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**COMMISSION IMPLEMENTING DECISION**

of **XXX**

**on the harmonised use of radio spectrum in the 5 945-6 425 MHz frequency band for the implementation of wireless access systems including radio local area networks**

(Text with EEA relevance)

## COMMISSION IMPLEMENTING DECISION

of **XXX**

### **on the harmonised use of radio spectrum in the 5 945-6 425 MHz frequency band for the implementation of wireless access systems including radio local area networks**

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Decision No 676/2002/EC of the European Parliament and of the Council of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community (Radio Spectrum Decision)<sup>1</sup>, and in particular Article 4(3) thereof,

Whereas:

- (1) Because of the growing number and diversity of devices for wireless access systems including radio local area networks ('WAS/RLANs') and rising connection speeds and data traffic volumes, there is a need to harmonise new spectrum resources for the provision of wireless broadband via WAS/RLANs in addition to the spectrum already available on a non-exclusive basis in the 2.4 GHz (2 400-2 483.5 MHz) and 5 GHz (5 150-5 350 MHz and 5 470-5 725 MHz) frequency bands. Additional spectrum for WAS/RLANs should support the wide channels required for many applications (including videoconferencing, downloading media, telemedicine, online learning and gaming, augmented reality and virtual reality) which need a large bandwidth in order to achieve gigabit speeds. Such applications have also become increasingly important in the recovery from the coronavirus crisis.
- (2) In accordance with the Commission strategy on the European Gigabit Society (<sup>2</sup>), all main socio-economic drivers (including schools, transport hubs and main providers of public services) as well as digitally intensive enterprises should have access to internet connections with download or upload speeds of 1 gigabit of data per second (Gbit/s) by 2025. All households in the Union should have internet connections with a download speed of at least 100 Mbit/s which can be upgraded to 1 Gbit/s.
- (3) The regulatory framework for WAS/RLANs operating in the 5 945-6 425 MHz frequency band, that is to say, the lower 6 GHz frequency band, should improve wireless connectivity in the Union and allow the internal market to benefit from a spectrum resource potentially available worldwide, thus generating large economies of scale for equipment manufacturers. The lower barriers to accessing spectrum resulting from a harmonised regulatory framework will facilitate large-scale deployment of interoperable WAS/RLANs-capable devices and access points, which should serve as an important connectivity infrastructure for services that complement mobile internet

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<sup>1</sup> OJ L 108, 24.4.2002, p. 1.

<sup>2</sup> Communication Connectivity for a Competitive Digital Single Market - Towards a European Gigabit Society (COM(2016) 587 final).

services provided by mobile network operators. The recommended framework identifies two WAS/RLANs use cases in the 5 945-6 425 MHz frequency band as follows: (i) low power indoor ('LPI') the use of which is restricted to and permanently located in buildings, trains with metal coated windows and aircrafts; and (ii) very low power ('VLP') which can be used indoor and outdoor. The VLP outdoor use is intended to cover short-range applications for small area direct communications.

- (4) In accordance with the International Telecommunication Union (ITU) Radio Regulations<sup>3</sup>, the 5 945-6 425 MHz frequency band is to be allocated to the mobile service, the fixed service ('FS') and the fixed-satellite service ('FSS') on a primary basis in all three Regions of the ITU. The 5 945-6 425 MHz frequency band is used by satellite Earth stations on board vessels, FSS Earth stations, FS systems (point-to-point), passive sensors (satellite), short-range devices (radiodetermination) and ultra-wideband applications.
- (5) The 5 945-6 425 MHz frequency band is also used by medium or high capacity, long distance fixed terrestrial links (point-to-point), including for the backhauling of data traffic in mobile broadband networks. In some Member States the deployment of urban rail intelligent transport systems ('ITS'), including communication based train control ('CBTC'), is authorised in parts of the 5 905-5 935 MHz frequency band, and in one Member State it is authorised in the 5 925-5 975 MHz frequency band. Urban rail ITS in the 5.9 GHz frequency band, which are subject to the conditions in the Commission Implementing Decision (EU) 2020/1426<sup>(4)</sup>, allow the safe and efficient management of urban rail operations.
- (6) On 19 December 2017, in order to identify additional spectrum for WAS/RLANs, the Commission issued, pursuant to Article 4(2) of Decision No 676/2002/EC of the European Parliament and of the Council<sup>(5)</sup>, a mandate to the European Conference of Postal and Telecommunications Administrations ('CEPT') to study the feasibility of, and identify harmonised technical conditions for, the use of WAS/RLANs in the 5 925-6 425 MHz frequency band for the provision of wireless broadband services.
- (7) In accordance with that mandate, CEPT published two reports: (i) Report A (CEPT Report 73): 'Assessment and study of compatibility and coexistence scenarios for WAS/RLANs in the band 5 925-6 425 MHz' (6 March 2020) and (ii) Report B (CEPT Report 75): 'Harmonised technical parameters for WAS/RLANs operating on a coexistence basis with appropriate mitigation techniques and/or operational compatibility/coexistence conditions, operating on the basis of a general authorisation' (20 November 2020). The studies carried out by CEPT indicated that the coexistence of WAS/RLANs with CBTC systems and road ITS would be technically feasible subject to suitable measures such as a guard band and requirements on in-band or out-of-band emissions, or both, applicable to WAS/RLANs. Those elements would mean that the spectrum available to WAS/RLANs could not include the entire 5 925-6 425 MHz frequency band. Sharing and compatibility studies conducted by CEPT in accordance with the mandate have shown that the coexistence between WAS/RLANs (LPI, VLP) and existing usages (FSS Earth stations and terrestrial FS deployments

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<sup>3</sup> <http://www.itu.int/pub/R-REG-RR> (2020 edition).

<sup>4</sup> Commission Implementing Decision (EU) 2020/1426 of 7 October 2020 on the harmonised use of radio spectrum in the 5 875-5 935 MHz frequency band for safety-related applications of intelligent transport systems (ITS) and repealing Decision 2008/671/EC (OJ L 328, 9.10.2020, p. 19).

<sup>5</sup> Decision No 676/2002/EC of the European Parliament and of the Council of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community (Radio Spectrum Decision) (OJ L 108, 24/04/2002, p. 1).

(fixed links)) in the 5 945-6 425 MHz frequency band is feasible, subject to a number of conditions to ensure adequate protection of existing usages in and adjacent to that 5 945-6 425 MHz band from harmful interference originating from WAS/RLANs equipment. It may be necessary to revise the limit -37 dBm/MHz, which has been set as the maximum mean equivalent isotropically radiated power density for out-of-band emissions below 5 935 MHz for VLP WAS/RLANs devices. Therefore, a review should be carried out by 31 December 2024, on the basis of CEPT's response to a mandate issued by the Commission pursuant to Article 4(2) of Decision No 676/2002/EC.

- (8) The measures provided for in this Decision are in accordance with the opinion of the Radio Spectrum Committee,

HAS ADOPTED THIS DECISION:

#### *Article 1*

This Decision harmonises the conditions for the availability and efficient use of the 5 945-6 425 MHz frequency band for wireless access systems including radio local area networks (WAS/RLANs).

#### *Article 2*

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

- (a) 'wireless access systems including radio local area networks (WAS/RLANs)' means broadband radio systems that allow wireless access for public and private applications regardless of the underlying network topology;
- (b) 'non-interference and non-protected basis' means that no harmful interference may be caused to any radiocommunication service and that no claim may be made for protection of these devices against interference originating from radiocommunication services in the same band;
- (c) 'equivalent isotropically radiated power ('e.i.r.p.')

#### *Article 3*

By 1 December 2021, Member States shall designate the 5 945-6 425 MHz frequency band and make it available on a non-exclusive, non-interference and non-protected basis, for the implementation of WAS/RLANs in accordance with the technical conditions set out in the Annex.

#### *Article 4*

This Decision shall be subject to review by the end of 2024 taking into account additional studies and measurements as regards the maximum mean e.i.r.p. density limits for VLP WAS/RLANs out-of-band emissions below 5 935 MHz.

*Article 5*

This Decision is addressed to the Member States.

Done at Brussels,

*For the Commission*  
*Thierry Breton*  
*Member of the Commission*



Brussels, XXX  
[...] (2021) XXX draft

ANNEX

**ANNEXES**

*to the*

**Commission Implementing Decision**

**on the harmonised use of radio spectrum in the 5 945-6 425 MHz frequency band for the  
implementation of wireless access systems including radio local area networks  
(WAS/RLANs)**

## ANNEX

### **Harmonised technical conditions for WAS/RLANs in the 5 945-6 425 MHz frequency band**

**Table 1: Low power indoor ('LPI') WAS/RLANs devices**

<b>Parameter</b>	<b>Technical conditions</b>
Permissible operation	Restricted to indoor use, including in trains with metal-coated windows (note 1) and aircraft. Outdoor use, including in road vehicles, is not permitted.
Category of device	An LPI access point or bridge that is supplied with power from a wired connection has an integrated antenna and is not battery powered.  An LPI client device that is connected to an LPI access point or another LPI client device and may or may not be battery powered.
Frequency band	5 945-6 425 MHz
Maximum mean equivalent isotropically radiated power ('e.i.r.p.') for in-band emissions (note 2)	23 dBm
Maximum mean e.i.r.p. density for in-band emissions (note 2)	10 dBm/MHz
Maximum mean e.i.r.p. density for out-of-band emissions below 5 935 MHz (note 2)	-22 dBm/MHz
Note 1: Or similar structures made of material with comparable attenuation characteristics.	
Note 2: The mean e.i.r.p. refers to the e.i.r.p. during the transmission burst which corresponds to the highest power, if power control is implemented.	

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 of the European Parliament and of the Council<sup>1</sup> shall be used. Where 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* in accordance with Directive

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<sup>1</sup> Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC (OJ L 153, 22.5.2014, p. 62.).

2014/53/EU, performance at least equivalent to the performance level associated with those techniques shall be ensured.

**Table 2: Very Low Power (VLP) WAS/RLAN devices**

<b>Parameter</b>	<b>Technical conditions</b>
Permissible operation	Indoors and outdoors. Use on drones is not permitted.
Category of device	The VLP device is a portable device.
Frequency band	5 945-6 425 MHz
Maximum mean e.i.r.p. for in-band emissions (note 1)	14 dBm
Maximum mean e.i.r.p. density for in-band emissions (note 1)	1 dBm/MHz
Narrowband usage maximum mean e.i.r.p. density for in-band emissions (note 1) (note 2)	10 dBm/MHz
Maximum mean e.i.r.p. density for out-of-band emissions below 5 935 MHz (note 1)	- 45 dBm/MHz until 31 December 2024 (note 3)
<p>Note 1: The mean e.i.r.p. refers to the e.i.r.p. during the transmission burst which corresponds to the highest power, if power control is implemented.</p> <p>Note 2: Narrowband (NB) devices are devices that operate in channel bandwidths below 20 MHz. NB devices also require a frequency hopping mechanism based on at least 15 hop channels to operate at a value of in-band power spectral density (PSD) above 1 dBm/MHz.</p> <p>Note 3: The appropriateness of this limit shall be subject to review by 31 December 2024. In the absence of justified evidence, a value of -37 dBm/MHz shall apply from 1 January 2025.</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. Where 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* in accordance with Directive 2014/53/EU, performance at least equivalent to the performance level associated with those techniques shall be ensured.