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ANNEX

ANNEX

Frequency bands with corresponding harmonised technical conditions and implementation deadlines for short-range devices

Table 1 defines the scope of different categories of short-range devices (defined in Article 2(3)) to which the present Decision applies. Table 2 specifies different combinations of frequency band and category of short-range devices, and the harmonised technical conditions for spectrum access and implementation deadlines applicable thereto.

General technical conditions applicable to all bands and short-range devices that fall within the scope of this Decision:

- Member States must allow adjacent frequency bands set out in Table 2 to be used as a single frequency band provided the specific conditions of each of these adjacent frequency bands are met.
- Member States must allow the usage of spectrum up to the **transmit power, field strength or power density** set out in Table 2. Pursuant to Article 3(3) of this Decision, they may impose less restrictive conditions, that is to say allow the use of spectrum with higher transmit power, field strength or power density, provided it does not reduce or compromise the appropriate coexistence between short-range devices in bands harmonised by this Decision.
- Member States may only impose the **additional parameters** (channelling and/or channel access and occupation rules) set out in Table 2, and must not add other parameters or spectrum access and mitigation requirements. Less restrictive conditions pursuant to Article 3(3), means that Member States may completely omit these additional parameters in a given cell or allow higher values, provided that the appropriate sharing environment in the harmonised band is not compromised.
- Member States may only impose the **other usage restrictions** set out in Table 2 and must not add additional usage restrictions. Since less restrictive conditions may be applied pursuant to Article 3(3), Member States may omit one or all of these restrictions, provided that the appropriate sharing environment in the harmonised band is not compromised.
- Less restrictive conditions pursuant to Article 3(3) must apply without prejudice to Directive 2014/53/EU.

For the purposes of this Annex, the following **duty cycle** definition applies:

“**duty cycle**” means the ratio, expressed as a percentage, of $\Sigma(\text{Ton})/(\text{Tobs})$ where Ton is the “on” time of a single transmitter device and Tobs is the observation period. Ton is measured in an observation frequency band (Fobs). Unless otherwise specified in this technical annex, Tobs is a continuous one hour period and Fobs is the applicable frequency band in this technical annex. Less restrictive conditions within the meaning of Article 3(3), mean that Member States may allow a higher value for “duty cycle”.

TABLE 1

Categories of short-range devices pursuant to Article 2(3) and their scope

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| Category of short-range devices | Scope |
|---|--|
| Non-specific short-range devices (SRDs) | Covers all kinds of radio devices, regardless of the application or their purpose, which fulfil the technical conditions as specified for a given frequency band. Typical uses include telemetry, telecommand, alarms, data transmissions in general and other applications. |
| Active medical implant devices | Covers the radio part of active implantable medical devices that are intended to be fully or partially introduced, surgically or medically, into the human body or that of an animal, and where applicable their peripherals. Active implantable medical devices are defined in Council Directive 90/385/EEC ^a . |
| Assistive listening devices (ALDs) | Covers radio communications systems that allow persons with hearing impairment to increase their listening capability. Typical system installations include one or more radio transmitters and one or more radio receivers. |
| High duty cycle/continuous transmission devices | Covers radio devices that rely on low latency and high duty cycle transmissions. These devices are typically used for personal wireless audio and multimedia streaming systems used for combined audio/video transmissions and audio/video sync signals, mobile phones, automotive or home entertainment system, wireless microphones, cordless loudspeakers, cordless headphones, radio devices carried on a person, assistive listening devices, in-ear monitoring, wireless microphones for use at concerts or other stage productions, and low power analogue FM transmitters. |
| Inductive devices | Covers radio devices that use magnetic fields with inductive loop systems for near field communications. This typically includes devices for car immobilisation, animal identification, alarm systems, cable detection, waste management, personal identification, wireless voice links, access control, proximity sensors, anti-theft systems as well as RF anti-theft induction systems, data transfer to hand-held devices, automatic article identification, wireless control systems and automatic road tolling. |

^a Council Directive 90/385/EEC of 20 June 1990 on the approximation of the laws of the Member States relating to active implantable medical devices (OJ L 189, 20.7.1990, p. 17).

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| Low duty cycle/high reliability devices | Covers radio devices that rely on low overall spectrum utilisation and low duty cycle spectrum access rules to ensure highly reliable spectrum access and transmissions in shared bands. Typical applications include alarm systems that use radio communication for indicating an alert condition at a distant location and social alarm systems that allow reliable communication for a person in distress. |
| Medical data acquisition devices | Covers the transmission of non-voice data to and from non-implantable medical devices in order to monitor, diagnose and treat patients in healthcare facilities or in their homes as prescribed by duly authorised healthcare professionals. |
| PMR446 devices | Covers hand portable equipment (without base station or repeater use) carried on a person or manually operated, which uses integral antennas only in order to maximise sharing and minimise interference. PMR 446 equipment operates in short-range peer-to-peer mode and must not be used neither as a part of infrastructure network nor as a repeater. |
| Radio determination devices | Covers radio devices used for determining the position, velocity and/or other characteristics of an object, or for obtaining information relating to these parameters. Radio determination equipment typically conducts measurements to obtain such characteristics. Radio determination devices exclude any kind of point-to-point or point-to-multipoint radio communications. |
| Radio frequency identification (RFID) devices | Covers tag/interrogator based radio communications systems, consisting of (i) radio devices (tags) attached to animate or inanimate items and (ii) transmitter/receiver units (interrogators) which activate the tags and receive data back. Typical applications include the tracking and identification of items, for instance for the purpose of electronic article surveillance (EAS), and collecting and transmitting data relating to the items to which tags are attached, which may be either battery-less, battery assisted or battery powered. The responses from a tag |

^a Council Directive 90/385/EEC of 20 June 1990 on the approximation of the laws of the Member States relating to active implantable medical devices (OJ L 189, 20.7.1990, p. 17).

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| | are validated by its interrogator and passed to its host system. |
| Transport and traffic telematics devices | Covers radio devices that are used in the fields of transport (road, rail, water or air, depending on the relevant technical restrictions), traffic management, navigation, mobility management and in intelligent transport systems (ITS). Typical applications include interfaces between different modes of transport, communication between vehicles (e.g. car to car), between vehicles and fixed locations (e.g. car to infrastructure) as well as communication from and to users. |
| Wideband data transmission devices | Covers radio devices that use wideband modulation techniques to access the spectrum. Typical uses include wireless access systems such as radio local area networks (WAS/RLANs) or wideband SRDs in data networks. |
| <p>a Council Directive 90/385/EEC of 20 June 1990 on the approximation of the laws of the Member States relating to active implantable medical devices (OJ L 189, 20.7.1990, p. 17).</p> | |

TABLE 2

Frequency bands with corresponding harmonised technical conditions and implementation deadlines for short-range devices

| Band no | Frequency band | Category of short-range devices | Transmit power limit/field strength limit/power density limit | Additional parameters (channelling and/or channel access and occupation rules) | Other usage restrictions | Implementation deadline |
|---------|-------------------|---------------------------------|---|--|---|-------------------------|
| 1 | 9-59,750 kHz | Inductive devices | 72 dB μ A/m at 10 metres | | | 1 July 2014 |
| 2 | 9-315 kHz | Active medical implant devices | 30 dB μ A/m at 10 metres | Duty cycle limit: 10 % | This set of usage conditions is only available to active implantable medical devices. | 1 July 2014 |
| 3 | 59,750-60,250 kHz | Inductive devices | 42 dB μ A/m at 10 metres | | | 1 July 2014 |

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| 4 | 60,250-74,750 kHz | Inductive devices | 72 dB μ A/m at 10 metres | | 1 July 2014 |
| 5 | 74,750-75,250 kHz | Inductive devices | 42 dB μ A/m at 10 metres | | 1 July 2014 |
| 6 | 75,250-77,250 kHz | Inductive devices | 72 dB μ A/m at 10 metres | | 1 July 2014 |
| 7 | 77,250-77,750 kHz | Inductive devices | 42 dB μ A/m at 10 metres | | 1 July 2014 |
| 8 | 77,750-90 kHz | Inductive devices | 72 dB μ A/m at 10 metres | | 1 July 2014 |
| 9 | 90-119 kHz | Inductive devices | 42 dB μ A/m at 10 metres | | 1 July 2014 |
| 10 | 119-128,6 kHz | Inductive devices | 66 dB μ A/m at 10 metres | | 1 July 2014 |
| 11 | 128,6-129,6 kHz | Inductive devices | 42 dB μ A/m at 10 metres | | 1 July 2014 |
| 12 | 129,6-135 kHz | Inductive devices | 66 dB μ A/m at 10 metres | | 1 July 2014 |
| 13 | 135-140 kHz | Inductive devices | 42 dB μ A/m at 10 metres | | 1 July 2014 |
| 14 | 140-148,5 kHz | Inductive devices | 37,7 dB μ A/m at 10 metres | | 1 July 2014 |
| 15 | 148,5-5 000 kHz [1] | Inductive devices | – 15 dB μ A/m at 10 metres in any bandwidth of 10 kHz. Furthermore the total field strength is – 5 dB μ A/m at 10 m for systems operating at | | 1 July 2014 |

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| | | | bandwidths larger than 10 kHz | | | |
| 17 | 400-600 kHz | Radio Frequency Identification (RFID) devices | – 8 dB μ A/m at 10 metres | | | 1 July 2014 |
| 85 | 442,2-450,0 kHz | Non-specific short-range devices | 7 dB μ A/m at 10 m | Channel spacing \geq 150 Hz | This set of usage conditions is only available for person detection and collision avoidance devices. | 1 January 2020 |
| 18 | 456,9-457,1 kHz | Non-specific short-range devices | 7 dB μ A/m at 10 m | | This set of usage conditions is only available for emergency detections of buried victims and valuable items devices. | 1 July 2014 |
| 19 | 984-7 484 kHz | Transport and Traffic Telematics devices | 9 dB μ A/m at 10 m | Duty cycle limit: 1 % | This set of usage conditions is only available for Eurobalise transmissions in the presence of trains and using the 27 MHz band for telepowering. | 1 July 2014 |
| 20 | 3 155-3 400 kHz | Inductive devices | 13,5 dB μ A/m at 10 metres | | | 1 July 2014 |

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| 21 | 5 000-30 000 kHz [2] | Inductive devices | – 20 dB μ A/m at 10 metres in any bandwidth of 10 kHz. Furthermore the total field strength is – 5 dB μ A/m at 10 m for systems operating at bandwidths larger than 10 kHz | | | 1 July 2014 |
| 22 | 6 765-6 795 kHz | Inductive devices | 42 dB μ A/m at 10 metres | | | 1 July 2014 |
| 23 | 7 300-23 000 kHz | Transport and Traffic Telematics devices | – 7 dB μ A/m at 10 m | Antenna requirements apply [8]. | This set of usage conditions is only available for Euroloop transmissions in the presence of trains and using the 27 MHz band for telepowering. | 1 July 2014 |
| 24 | 7 400-8 800 kHz | Inductive devices | 9 dB μ A/m at 10 metres | | | 1 July 2014 |
| 25 | 10 200-11 000 kHz | Inductive devices | 9 dB μ A/m at 10 metres | | | 1 July 2014 |
| 27a | 13 553-13 567 kHz | Inductive devices | 42 dB μ A/m at 10 metres | Transmission mask and antenna requirements for all combined frequency segments | | 1 January 2020 |

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| | | | | apply [8], [9]. | |
| 27b | 13 553-13 567 kHz | Radio Frequency Identification (RFID) devices | 60 dB μ A/m at 10 metres | Transmission mask and antenna requirements for all combined frequency segments apply [8], [9]. | 1 July 2014 |
| 27c | 13 553-13 567 kHz | Non-specific short-range devices | 10 mW e.r.p. | | 1 July 2014 |
| 28 | 26 957-27 283 kHz | Non-specific short-range devices | 10 mW e.r.p. | | 1 July 2014 |
| 29 | 26 990-27 000 kHz | Non-specific short-range devices | 100 mW e.r.p. | Duty cycle limit: 0,1 %. Model control devices [d] may operate without duty cycle restrictions. | 1 July 2014 |
| 30 | 27 040-27 050 kHz | Non-specific short-range devices | 100 mW e.r.p. | Duty cycle limit: 0,1 %. Model control devices [d] may operate without duty cycle restrictions. | 1 July 2014 |
| 31 | 27 090-27 100 kHz | Non-specific short-range devices | 100 mW e.r.p. | Duty cycle limit: 0,1 %. Model control devices [d] may operate | 1 July 2014 |

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| | | | | without duty cycle restrictions. | | |
| 32 | 27 140-27 150 kHz | Non-specific short-range devices | 100 mW e.r.p. | Duty cycle limit: 0,1 %. Model control devices [d] may operate without duty cycle restrictions. | | 1 July 2014 |
| 33 | 27 190-27 200 kHz | Non-specific short-range devices | 100 mW e.r.p. | Duty cycle limit: 0,1 %. Model control devices [d] may operate without duty cycle restrictions. | | 1 July 2014 |
| 34 | 30-37,5 MHz | Active medical implant devices | 1 mW e.r.p. | Duty cycle limit: 10 % | This set of usage conditions is only available to ultra-low power medical membrane implants for blood pressure measurements within the definition of active implantable medical devices. | 1 July 2014 |
| 35 | 40,66-40,7 MHz | Non-specific short-range devices | 10 mW e.r.p. | | | 1 January 2018 |

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| 36 | 87,5-108 MHz | High duty cycle/continuous transmission devices | 50 nW e.r.p. | Channel spacing up to 200 kHz. | This set of usage conditions is only available to wireless audio and multimedia streaming transmitters with analogue frequency modulation (FM). | 1 July 2014 |
| 37a | 169,4-169,475 MHz | Assistive Listening Devices (ALD) | 500 mW e.r.p. | Channel spacing: max 50 kHz. | | 1 July 2014 |
| 37c | 169,4-169,475 MHz | Non-specific short-range devices | 500 mW e.r.p. | Channel spacing: max 50 kHz. Duty cycle limit: 1,0 %. For metering devices [a], the duty cycle limit is 10,0 % | | 1 July 2014 |
| 38 | 169,4-169,4875 MHz | Non-specific short-range devices | 10 mW e.r.p. | Duty cycle limit: 0,1 %. | | 1 January 2020 |
| 39a | 169,4875-169,5875 MHz | Assistive Listening Devices (ALD) | 500 mW e.r.p. | Channel spacing: max 50 kHz. | | 1 July 2014 |
| 39b | 169,4875-169,5875 MHz | Non-specific short-range devices | 10 mW e.r.p. | Duty cycle limit: 0,001 %. Between 00.00 and 6.00 local time a duty cycle limit of 0,1 % | | 1 January 2020 |

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| | | | | may be used. | | |
| 40 | 169,5875-169,8125 MHz | 9,8125 specific short-range devices | 10 mW e.r.p. | Duty cycle limit: 0,1 %. | | 1 January 2020 |
| 82 | 173,965-216 MHz | Assistive Listening Devices (ALD) | 10 mW e.r.p. | On a tuning range basis [5]. Channel spacing: max 50 kHz. A threshold of 35 dB μ V/m is required to ensure the protection of a DAB receiver located at 1,5 m from the ALD device, subject to DAB signal strength measurements taken around the ALD operating site. The ALD device should operate under all circumstances at least 300 kHz away from the channel edge of an occupied DAB channel. Requirements on techniques to access | | 1 January 2018 |

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| | | | | spectrum and mitigate interference apply [7]. | | |
| 41 | 401-402 MHz | Active medical implant devices | 25 μ W e.r.p. | Channel spacing: 25 kHz. Individual transmitters may combine adjacent channels for increased bandwidth up to 100 kHz. Requirements between on techniques to access spectrum and mitigate interference apply [7]. Alternatively a duty cycle limit of 0,1 % may also be used. | This set of usage conditions is only available for systems specifically designed for the purpose of providing non-voice digital communications between active implantable medical devices and/or body-worn devices and other devices external to the human body used for transferring non-time critical individual patient-related physiological information. | 1 July 2014 |
| 42 | 402-405 MHz | Active medical implant devices | 25 μ W e.r.p. | Channel spacing: 25 kHz. Individual transmitters may combine adjacent channels for increased | This set of usage conditions is only available to active implantable medical devices. | 1 July 2014 |

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| | | | | bandwidth up to 300 kHz. Other techniques to access spectrum or mitigate interference, including bandwidths greater than 300 kHz, can be used provided they ensure compatible operation with the other users and in particular with meteorological radiosondes [7]. | | |
| 43 | 405-406 MHz | Active medical implant devices | 25 µW e.r.p. | Channel spacing: 25 kHz Individual transmitters may combine adjacent channels for increased bandwidth up to 100 kHz. Requirements on techniques to access spectrum and mitigate interference apply [7]. Alternatively a duty cycle limit | This set of usage conditions is only available for systems specifically designed for the purpose of providing non-voice digital communications between active implantable medical devices and/or body-worn devices and other devices external to the human | 1 July 2014 |

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| | | | | of 0,1 % may also be used. | body used for transferring non-time critical individual patient-related physiological information. | |
| 86 | 430-440 MHz | Medical data acquisition devices | – 50 dBm/100kHz e.r.p. power density but not exceeding a total power of – 40 dBm/10MHz (both limits are intended for measurement outside of the patient's body) | | The set of usage conditions is only available for Ultra-Low Power Wireless Medical Capsule Endoscopy (ULP-WMCE) applications [h]. | 1 January 2020 |
| 44a | 433,05-434,7 MHz | Non-specific short-range devices | 1 mW e.r.p. and – 13 dBm/10 kHz power density for bandwidth modulation larger than 250 kHz | | Voice applications are allowed with advanced mitigation techniques. Other audio and video applications are excluded. | 1 July 2014 |
| 44b | 433,05-434,7 MHz | Non-specific short-range devices | 10 mW e.r.p. | Duty cycle limit: 10 % | | 1 January 2020 |
| 45c | 434,04-434,7 MHz | Non-specific short-range devices | 10 mW e.r.p. | Duty cycle limit: 100 % subject to channel spacing up to 25 kHz. | Voice applications are allowed with advanced mitigation techniques. Other audio | 1 January 2020 |

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| | | | | | and video applications are excluded. | |
| 83 | 446,0-446,2 MHz | PMR446 | 500 mW e.r.p. | Requirements on techniques to access spectrum and mitigate interference apply [7]. | | 1 January 2018 |
| 87 | 862-863 MHz | Non-specific short-range devices | 25 mW e.r.p. | Duty cycle limit: 0,1 %. Bandwidth: ≤ 350 kHz. | | 1 January 2020 |
| 46a | 863-865 MHz | Non-specific short-range devices | 25 mW e.r.p. | Requirements on techniques to access spectrum and mitigate interference apply [7]. Alternatively a duty cycle limit of 0,1 % may also be used. | | 1 January 2018 |
| 46b | 863-865 MHz | High duty cycle/continuous transmission devices | 10 mW e.r.p. | | This set of usage conditions is only available to wireless audio and multimedia streaming devices. | 1 July 2014 |
| 84 | 863-868 MHz | Wideband data transmission devices | 25 mW e.r.p. | Requirements on techniques to access spectrum and mitigate | This set of usage conditions is only available for wideband | 1 January 2018 |

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| | | | | interference apply [7]. Bandwidth: > 600 kHz and \leq 1 MHz. Duty cycle: \leq 10 % for network access points [g] Duty cycle: \leq 2,8 % otherwise | SRDs in data networks [g]. | |
| 47 | 865-868 MHz | Non-specific short-range devices | 25 mW e.r.p. | Requirements on techniques to access spectrum and mitigate interference apply [7]. Alternatively a duty cycle limit of 1 % may also be used. | | 1 January 2020 |
| 47a | 865-868 MHz [6] | Radio Frequency Identification (RFID) devices | 2 W e.r.p. Interrogator transmissions at 2 W e.r.p. only permitted within the four channels centred at 865,7 MHz, 866,3 MHz, 866,9 MHz and 867,5 MHz RFID interrogator devices placed on the market before | Requirements on techniques to access spectrum and mitigate interference apply [7]. Bandwidth \leq 200 kHz | | 1 January 2018 |

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| | | | the repeal date of EC Commission Decision 2006/804/EC ^a are “grandfathered”, i.e. they are continuously permitted to be used in line with the provisions set out in EC Decision 2006/804/EC before the repeal date. | | | |
| 47b | 865-868 MHz | Non-specific short-range devices | 500 mW e.r.p. Transmission only permitted within the frequency ranges 865,6-865,8 MHz, 866,2-866,4 MHz, 866,8-867,0 MHz and 867,4-867,6 MHz. Adaptive Power Control (APC) required. Alternatively other mitigation technique with at least an equivalent level of spectrum compatibility. | Requirements on techniques to access spectrum and mitigate interference apply [7]. Bandwidth: ≤ 200 kHz Duty cycle: ≤ 10 % for network access points [g] Duty cycle: ≤ 2,5 % otherwise | This set of usage conditions is only available for data networks [g]. | 1 January 2018 |

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| 48 | 868-868,6 MHz | Non-specific short-range devices | 25 mW e.r.p. | Requirements on techniques to access spectrum and mitigate interference apply [7]. Alternatively a duty cycle limit of 1 % may also be used. | | 1 January 2020 |
| 49 | 868,6-868,7 MHz | Low duty cycle/high reliability devices | 10 mW e.r.p. | Channel spacing: 25 kHz. The whole frequency band may also be used as a single channel for high-speed data transmission. Duty cycle limit: 1,0 % | This set of usage conditions is only available to alarm systems [e]. | 1 July 2014 |
| 50 | 868,7-869,2 MHz | Non-specific short-range devices | 25 mW e.r.p. | Requirements on techniques to access spectrum and mitigate interference apply [7]. Alternatively a duty cycle limit of 0,1 % may also be used. | | 1 January 2020 |
| 51 | 869,2-869,25 MHz | Low duty cycle/high reliability devices | 10 mW e.r.p. | Channel spacing: 25 kHz. Duty cycle limit: 0,1 % | This set of usage conditions is only available to social | 1 July 2014 |

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| | | | | | alarm devices [b]. | |
| 52 | 869,25-869,3 MHz | Low duty cycle/high reliability devices | 10 mW e.r.p. | Channel spacing: 25 kHz. Duty cycle limit: 0,1 % | This set of usage conditions is only available to alarm systems [e]. | 1 July 2014 |
| 53 | 869,3-869,4 MHz | Low duty cycle/high reliability devices | 10 mW e.r.p. | Channel spacing: 25 kHz. Duty cycle limit: 1,0 % | This set of usage conditions is only available to alarm systems [e]. | 1 July 2014 |
| 54 | 869,4-869,65 MHz | Non-specific short-range devices | 500 mW e.r.p. | Requirements on techniques to access spectrum and mitigate interference apply [7]. Alternatively a Duty cycle limit of 10 % may also be used. | | 1 January 2020 |
| 55 | 869,65-869,7 MHz | Low duty cycle/high reliability devices | 25 mW e.r.p. | Channel spacing: 25 kHz Duty cycle limit: 10 % | This set of usage conditions is only available to alarm systems [e]. | 1 July 2014 |
| 56a | 869,7-870 MHz | Non-specific short-range devices | 5 mW e.r.p. | | Voice applications are allowed with advanced mitigation techniques. Other audio and video applications are excluded. | 1 July 2014 |

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|-----|-------------------|---|---|--|----------------|
| 56b | 869,7-870 MHz | Non-specific short-range devices | 25 mW e.i.r.p. | Requirements on techniques to access spectrum and mitigate interference apply [7]. Alternatively a duty cycle limit of 1 % may also be used. | 1 January 2020 |
| 57a | 2 400-2 483,5 MHz | Non-specific short-range devices | 10 mW equivalent isotropic radiated power (e.i.r.p.) | | 1 July 2014 |
| 57b | 2 400-2 483,5 MHz | Radio determination devices | 25 mW e.i.r.p. | | 1 July 2014 |
| 57c | 2 400-2 483,5 MHz | Wideband data transmission devices | 100 mW e.i.r.p. and 100 mW/100 kHz e.i.r.p. density applies when frequency hopping modulation is used, 10 mW/MHz e.i.r.p. density applies when other types of modulation are used | Requirements on techniques to access spectrum and mitigate interference apply [7]. | 1 July 2014 |
| 58 | 2 446-2 454 MHz | Radio Frequency Identification (RFID) devices | 500 mW e.i.r.p. | Requirements on techniques to access spectrum and | 1 July 2014 |

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| | | | | mitigate interference apply [7]. | | |
| 59 | 2 483,5-2 500 MHz | Active medical implant devices | 10 mW e.i.r.p. | Requirements on techniques to access spectrum and mitigate interference apply [7]. Channel spacing: 1 MHz. The whole frequency band may also be used dynamically as a single channel for high-speed data transmissions. In addition, a duty cycle limit of 10 % applies. | This set of usage conditions is only available to active implantable medical devices. Peripheral master units are for indoor use only. | 1 July 2014 |
| 59a | 2 483,5-2 500 MHz | Medical data acquisition devices | 1 mW e.i.r.p. | Requirements on techniques to access spectrum and mitigate interference apply [7]. Modulation Bandwidth: ≤ 3 MHz. In addition, a duty cycle: ≤ 10 % applies. | The set of usage conditions is only available for medical body area network system (MBANS) [f] for indoor use within healthcare facilities | 1 January 2018 |
| 59b | 2 483,5-2 500 MHz | Medical data acquisition devices | 10 mW e.i.r.p. | Requirements on techniques to access | The set of usage conditions is only | 1 January 2018 |

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| | | | | spectrum and mitigate interference apply [7]. Modulation Bandwidth: ≤ 3 MHz. In addition, a duty cycle: ≤ 2 % applies | available for medical body area network system (MBANS) [f] for indoor use within the patient's home | |
| 60 | 4 500-7 000 MHz | Radio determination devices | 24 dBm e.i.r.p. [3] | Requirements on techniques to access spectrum and mitigate interference apply [7]. | This set of usage conditions is only available to Tank Level Probing Radar [c]. | 1 July 2014 |
| 61 | 5 725-5 875 MHz | Non-specific short-range devices | 25 mW e.i.r.p. | | | 1 July 2014 |
| 62 | 5 795-5 815 MHz | Transport and Traffic Telematics devices | 2 W e.i.r.p. | Requirements on techniques to access spectrum and mitigate interference apply [7]. | This set of usage conditions applies only to road tolling applications and smart tachograph, weight and dimension applications [i]. | 1 January 2020 |
| 88 | 5 855-5 865 MHz | Transport and Traffic Telematics devices | 33 dBm e.i.r.p., 23 dBm/MHz e.i.r.p. density and a Transmit Power Control (TPC) range of 30 dB | Requirements on techniques to access spectrum and mitigate interference apply [7]. | This set of usage conditions is only available to vehicle-to-vehicle, vehicle-to-infrastructure and infrastructure- | 1 January 2020 |

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| | | | | | to-vehicle systems. | |
| 89 | 5 865-5 875 MHz | Transport and Traffic Telematics devices | 33 dBm e.i.r.p., 23 dBm/MHz e.i.r.p. density and a Transmit Power Control (TPC) range of 30 dB | Requirements on techniques to access spectrum and mitigate interference apply [7]. | This set of usage conditions is only available to vehicle-to-vehicle, vehicle-to-infrastructure and infrastructure-to-vehicle systems. | 1 January 2020 |
| 63 | 6 000-8 500 MHz | Radio determination devices | 7 dBm/50 MHz peak e.i.r.p. and – 33 dBm/MHz mean e.i.r.p. | Automatic power control and antenna requirements as well as requirements on techniques to access spectrum and mitigate interference apply [7], [8] [10]. | This set of usage conditions is only available to Level Probing Radar. Established exclusion zones around radio astronomy sites must be obeyed. | 1 July 2014 |
| 64 | 8 500-10 600 MHz | Radio determination devices | 30 dBm e.i.r.p. [3] | Requirements on techniques to access spectrum and mitigate interference apply [7]. | This set of usage conditions is only available to Tank Level Probing Radar [c]. | 1 July 2014 |
| 65 | 17,1-17,3 GHz | Radio determination devices | 26 dBm e.i.r.p. | Requirements on techniques to access spectrum and mitigate interference apply [7]. | This set of usage conditions is only available to ground-based systems. | 1 July 2014 |

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| 66 | 24,05-24,075 GHz | Transport and Traffic Telematics devices | 100 mW e.i.r.p. | | | 1 July 2014 |
| 67 | 24,05-26,5 GHz | Radio determination devices | 26 dBm/50 MHz peak e.i.r.p. and – 14 dBm/MHz mean e.i.r.p. | Automatic power control and antenna requirements as well as requirements on techniques to access spectrum and mitigate interference apply [7], [8], [10] | This set of usage conditions is only available to Level Probing Radar. Established exclusion zones around radio astronomy sites must be obeyed. | 1 July 2014 |
| 68 | 24,05-27 GHz | Radio determination devices | 43 dBm e.i.r.p. [3] | Requirements on techniques to access spectrum and mitigate interference apply [7]. | This set of usage conditions is only available to Tank Level Probing Radar [c]. | 1 July 2014 |
| 69a | 24,075-24,15 GHz | Transport and Traffic Telematics devices | 100 mW e.i.r.p. | Requirements on techniques to access spectrum and mitigate interference apply [7]. | This set of usage conditions is only available to ground-based vehicle radars. | 1 July 2014 |
| 69b | 24,075-24,15 GHz | Transport and Traffic Telematics devices | 0,1 mW e.i.r.p. | | | 1 July 2014 |
| 70a | 24,15-24,25 GHz | Non-specific short-range devices | 100 mW e.i.r.p. | | | 1 July 2014 |
| 70b | 24,15-24,25 GHz | Transport and Traffic | 100 mW e.i.r.p. | | | 1 July 2014 |

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| | | Telematics devices | | | | |
| 74a | 57-64 GHz | Non-specific short-range devices | 100 mW e.i.r.p. and a maximum transmit power of 10 dBm | | | 1 January 2020 |
| 74b | 57-64 GHz | Radio determination devices | 43 dBm e.i.r.p. [3] | Requirements on techniques to access spectrum and mitigate interference apply [7]. | This set of usage conditions is only available to Tank Level Probing Radar [c]. | 1 July 2014 |
| 74c | 57-64 GHz | Radio determination devices | 35 dBm/50 MHz peak e.i.r.p. and – 2 dBm/MHz mean e.i.r.p. | Automatic power control and antenna requirements as well as requirements on techniques to access spectrum and mitigate interference apply [7], [8], [10]. | This set of usage conditions is only available to Level Probing Radar. | 1 July 2014 |
| 75 | 57-71 GHz | Wideband data transmission devices | 40 dBm e.i.r.p. and 23 dBm/MHz e.i.r.p. density | Requirements on techniques to access spectrum and mitigate interference apply [7]. | Fixed outdoor installations are excluded. | 1 January 2020 |
| 75a | 57-71 GHz | Wideband data transmission devices | 40 dBm e.i.r.p., 23 dBm/MHz e.i.r.p. density and maximum transmit power of | Requirements on techniques to access spectrum and mitigate | | 1 January 2020 |

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| | | | 27 dBm at the antenna port or ports | interference apply [7]. | | |
| 75b | 57-71 GHz | Wideband data transmission devices | 55 dBm e.i.r.p., 38 dBm/MHz e.i.r.p. density and a transmit antenna gain ≥ 30 dBi | Requirements on techniques to access spectrum and mitigate interference apply [7]. | This set of usage conditions is only available to fixed outdoor installations. | 1 January 2020 |
| 76 | 61-61,5 GHz | Non-specific short-range devices | 100 mW e.i.r.p. | | | 1 July 2014 |
| 77 | 63,72-65,88 GHz | Transport and Traffic Telematics devices | 40 dBm e.i.r.p. | TTT devices placed on the market before the 1 January 2020 are “grandfathered”, i.e. they are permitted to use the previous frequency range 63-64 GHz, and otherwise the same conditions apply. | This set of usage conditions is only available to vehicle-to-vehicle, vehicle-to-infrastructure and infrastructure-to-vehicle systems. | 1 January 2020 |
| 78a | 75-85 GHz | Radio determination devices | 34dBm/50MHz peak e.i.r.p. and – 3 dBm/MHz mean e.i.r.p. | Automatic power control and antenna requirements as well as requirements on techniques to access spectrum and mitigate interference | This set of usage conditions is only available to Level Probing Radar. Established exclusion zones around radio astronomy | 1 July 2014 |

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| | | | | apply [7], [8], [10]. | sites must be obeyed. | |
| 78b | 75-85 GHz | Radio determination devices | 43 dBm e.i.r.p. [3] | Requirements on techniques to access spectrum and mitigate interference apply [7]. | This set of usage conditions is only available to Tank Level Probing Radar [c]. | 1 July 2014 |
| 79a | 76-77 GHz | Transport and Traffic Telematics devices | 55 dBm peak e.i.r.p. and 50 dBm mean e.i.r.p. and 23,5 dBm mean e.i.r.p. for pulse radars | Requirements on techniques to access spectrum and mitigate interference apply [7]. Fixed transportation infrastructure radars have to be of a scanning nature in order to limit the illumination time and ensure a minimum silent time to achieve coexistence with automotive radar systems. | This set of usage conditions is only available to ground-based vehicle and infrastructure systems. | 1 June 2020 |
| 79b | 76-77 GHz | Transport and Traffic Telematics devices | 30 dBm peak e.i.r.p. and 3 dBm/MHz average power spectral density | Duty cycle limit: ≤ 56 %/s | This set of usage conditions is only available to obstacle detection systems for rotorcraft use [4]. | 1 January 2018 |

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| 80a | 122-122,25 GHz | Non-specific short-range devices | 10 dBm e.i.r.p./250 MHz and – 48 dBm/MHz at 30° elevation | | | 1 January 2018 |
| 80b | 122,25-123 GHz | Non-specific short-range devices | 100 mW e.i.r.p. | | | 1 January 2018 |
| 81 | 244-246 GHz | Non-specific short-range devices | 100 mW e.i.r.p. | | | 1 July 2014 |

a Commission Decision of 23 November 2006 on harmonisation of the radio spectrum for radio frequency identification (RFID) devices operating in the ultra high frequency (UHF) band (OJ L 329, 25.11.2006, p. 64).

Applications and devices referred to in Table 2:

- [a] “Metering devices” means radio devices that are part of bidirectional radio communications systems which allow remote monitoring, measuring and transmission of data in smart grid infrastructures, such as electricity, gas and water.
- [b] “Social alarm devices” means radio communications systems that allow reliable communication for a person in distress in a confined area to initiate a call for assistance. Typical uses of social alarm are to assist elderly or disabled people.
- [c] “Tank Level Probing Radar” (TLPR) means a specific type of radiodetermination application, which is used for tank level measurements and is installed in metallic or reinforced concrete tanks, or similar structures made of material with comparable attenuation characteristics. The purpose of the tank is to contain a substance.
- [d] “Model control devices” means a specific kind of telecommand and telemetry radio equipment that is used to remotely control the movement of models (principally miniature representations of vehicles) in the air, on land or over or under the water surface.
- [e] An alarm system is a device which uses radio communication support for indicating an alert to a system or a person, as a main functionality, at a distant location when a problem or a specific situation occurs. Radio alarms include social alarms and alarms for security and safety.
- [f] Medical Body Area Network Systems (MBANSs) are used for medical data acquisition and are intended for low-power wireless networking of a plurality of body-worn sensors and/or actuators as well as of a hub device placed on/around the human body.
- [g] A network access point in a data network is a fixed terrestrial short-range device that acts as a connection point for the other short-range devices in the data network to service platforms located outside of that data network. The term data network refers to several short-range devices, including the network access point, as network components and to the wireless connections between them.
- [h] Wireless medical capsule endoscopy is used for medical data acquisition designed for use in medical doctor-patient scenarios with the aim of acquiring images of human digestive tract.
- [i] Smart tachograph, weight and dimension applications are defined as remote enforcement of the tachograph in Appendix 14 of Commission Implementing Regulation (EU) 2016/799 (OJ L 139, 26.5.2016, p. 1) and for the weights and dimensions enforcement in Article 10d of Directive (EU) 2015/719 of the European Parliament and of the Council (OJ L 115, 6.5.2015, p. 1).

Other technical requirements and clarifications referred to in Table 2:

- [1] In band 20 higher field strengths and additional usage restrictions apply for inductive applications.
- [2] In bands 22, 24, 25, 27a, and 28 higher field strengths and additional usage restrictions apply for inductive applications.
- [3] The power limit applies inside a closed tank and corresponds to a spectral density of – 41,3 dBm/MHz e.i.r.p. outside a 500 litre test tank.
- [4] Member States can specify exclusion zones or equivalent measures in which the obstacle detection application for rotorcraft use shall not be used for the protection

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- of the radioastronomy service or other national use. Rotorcraft is defined as EASA CS-27 and CS-29 (resp. JAR-27 and JAR-29 for former certifications);
- [5] Devices shall implement the whole frequency range on a tuning range basis.
- [6] RFID tags respond at a very low power level (– 20 dBm e.r.p.) in a frequency range around the RFID interrogator channels and must comply with the essential requirements of Directive 2014/53/EU.
- [7] Techniques to access spectrum and mitigate interference that provide an appropriate level of performance to comply with the essential requirements of Directive 2014/53/EU shall be used. If relevant techniques are described in harmonised standards or parts thereof the references of which have been published in the *Official Journal of the European Union* under Directive 2014/53/EU, performance at least equivalent to these techniques shall be ensured.
- [8] Antenna requirements that provide an appropriate level of performance to comply with the essential requirements of Directive 2014/53/EU shall be used. If relevant restrictions are described in harmonised standards or parts thereof the references of which have been published in the *Official Journal of the European Union* under Directive 2014/53/EU, performance at least equivalent to these restrictions shall be ensured.
- [9] Transmission mask that provides an appropriate level of performance to comply with the essential requirements of Directive 2014/53/EU shall be used. If relevant restrictions are described in harmonised standards or parts thereof the references of which have been published in the *Official Journal of the European Union* under Directive 2014/53/EU, performance at least equivalent to these restrictions shall be ensured.
- [10] Automatic power control that provides an appropriate level of performance to comply with the essential requirements of Directive 2014/53/EU shall be used. If relevant restrictions are described in harmonised standards or parts thereof the references of which have been published in the *Official Journal of the European Union* under Directive 2014/53/EU, performance at least equivalent to these restrictions shall be ensured.
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Changes and effects yet to be applied to :

- Decision revoked by [2023 c. 28 Sch. 1 Pt. 2](#)