wideband equipment complying with the terms, provisions and limitations in regulation 9 is hereby exempt from the provisions of section 8(1) of the Act.

#### Terms, provisions and limitations

9.—(1) The exemption provided for in regulation 8 shall apply to ultra-wideband equipment which complies with the requirements of paragraphs (2) to (4) of this regulation.

(2) The ultra-wideband equipment must be used in a location tracking system.

(3) The ultra-wideband equipment must not cause or contribute to undue interference to other users of the electromagnetic spectrum.

(4) The ultra-wideband equipment must emit transmissions which are in accordance with the condition in regulation 10.

#### Transmission limitations

10. The condition referred to in regulation 9(4) is that the ultra-wideband equipment only emits transmissions which—

- (a) in frequencies up to 1.6 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -90.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -50.0 dBm or the equivalent transmission level;
- (b) in the frequency band 1.6 GHz to 2.7 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -85.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -45.0 dBm or the equivalent transmission level;
- (c) in the frequency band 2.7 GHz to 3.4 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -70.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -36.0 dBm or the equivalent transmission level;
- (d) in the frequency band 3.4 GHz to 3.8 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -80.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -40.0 dBm or the equivalent transmission level;
- (e) in the frequency band 3.8GHz to 6.0 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -70.0 dBm/MHz; and

- (ii) a maximum peak power no greater than -30.0 dBm or the equivalent transmission level;
- (f) in the frequency band 6 GHz to 8.5 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -41.3 dBm/MHz; and
  - (ii) a maximum peak power no greater than 0.0 dBm or the equivalent transmission level;
- (g) in the frequency band 8.5 GHz to 9 GHz when measured in any direction—
  - (i) have a maximum mean power spectral density—
    - (aa) no greater than -65.0 dBm/MHz; or
    - (bb) no greater than -41.3 dBm/MHz provided that the technique set out in regulation 11 is used to mitigate interference to other users of the electromagnetic spectrum; and
  - (ii) have a maximum peak power—
    - (aa) no greater than -25.0 dBm or the equivalent transmission level; or
    - (bb) no greater than 0.0 dBm or the equivalent transmission level provided that the technique set out in regulation 11 is used to mitigate interference to other users of the electromagnetic spectrum;
- (h) in the frequency band 9 GHz to 10.6 GHz when measured in any direction—
  - (i) have a maximum mean power spectral density no greater than -65.0 dBm/MHz; and
  - (ii) have a maximum peak power no greater than -25.0 dBm or the equivalent transmission level; and
- (i) in the frequency bands above 10.6 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -85.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -45.0 dBm or the equivalent transmission level.

### **Mitigation technique**

**11.** The mitigation technique referred to in regulation 10(g) is the detect and avoid mitigation technique described in harmonised standard EN 302 065-2(10).

## **PART 4**

### **USE OF ULTRA-WIDEBAND EQUIPMENT IN AUTOMOTIVE VEHICLES AND RAILWAY VEHICLES**

### **Exemption**

**12.** The establishment, installation or use of ultra-wideband equipment complying with the terms, provisions and limitations in regulation 13 is hereby exempt from the provisions of section 8(1) of the Act.

### Terms, provisions and limitations

13.—(1) The exemption provided for in regulation 12 shall apply to ultra-wideband equipment which complies with the requirements of paragraphs (2) to (4) of this regulation.

(2) The ultra-wideband equipment must be used in an automotive vehicle or in a railway vehicle.

(3) The ultra-wideband equipment must not cause or contribute to undue interference to other users of the electromagnetic spectrum.

(4) The ultra-wideband equipment must emit transmissions which are in accordance with the condition in regulation 14.

### Transmission limits

14. The condition referred to in regulation 13(4) is that the ultra-wideband equipment only emits transmissions which—

- (a) in frequencies up to 1.6 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -90.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -50.0 dBm or the equivalent transmission level;
- (b) in the frequency band 1.6 GHz to 2.7 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -85.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -45.0 dBm or the equivalent transmission level;
- (c) in the frequency band 2.7 GHz to 3.1 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -70.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -36.0 dBm or the equivalent transmission level;
- (d) in the frequency band 3.1 GHz to 3.4 GHz when measured in any direction—
  - (i) have a maximum mean power spectral density—
    - (aa) no greater than -70.0 dBm/MHz;
    - (bb) no greater than -41.3 dBm/MHz provided that the technique set out in regulation 15(a) is used to mitigate interference to other users of the electromagnetic spectrum and an exterior limit of -53.3 dBm/MHz is applied; or
    - (cc) no greater than -41.3 dBm/MHz provided that both of the techniques set out in regulation 15(b) and regulation 15(c) are used to mitigate interference to other users of the electromagnetic spectrum and an exterior limit of -53.3 dBm/MHz is applied; and
  - (ii) have a maximum peak power—
    - (aa) no greater than -36 dBm or the equivalent transmission level;
    - (bb) no greater than 0.0 dBm or the equivalent transmission level provided that the technique set out in regulation 15(a) is used to mitigate interference to other users of the electromagnetic spectrum and an exterior limit of -53.3 dBm/MHz is applied; or
    - (cc) no greater than 0.0 dBm or the equivalent transmission level provided that both of the techniques set out in regulation 15(b) and regulation 15(c) are



- used to mitigate interference to other users of the electromagnetic spectrum and an exterior limit of -53.3 dBm/MHz is applied;
- (e) in the frequency band 3.4 GHz to 3.8 GHz when measured in any direction—
- (i) have a maximum mean power spectral density—
    - (aa) no greater than -80.0 dBm/MHz;
    - (bb) no greater than -41.3 dBm/MHz provided that the technique set out in regulation 15(a) is used to mitigate interference to other users of the electromagnetic spectrum and an exterior limit of -53.3 dBm/MHz is applied; or
    - (cc) no greater than -41.3 dBm/MHz provided that both of the techniques set out in regulation 15(b) and regulation 15(c) are used to mitigate interference to other users of the electromagnetic spectrum and an exterior limit of -53.3 dBm/MHz is applied; and
  - (ii) have a maximum peak power—
    - (aa) no greater than -40.0 dBm or the equivalent transmission level;
    - (bb) no greater than 0.0 dBm or the equivalent transmission level provided that the technique set out in regulation 15(a) is used to mitigate interference to other users of the electromagnetic spectrum and an exterior limit of -53.3 dBm/MHz is applied; or
    - (cc) no greater than 0.0 dBm or the equivalent transmission level provided that both of the techniques set out in regulation 15(b) and regulation 15(c) are used to mitigate interference to other users of the electromagnetic spectrum and an exterior limit of -53.3 dBm/MHz is applied;
- (f) in the frequency band 3.8 GHz to 4.8 GHz when measured in any direction—
- (i) have a maximum mean power spectral density—
    - (aa) no greater than -70.0 dBm/MHz;
    - (bb) no greater than -41.3 dBm/MHz provided that the technique set out in regulation 15(a) is used to mitigate interference to other users of the electromagnetic spectrum and an exterior limit of -53.3 dBm/MHz is applied; or
    - (cc) no greater than -41.3 dBm/MHz provided that both of the techniques set out in regulation 15(b) and regulation 15(c) are used to mitigate interference to other users of the electromagnetic spectrum and an exterior limit of -53.3 dBm/MHz is applied; and
  - (ii) have a maximum peak power—
    - (aa) no greater than -30.0 dBm or the equivalent transmission level;
    - (bb) no greater than 0.0 dBm or the equivalent transmission level provided that the technique set out in regulation 15(a) is used to mitigate interference to other users of the electromagnetic spectrum and an exterior limit of -53.3 dBm/MHz is applied; or
    - (cc) no greater than 0.0 dBm or the equivalent transmission level provided that both of the techniques set out in regulation 15(b) and regulation 15(c) are used to mitigate interference to other users of the electromagnetic spectrum and an exterior limit of -53.3 dBm/MHz is applied;
- (g) in the frequency band 4.8 GHz to 6.0 GHz when measured in any direction have—
- (i) a maximum mean power spectral density no greater than -70.0 dBm/MHz; and

- (ii) a maximum peak power no greater than -30.0 dBm or the equivalent transmission level;
- (h) in the frequency band 6.0 GHz to 8.5 GHz when measured in any direction—
  - (i) have a maximum mean power spectral density—
    - (aa) no greater than -53.3 dBm/MHz;
    - (bb) no greater than -41.3 dBm/MHz provided that the technique set out in regulation 15(a) is used to mitigate interference to other users of the electromagnetic spectrum and an exterior limit of -53.3 MHz is applied; or
    - (cc) no greater than -41.3 dBm/MHz provided that the technique set out in regulation 15(c) is used to mitigate interference to other users of the electromagnetic spectrum and an exterior limit of -53.3 MHz is applied; and
  - (ii) have a maximum peak power—
    - (aa) no greater than -13.3 dBm or the equivalent transmission level;
    - (bb) no greater than 0.0 dBm or the equivalent transmission level provided that the technique set out in regulation 15(a) is used to mitigate interference to other users of the electromagnetic spectrum and an exterior limit of -53.3 dBm/MHz is applied; or
    - (cc) no greater than 0.0 dBm or the equivalent transmission level that the technique set out in regulation 15(c) is used to mitigate interference to other users of the electromagnetic spectrum and an exterior limit of -53.3 dBm/MHz is applied;
- (i) in the frequency band 8.5 GHz to 9 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density—
    - (aa) no greater than -65.0 dBm/MHz; or
    - (bb) no greater than -41.3 dBm/MHz provided that both of the techniques set out in regulation 15(b) and regulation 15(c) are used to mitigate interference to other users of the electromagnetic spectrum and an exterior limit of -53.3 dBm/MHz is applied; and
  - (ii) have a maximum peak power—
    - (aa) no greater than -25 dBm or the equivalent transmission level; or
    - (bb) no greater than 0 dBm or the equivalent transmission level provided that both of the techniques set out in regulation 15(b) and regulation 15(c) are used to mitigate interference to other users of the electromagnetic spectrum and an exterior limit of -53.3 dBm/MHz is applied;
- (j) in the frequency band 9 GHz to 10.6 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -65.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -25.0 dBm or the equivalent transmission level; and
- (k) in frequency bands above 10.6 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -85.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -45.0 dBm or the equivalent transmission level.

### **Mitigation techniques**

15. The mitigation techniques referred to in regulation 14 are—
- (a) the low duty cycle mitigation technique and its limits described in harmonised standard EN 302 065-3(11);
  - (b) the detect and avoid mitigation technique and its limits described in harmonised standard EN 302 065-3; and
  - (c) the transmit power control mitigation technique and its limits described in harmonised standard EN 302 065-3.

## **PART 5**

### **USE OF ULTRA-WIDEBAND EQUIPMENT ONBOARD AIRCRAFT**

#### **Exemption**

16. The establishment, installation or use of ultra-wideband equipment complying with the terms, provisions and limitations in regulation 17 is hereby exempt from the provisions of section 8(1) of the Act.

#### **Terms, provisions and limitations**

17.—(1) The exemption provided for in regulation 16 shall apply to ultra-wideband equipment which complies with the requirements of paragraph (2) to (5) of this regulation.

- (2) The ultra-wideband equipment must be used onboard an aircraft where the aircraft is—
  - (a) an aircraft registered in the British Islands; and
  - (b) situated in or flying over the British Islands and the territorial waters adjacent thereto, or for the time being beyond the British Islands and the territorial waters adjacent hereto.
- (3) The ultra-wideband equipment must be used for communications purposes within an aircraft.
- (4) The ultra-wideband equipment must not cause or contribute to undue interference to other users of the electromagnetic spectrum.
- (5) The ultra-wideband equipment must emit transmissions which are in accordance with the condition in regulation 18.

#### **Transmission limits**

18. The condition referred to in regulation 17(5) is that the ultra-wideband equipment only emits transmissions which—

- (a) in frequencies up to 1.6 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -90.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -50.0 dBm or the equivalent transmission level;
- (b) in the frequency band 1.6 GHz to 2.7 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -85.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -45.0 dBm or the equivalent transmission level;

- (c) in the frequency band 2.7 GHz to 3.4 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -70.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -36.0 dBm or the equivalent transmission level;
- (d) in the frequency band 3.4 GHz to 3.8 GHz when measured in any direction—
  - (i) have a maximum mean power spectral density no greater than -80.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -40.0 dBm or the equivalent transmission level;
- (e) in the frequency band 3.8 GHz to 6.0 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -70.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -30.0 dBm or the equivalent transmission level;
- (f) in the frequency band 6.0 GHz to 6.650 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -41.3 dBm/MHz; and
  - (ii) a maximum peak power no greater than 0.0 dBm or the equivalent transmission level;
- (g) in the frequency band 6.650 GHz to 6.6752 GHz when measured in any direction—
  - (i) have—
    - (aa) a maximum mean power spectral density no greater than -62.3 dBm/MHz; and
    - (bb) a maximum peak power no greater than -21.0 dBm or the equivalent transmission level; or
  - (ii) provide an equivalent level of protection from interference to other users of the electromagnetic spectrum as that provided by the provisions in regulation 18(g)(i)(aa) and regulation 18(g)(i)(bb), by use of mitigation techniques which may include the technique described in regulation 23.
- (h) in the frequency bands 6,6752 GHz to 7.25 GHz and 7.9 GHz to 8.5 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -41.3 dBm/MHz; and
  - (ii) a maximum peak power no greater than 0.0 dBm or the equivalent transmission level;
- (i) in the frequency band 7.25 GHz to 7.75 GHz when measured in any direction meet the emission requirements in either regulation 19 or regulation 20;
- (j) In the frequency band 7.75 GHz to 7.9 GHz when measured in any direction meet the emission requirements in either regulation 21 or regulation 22;
- (k) in the frequency band 8.5 to 10.6 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -65.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -25.0 dBm or the equivalent transmission level; and
- (l) in frequency bands above 10.6 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -85.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -45.0 dBm or the equivalent transmission level.

### **Emission requirements for the frequency band 7.25 GHz to 7.75 GHz**

19. The requirements referred to in regulation 18(i) are that the emissions have—
- (i) a maximum mean power spectral density—
    - (aa) no greater than -41.3 dBm/MHz;
    - (bb) no greater than  $-51.3 \text{ dBm/MHz} - 20 \cdot \log_{10}(10[\text{km}]/x[\text{km}])(\text{dBm/MHz})$  (where x is the aircraft height above ground in kilometres) provided that the aircraft that the ultra-wideband equipment is onboard is higher than 1000 meters above ground level; or
    - (cc) no greater than -71.3 dBm/MHz provided that the aircraft that the ultra-wideband equipment is onboard is at or lower than 1000 meters above ground level but not on ground level; and
  - (ii) a maximum peak power no greater than 0.0 dBm or the equivalent transmission level.

### **Alternative emission requirement for the frequency band 7.25 GHz to 7.75 GHz**

20. The requirement referred to in regulation 18(i) is that the emissions provide an equivalent level of protection from interference to other users of the electromagnetic spectrum as that provided by regulation 19, by use of mitigation techniques which may include the technique described in regulation 23.

### **Emission requirements for the frequency band 7.75 GHz to 7.9 GHz**

21. The requirements referred to in regulation 18 (j) are that the emissions have—
- (i) a maximum mean power spectral density—
    - (aa) no greater than -41.3 dBm/MHz;
    - (bb) no greater than  $-44.3 \text{ dBm/MHz} - 20 \cdot \log_{10}(10[\text{km}]/x[\text{km}])(\text{dBm/MHz})$  (where x is the aircraft height above ground in kilometres) provided that the aircraft that the ultra-wideband equipment is onboard is higher than 1000 meters above ground level; or
    - (cc) no greater than -64.3 dBm/MHz provided that the aircraft that the ultra-wideband equipment is onboard is at or lower than 1000 meters above ground level but not on ground level; and
  - (ii) have a peak power no greater than 0.0 dBm or the equivalent transmission level.

### **Alternative emission requirement for the frequency band 7.75 GHz to 7.9 GHz**

22. The requirement referred to in regulation 18(j) is that the emissions provide an equivalent level of protection from interference to other users of the electromagnetic spectrum as that provided by regulation 21, by use of mitigation techniques which may include the technique described in regulation 23.

### **Mitigation techniques**

23. The mitigation technique referred to in regulations 18, 20 and 22 is the use of shielding on the windows of an aircraft in order to give the windows similar attenuation characteristics as other parts of the aircraft.

## PART 6

### USE OF ULTRA-WIDEBAND EQUIPMENT FOR MATERIAL SENSING DEVICES

#### **Exemption**

**24.** The establishment, installation or use of ultra-wideband equipment complying with the terms, provisions and limitations in either regulation 25 or regulation 26 are hereby exempt from the provisions of section 8(1) of the Act.

#### **Terms, provisions and limitations for fixed installations**

**25.**—(1) The exemption provided for in regulation 24 shall apply to ultra-wideband equipment which is a material sensing device and which complies with the requirements of paragraphs (2) to (4) of this regulation.

(2) The ultra-wideband equipment must—

- (a) have a sensor that detects when it is not running and turns the transmitter off;
- (b) implement a total power control with a dynamic range of 10.0 dB as described in harmonised standard EN 302 498-2(**12**); and
- (c) be attached to a fixed installation.

(3) The ultra-wideband equipment must not cause or contribute to undue interference to other users of the electromagnetic spectrum.

(4) The ultra-wideband equipment must emit transmissions which are kept to a minimum and in accordance with the condition in regulation 27.

#### **Terms, provisions and limitations for non-fixed installations**

**26.**—(1) The exemption provided for in regulation 24 shall also apply to ultra-wideband equipment which is a material sensing device and which complies with the requirements of paragraphs (2) to (4) of this regulation.

(2) The ultra-wideband equipment must—

- (a) only have the transmitter turned on by a manually operated non-locking switch;
- (b) be in contact with or in close proximity to the investigated material; and
- (c) direct the emissions into the direction of the object of the analysis.

(3) the ultra-wideband equipment must not cause or contribute to undue interference to other users of the electromagnetic spectrum.

(4) The ultra-wideband equipment must only emit signals that are radiated into the air which—

- (a) are kept to a minimum; and
- (b) if the equipment were to be placed on a representative wall (as defined within Annex D of harmonised standards EN 302-435-1(**13**) and EN 302 498-1(**14**)) would be in accordance with the condition in regulation 28.

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(12) EN 302 498-2 (Version 1.1.1) published in June 2010

(13) EN 302 435-1 (Version 1.3.1 published in December 2009.

(14) EN 302 498-1 (Version 1.1.1) published in June 2010.

### **Transmission limits for fixed installations**

27. The condition referred to in regulation 25(4) is that the ultra-wideband equipment only emits transmissions which—

- (a) in frequencies up to 1.73 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -85.0 dBm/MHz; and
  - (ii) a maximum mean power spectral density in the horizontal plane of -85.0 dBm/MHz; and
  - (iii) a maximum peak power no greater than -60.0 dBm;
- (b) in frequency band 1.73 GHz to 2.2GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -65.0 dBm/MHz; and
  - (ii) a maximum mean power spectral density in the horizontal plane of -70.0 dBm/MHz; and
  - (iii) a maximum peak power no greater than -40.0 dBm;
- (c) in frequency band 2.2 GHz to 2.5GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -50.0 dBm/MHz; and
  - (ii) a maximum mean power spectral density in the horizontal plane of -50.0 dBm/MHz; and
  - (iii) a maximum peak power no greater than -25.0 dBm;
- (d) in frequency band 2.5 GHz to 2.69GHz when measured in any direction have—
  - (i) a maximum mean power spectral density—
    - (aa) no greater than -65.0 dBm/MHz; or
    - (bb) no greater than -50.0 dBm/MHz provided that a listen before talk mechanism described in harmonised standard EN 302 435-1 is used to mitigate interference to other users of the electromagnetic spectrum;
  - (ii) a maximum mean power spectral density in the horizontal plane of -70.0 dBm/MHz; and
  - (iii) a maximum peak power no greater than -40dBm;
- (e) in frequency band 2.69 GHz to 2.7GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -55.0 dBm/MHz;
  - (ii) a maximum mean power spectral density in the horizontal plane of -75.0 dBm/MHz; and
  - (iii) a maximum peak power no greater than -30.0 dBm;
- (f) in frequency band 2.7 GHz to 2.9 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -50.0 dBm/MHz;
  - (ii) a maximum mean power spectral density in the horizontal plane of -70.0 dBm/MHz; and
  - (iii) a maximum peak power no greater than -25.0 dBm;
- (g) in frequency band 2.9 GHz to 3.4 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -50.0 dBm/MHz;
  - (ii) a maximum mean power spectral density in the horizontal plane of -70.0 dBm/MHz; and
  - (iii) a maximum peak power no greater than -25.0 dBm;

- (h) in frequency band 3.4 GHz to 3.8 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -50.0 dBm/MHz;
  - (ii) a maximum mean power spectral density in the horizontal plane of -70.0 dBm/MHz;  
and
  - (iii) a maximum peak power no greater than -25.0 dBm;
- (i) in frequency band 3.8 GHz to 4.8 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -50.0 dBm/MHz;
  - (ii) a maximum mean power spectral density in the horizontal plane of -50.0 dBm/MHz;  
and
  - (iii) a maximum peak power no greater than -25.0 dBm;
- (j) in frequency band 4.8 GHz to 5.0 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -55.0 dBm/MHz;
  - (ii) a maximum mean power spectral density in the horizontal plane of -75.0 dBm/MHz;  
and
  - (iii) a maximum peak power no greater than -30.0 dBm;
- (k) in frequency band 5 GHz to 5.25 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -50.0 dBm/MHz;
  - (ii) a maximum mean power spectral density in the horizontal plane of -50.0 dBm/MHz;  
and
  - (iii) a maximum peak power no greater than -25.0 dBm;
- (l) in frequency band 5.25 GHz to 5.35 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -50.0 dBm/MHz;
  - (ii) a maximum mean power spectral density in the horizontal plane of -60.0 dBm/MHz;  
and
  - (iii) a maximum peak power no greater than -25.0 dBm;
- (m) in frequency band 5.35 GHz to 5.6 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -50.0 dBm/MHz;
  - (ii) a maximum mean power spectral density in the horizontal plane of -50.0 dBm/MHz;  
and
  - (iii) a maximum peak power no greater than -25.0 dBm;
- (n) in frequency band 5.6 GHz to 5.65 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -50.0 dBm/MHz;
  - (ii) a maximum mean power spectral density in the horizontal plane of -65.0 dBm/MHz;  
and
  - (iii) a maximum peak power no greater than -25.0 dBm;
- (o) in frequency band 5.65 GHz to 5.725 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -50.0 dBm/MHz;
  - (ii) a maximum mean power spectral density in the horizontal plane of -60.0 dBm/MHz;  
and
  - (iii) a maximum peak power no greater than -25.0 dBm;
- (p) in frequency band 5.725 GHz to 8.5 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -50.0 dBm/MHz;



- (ii) a maximum mean power spectral density in the horizontal plane of -50.0 dBm/MHz;  
and
- (iii) a maximum peak power no greater than -25.0 dBm;
- (q) in frequency band 8.5 GHz to 10.6 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -65.0 dBm/MHz;
  - (ii) a maximum mean power spectral density in the horizontal plane of -65.0 dBm/MHz;  
and
  - (iii) a maximum peak power no greater than -40.0 dBm; and
- (r) in frequency bands above 10.6 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -85.0 dBm/MHz;
  - (ii) a maximum mean power spectral density in the horizontal plane of -85.0 dBm/MHz;  
and
  - (iii) a maximum peak power no greater than -60.0 dBm;

#### **Transmission limits for non-fixed installations**

**28.** The condition referred to in regulation 26(4)(b) is that the ultra-wideband equipment only emits transmissions which—

- (a) in frequencies up to 1.73 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -85.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -60.0 dBm;
- (b) in frequency band 1.73 GHz to 2.2 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -70.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -45.0 dBm;
- (c) in frequency band 2.2 GHz to 2.5 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -50.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -25.0 dBm;
- (d) in frequency band 2.5 GHz to 2.69 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density—
    - (aa) no greater than -65.0 dBm/MHz; or
    - (bb) no greater than -50.0 dBm/MHz provided that a listen before talk mechanism described in harmonised standard EN 302 435-1(15) is used to mitigate interference to other users of the electromagnetic spectrum;
  - (ii) a maximum peak power no greater than -40.0 dBm; and
  - (iii) a total radiated power spectral density no greater than -75.0 dBm/MHz;
- (e) in frequency band 2.69 GHz to 2.7 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -70.0 dBm/MHz provided that all transmissions are limited to a maximum of 100 milliseconds in any one second; and
  - (ii) a maximum peak power no greater than -45.0 dBm;
- (f) in frequency band 2.7 GHz to 2.9 GHz when measured in any direction have—

- (i) a maximum mean power spectral density no greater than -70.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -45.0 dBm;
- (g) in frequency band 2.9 GHz to 3.4 GHz when measured in any direction have—
- (i) a maximum mean power spectral density
    - (aa) no greater than -70.0 dBm/MHz; or
    - (bb) no greater than -50.0 dBm/MHz provided that a listen before talk mechanism described in harmonised standard EN 302 435-1 is used to mitigate interference to other users of the electromagnetic spectrum;
  - (ii) a maximum peak power no greater than -45.0 dBm;
- (h) in frequency band 3.4 GHz to 3.8 GHz when measured in any direction have—
- (i) a maximum mean power spectral density no greater than -50.0 dBm/MHz provided that all transmissions are limited to a maximum of 100 milliseconds in any one second;
  - (ii) a maximum peak power no greater than -25.0 dBm; and
  - (iii) a total radiated power spectral density no greater than -55.0 dBm/MHz;
- (i) in frequency band 3.8 GHz to 4.8 GHz when measured in any direction have—
- (i) a maximum mean power spectral density no greater than -50.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -25.0 dBm;
- (j) in frequency band 4.8 GHz to 5.0 GHz when measured in any direction have—
- (i) a maximum mean power spectral density no greater than -55.0 dBm/MHz provided that all transmissions are limited to a maximum of 100 milliseconds in any one second;
  - (ii) a maximum peak power no greater than -30.0 dBm; and
  - (iii) a total radiated power spectral density no greater than -65.0 dBm/MHz;
- (k) in frequency band 5 GHz to 5.25 GHz when measured in any direction have—
- (i) a maximum mean power spectral density no greater than -50.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -25.0 dBm;
- (l) in frequency band 5.25 GHz to 5.35GHz when measured in any direction have—
- (i) a maximum mean power spectral density no greater than -60.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -35.0 dBm;
- (m) in frequency band 5.35 GHz to 5.6 GHz when measured in any direction have—
- (i) a maximum mean power spectral density no greater than -50.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -25.0 dBm;
- (n) in frequency band 5.6 GHz to 5.65 GHz when measured in any direction have—
- (i) a maximum mean power spectral density no greater than -65.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -40.0 dBm;
- (o) in frequency band 5.65 GHz to 5.725 GHz when measured in any direction have—
- (i) a maximum mean power spectral density no greater than -60.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -35.0 dBm;
- (p) in frequency band 5.725 GHz to 8.5 GHz when measured in any direction have—
- (i) a maximum mean power spectral density no greater than -50.0 dBm/MHz; and

- (ii) a maximum peak power no greater than -25.0 dBm;
- (q) in frequency band 8.5 GHz to 10.6 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -65.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -40.0 dBm; and
- (r) in frequency bands above 10.6 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -85.0 dBm/MHz; and
  - (ii) a maximum peak power no greater than -60.0 dBm;

## PART 7

### USE OF ULTRA-WIDEBAND EQUIPMENT FOR BUILDING MATERIAL ANALYSIS

#### Exemption

**29.** The establishment, installation or use of ultra-wideband equipment complying with the terms, provisions and limitations in regulation 30 is hereby exempt from the provisions of section 8(1) of the Act.

#### Terms, provisions and limitations

**30.**—(1) The exemption provided for in regulation 29 shall apply to ultra-wideband equipment which is a building material analysis device and which complies with the requirements of paragraphs (2) to (4) of this regulation.

(2) The ultra-wideband equipment must—

- (a) only have the transmitter turned on if manually operated with a non-locking switch;
- (b) be used in close proximity to the material being analysed with the emissions being directed into the direction of the object of the analysis; and
- (c) switch off automatically after ten seconds without any movement.

(3) The ultra-wideband equipment must not cause or contribute to undue interference to other users of the electromagnetic spectrum.

(4) The ultra-wideband equipment must only emit signals that are radiated into the air which—

- (a) are kept to a minimum; and
- (b) if the equipment were to be placed on a representative wall (as defined within Annex D of harmonised standard EN 302-435-1(16)) would be in accordance with the condition in regulation 31.

#### Transmission limits

**31.** The condition referred to in regulation 30(4)(b) is that the ultra-wideband equipment only emits transmissions which—

- (a) in the frequencies up to 1.215 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -85.0 dBm/MHz; and

- (ii) a maximum peak power no greater than -45.0 dBm or the equivalent transmission level;
- (iii) a total radiated power spectral density of -90.0 dBm/MHz;
- (b) in the frequency band 1.215 GHz to 1.73 GHz when measured in any direction—
  - (i) have a maximum mean power spectral density —
    - (aa) no greater than -85.0 dBm/MHz; or
    - (bb) no greater than -70.0 dBm/MHz provided that a listen before talk mechanism described in harmonised standard EN 302 435-1 is used to mitigate interference to other users of the electromagnetic spectrum.
  - (ii) have a maximum peak power no greater than -45.0 dBm or the equivalent transmission level; and
  - (iii) have a total radiated power spectral density of -90.0 dBm/MHz;
- (c) in the frequency band 1.73 GHz to 2.2 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -65.0 dBm/MHz;
  - (ii) a maximum peak power no greater than -25.0 dBm or the equivalent transmission level; and
  - (iii) a total radiated power spectral density of -70 dBm/MHz;
- (d) in the frequency band 2.2 GHz to 2.5 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -50.0 dBm/MHz;
  - (ii) a maximum peak power no greater than -10.0 dBm or the equivalent transmission level; and
  - (iii) a total radiated power spectral density of -55 dBm/MHz;
- (e) in the frequency band 2.5 GHz to 2.69 GHz when measured in any direction—
  - (i) have a maximum mean power spectral density —
    - (aa) no greater than -65.0 dBm/MHz; or
    - (bb) no greater than -50.0 dBm/MHz provided that a listen before talk mechanism described in harmonised standard EN 302 435-1 is used to mitigate interference to other users of the electromagnetic spectrum;
  - (ii) have a maximum peak power spectral density no greater than -25.0 dBm or the equivalent transmission level; and
  - (iii) have a total radiated power spectral density of -70.0 dBm/MHz;
- (f) in the frequency band 2.69 GHz to 2.7 GHz when measured in any direction have—
  - (i) a maximum mean power spectral density no greater than -55.0 dBm/MHz;
  - (ii) a maximum peak power no greater than -15.0 dBm or the equivalent transmission level; and
  - (iii) a total radiated power spectral density below -65.0 dBm/MHz;
- (g) in the frequency band 2.7 GHz to 3.4 GHz when measured in any direction—
  - (i) have a maximum mean power spectral density —
    - (aa) no greater than -70.0 dBm/MHz; or
    - (bb) no greater than -50.0 dBm/MHz provided that a listen before talk mechanism described in EN 302 435-1 is used to mitigate interference to other users of the electromagnetic spectrum;

- (ii) have a maximum peak power no greater than -30.0 dBm or the equivalent transmission level; and
  - (iii) have a total radiated power spectral density of -75.0 dBm/MHz;
- (h) in the frequency band 3.4 GHz to 4.8 GHz when measured in any direction have—
- (i) a maximum mean power spectral density no greater than -50.0 dBm/MHz;
  - (ii) a maximum peak power no greater than -10.0 dBm or the equivalent transmission level; and
  - (iii) a total radiated power spectral density of -55.0 dBm/MHz;
- (i) in the frequency band 4.8 GHz to 5.0 GHz when measured in any direction have—
- (i) a maximum mean power spectral density no greater than -55.0 dBm/MHz;
  - (ii) a maximum peak power no greater than -15.0 dBm or the equivalent transmission level; and
  - (iii) a total radiated power spectral density below -65.0 dBm/MHz;
- (j) in the frequency band 5.0 GHz to 8.5 GHz when measured in any direction have—
- (i) a maximum mean power spectral density no greater than -50.0 dBm/MHz;
  - (ii) a maximum peak power no greater than -10.0 dBm or the equivalent transmission level; and
  - (iii) a total radiated power spectral density of -55.0 dBm/MHz; and
- (k) in the frequency bands above 8.5 GHz when measured in any direction have—
- (i) a maximum mean power spectral density no greater than -85.0 dBm/MHz;
  - (ii) a maximum peak power no greater than -45.0 dBm or the equivalent transmission level; and
  - (iii) a total radiated power spectral density of -90.0 dBm/MHz.

*Philip Marnick*  
Group Director Spectrum Policy Group  
For and by authority of the Office of  
Communications

9th March 2015

## EXPLANATORY NOTE

*(This note is not part of the Regulations)*

These Regulations give effect to Commission Decision 2014/702/EU(17) amending [Decision 2007/131/EC](#) on allowing the use of radio spectrum equipment using ultra-wideband technology in a harmonised manner in the Community.

The Regulations exempt the establishment, installation or use of equipment using ultra-wideband technology from the requirement to be licensed under section 8(1) of the Wireless Telegraphy Act 2006 (c.36) (“the Act”).

Parts 2 to 7 of the Regulations provide exemptions for the general use of ultra-wideband equipment, for ultra-wideband equipment in location tracking systems, automotive vehicles, railway vehicles, onboard aircraft, in material sensing devices and for building material analysis (all complying with certain terms, provisions and limitations) from the need to be licensed under the Act.

These regulations revoke and replace the Wireless Telegraphy (Ultra-Wideband Equipment) (Exemption) Regulations 2009 (S.I.2009/2517) and the Wireless Telegraphy (Ultra-Wideband Equipment) (Exemption)(Amendment) Regulations 2010 (S.I. 2010/2761).

The ETSI harmonised standards referred to in the regulations are available to the public on the ETSI website at <http://www.etsi.org> or from the ETSI Secretariat at 650 Route des Lucioles, 06921 Sophia-Anitpoles Cedex, France (Tel: +33 4 92 94 42 00).

A full list of all the harmonised standards for ultra-wideband equipment whose reference numbers have been published in the Official Journal of the European Union under Article 5 of Council [Directive 1999/5/EC](#) can be found on the European Commission internet website at: [http://ec.europa.eu/enterprise/policies/european-standards/harmonised-standards/rte/index\\_en.htm](http://ec.europa.eu/enterprise/policies/european-standards/harmonised-standards/rte/index_en.htm)

A full regulatory impact assessment of the effect that these Regulations will have on the costs to business is available to the public from OFCOM’s website at <http://www.ofcom.org.uk> or from the OFCOM library at Riverside House, 2a Southwark Bridge Road, London, SE1 9HA. Copies of this assessment have been placed in the library of the House of Commons.