



**▼B****COMMISSION IMPLEMENTING DECISION (EU) 2018/1538****of 11 October 2018****on the harmonisation of radio spectrum for use by short-range devices within the 874-876 and 915-921 MHz frequency bands***(notified under document C(2018) 6535)***(Text with EEA relevance)***Article 1*

This Decision harmonises the frequency bands and the related technical conditions for the availability and efficient use of spectrum for short-range devices within the 874-876 MHz and 915-921 MHz frequency bands.

**▼M1***Article 2*

For the purposes of this Decision, the following definitions shall apply:

1. ‘short-range device’ means a radio device which provides either unidirectional or bidirectional communication and which receives and/or transmits over a short distance at low power;
2. ‘non-interference and non-protected basis’ means that no harmful interference may be caused to any radio communication service and that no claim may be made for protection of these devices against interference originating from radio communication services;
3. ‘category of short-range devices’ means a group of short-range or networked short-range devices that use spectrum with similar technical spectrum access mechanisms or based on common usage scenarios.

**▼B***Article 3*

1. Member States shall designate and make available, on a non-exclusive, non-interference and non-protected basis the frequency bands for the types of short-range devices and networked short-range devices, subject to the harmonised technical conditions and by the implementation deadlines set out in the Annex.

2. Member States may take appropriate measures to protect existing use in the 874-876 MHz and 915-921 MHz spectrum to the extent necessary and where no alternative protective solution may be found through coordination of the various types of uses in those bands. This may include the imposition of additional technical, geographic or operational requirements for the use of the band while complying with the harmonised technical conditions for spectrum access set out in the Annex.

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3. Member States may allow the use of the frequency bands covered by the Annex under less restrictive conditions or for short-range devices which are not part of the harmonised category. This holds as long as it does not prevent or reduce the possibility for short-range devices of the harmonised category to rely on the appropriate set of harmonised technical conditions allowing the shared use of a specific part of the spectrum on a non-exclusive basis and for different purposes by short-range devices of the same category.

4. Member States shall refrain from introducing new uses in the 874,4-876 MHz and 919,4-921 MHz sub-bands until such time as harmonised conditions for their use are adopted under Decision No 676/2002/EC.

*Article 4*

Member States shall monitor the use of the 874-876 MHz and 915-921 MHz frequency bands, including the potential use of the 874,4-876 MHz and 919,4-921 MHz sub-bands for the future railway mobile communications system (FRMCS), and report their findings to the Commission upon request or at their own initiative in order to allow regular and timely review of the Decision.

*Article 5*

This Decision is addressed to the Member States.

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## ANNEX

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

The following table specifies different combinations of frequency band and category of short-range devices (as defined in Article 2(6)), 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 in the scope of this Decision:

- Member States must allow the usage of spectrum up to the **transmit power, field strength or power density** given in this table. In accordance with Article 3(3), they may impose less restrictive conditions, i.e. allow the use of spectrum with higher transmit power, field strength or power density, provided that this 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)’ identified in the table, and shall not add other parameters or spectrum access and mitigation requirements. Less restrictive conditions within the meaning of Article 3(3), mean that Member States may completely omit the ‘additional parameters (channelling and/or channel access and occupation rules)’ 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**’ identified in the table and shall not add additional usage restrictions unless the conditions mentioned in Article 3(2) apply. As less restrictive conditions may be introduced within the meaning of 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.

Terms used:

‘**Duty cycle**’ is defined as 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 Annex. Less restrictive conditions within the meaning of Article 3(3), mean that Member States may allow a higher value for ‘duty cycle’.

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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	874-874,4 MHz <sup>(8)</sup>	Non-specific short-range devices <sup>(1)</sup>	500 mW e.r.p. Adaptive Power Control (APC) required, alternatively other mitigation techniques which achieve at least an equivalent level of spectrum compatibility	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 <i>Official Journal of the European Union</i> under Directive 2014/53/EU, performance at least equivalent to these techniques shall be ensured.  Bandwidth: ≤ 200 kHz Duty cycle: ≤ 10 % for network access points <sup>(4)</sup> Duty cycle: 2,5 % otherwise	This set of usage conditions is only available for data networks All nomadic and mobile devices within the data network shall be controlled by a master network access point <sup>(4)</sup> , <sup>(5)</sup> , <sup>(6)</sup> , <sup>(7)</sup>	1 July 2022
2	917,4-919,4 MHz <sup>(9)</sup>	Wideband data transmission devices <sup>(3)</sup>	25 mW e.r.p	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 <i>Official Journal of the European Union</i> under Directive 2014/53/EU, performance at least equivalent to these techniques shall be ensured.  Bandwidth: > 600 kHz and ≤ 1 MHz Duty cycle: ≤ 10 % for network access points <sup>(4)</sup> Duty cycle: ≤ 2,8 % otherwise	This set of usage conditions is only available for wideband short-range devices in data networks All nomadic and mobile devices within the data network shall be controlled by a master network access point <sup>(4)</sup> , <sup>(5)</sup> , <sup>(6)</sup>	1 July 2022

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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
3	916,1-918,9 MHz <sup>(10)</sup>	Radio Frequency Identification (RFID) devices <sup>(2)</sup>	Interrogator transmissions at 4 W e.r.p. only permitted at the centre frequencies 916,3 MHz, 917,5 MHz, 918,7 MHz	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 <i>Official Journal of the European Union</i> under Directive 2014/53/EU, performance at least equivalent to these techniques shall be ensured.  Bandwidth: ≤ 400 kHz	<sup>(5)</sup> , <sup>(6)</sup> , <sup>(7)</sup>	1 July 2022
4	917,3-918,9 MHz	Non-specific short-range devices <sup>(1)</sup>	500 mW e.r.p. Transmissions only permitted within the frequency ranges 917,3-917,7 MHz, 918,5-918,9 MHz Adaptive Power Control (APC) required, alternatively other mitigation techniques which achieve at least an equivalent level of spectrum compatibility	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 <i>Official Journal of the European Union</i> under Directive 2014/53/EU, performance at least equivalent to these techniques shall be ensured.  Bandwidth: ≤ 200 kHz  Duty cycle: ≤ 10 % for network access points <sup>(4)</sup>  Duty cycle: ≤ 2,5 % otherwise	This set of usage conditions is only available for data networks. All nomadic and mobile devices within the data network shall be controlled by a master network access point <sup>(4)</sup> , <sup>(5)</sup> , <sup>(6)</sup> , <sup>(7)</sup> .	1 July 2022

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
5	917,4-919,4 MHz <sup>(9)</sup>	Non-specific short-range devices <sup>(1)</sup>	25 mW e.r.p.	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 <i>Official Journal of the European Union</i> under Directive 2014/53/EU, performance at least equivalent to these techniques shall be ensured.  Bandwidth: ≤ 600 kHz  Duty cycle: ≤ 1 %,	This set of usage conditions is only available for short-range device in data networks All nomadic and mobile devices within the data network shall be controlled by a master network access point <sup>(4)</sup> , <sup>(5)</sup> , <sup>(6)</sup>	1 July 2022

<sup>(1)</sup> The non-specific short-range device category covers all kinds of radio devices, regardless of the application or the 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.

<sup>(2)</sup> The radio frequency identification (RFID) device category covers tag/interrogator based radio communications systems, consisting of radio devices (tags) attached to animate or inanimate items and of transmitter/receiver units (interrogators) which activate the tags and receive data back. Typical uses include the tracking and identification of items, such as for 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 are validated by its interrogator and passed to its host system.

<sup>(3)</sup> The wideband data transmission device category 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 short-range devices in data networks.

<sup>(4)</sup> 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.

<sup>(5)</sup> According to Article 3(1) the frequency bands shall be designated and made available on a non-exclusive and shared basis. The harmonised technical conditions shall make it possible for most short-range devices in most Member States to be operated subject to a general authorisation regime under national law. This is without prejudice to Articles 46 and 51 of Directive (EU) 2018/1972 and to Articles 3(2) and 7 of Directive 2014/53/EU. Member States may limit usage of this entry such that installation and operation are performed only by professional users and may consider individual authorisation, e.g. to administer geographical sharing and/or the application of mitigation techniques to ensure protection of radio services.

<sup>(6)</sup> In Member States where parts or all of this frequency range are used for public order and public security purposes and defence and coordination is not possible, Member States may decide not to implement this entry partially or entirely, in accordance with Article 1(4) of Decision 676/2002/EC and Article 3(2) of this Decision.

<sup>(7)</sup> National rules, such as local coordination, may also be needed in order to avoid interference to radio services operating in the adjacent bands, for example due to intermodulation or blocking.

<sup>(8)</sup> This frequency range 874-874,4 MHz is the harmonised minimum core band.

<sup>(9)</sup> This frequency range 917,4-919,4 MHz is the harmonised minimum core band.

<sup>(10)</sup> RFID tags respond at a very low power level (-10 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.