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STATUTORY INSTRUMENTS

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**2015 No. 591**

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

**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(1); 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(2) and EN 302 498-1(3)) would be in accordance with the condition in regulation 28.

### **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—

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

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

- (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(4) 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;