

COMMISSION IMPLEMENTING DECISION (EU) 2022/179**of 8 February 2022****on the harmonised use of radio spectrum in the 5 GHz frequency band for the implementation of wireless access systems including radio local area networks and repealing Decision 2005/513/EC***(notified under document C(2022) 628)***(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) ⁽¹⁾, and in particular Article 4(3) thereof,

Whereas:

- (1) The Commission Communication '2030 Digital Compass: the European way for the Digital Decade' ⁽²⁾ sets out new connectivity objectives for the Union to be achieved through the widespread deployment and take-up of very high capacity networks. One of the objectives is for all households in the Union to be covered by 2030 by a Gigabit network. Wireless access systems including radio local area networks (WAS/RLANs) applications largely contribute to that coverage objective.
- (2) Access to radio local area networks is governed by Article 56 of Directive (EU) 2018/1972 of the European Parliament and of the Council ⁽³⁾. Radio local area networks are defined by that Directive as low-power wireless access systems, operating within a small range, with a low risk of interference with other such systems deployed in close proximity by other users, using, on a non-exclusive basis, harmonised radio spectrum.
- (3) Commission Decision 2005/513/EC ⁽⁴⁾ harmonised the use of radio spectrum in the 5 GHz band (5 150-5 350 MHz and 5 470-5 725 MHz) for wireless access systems including radio local area networks.
- (4) In accordance with the International Telecommunication Union (ITU) Radio Regulations ⁽⁵⁾, the 5 150-5 350 MHz and 5 470-5 725 MHz frequency bands are allocated to the mobile service except aeronautical mobile service on a primary basis in all three Regions of the ITU, taking into account the need to protect other primary services in those frequency bands. The ITU World Radiocommunication Conference in 2003 (WRC-03) adopted Resolution 229 on the 'Use of the bands 5 150-5 250, 5 250-5 350 MHz and 5 470-5 725 MHz by the mobile service for the implementation of Wireless Access Systems including Radio Local Area Networks'. That Resolution, which was revised at the World Radiocommunication Conference in 2019 (WRC-19), extended the scope of indoor use to trains and road vehicles, set the maximum emission power for WAS/RLANs using the 5 150-5 250 MHz frequency band in road vehicles, and allowed limited outdoor use in the 5 150-5 250 MHz band by protecting other existing uses in that band.

⁽¹⁾ OJ L 108, 24.4.2002, p. 1.

⁽²⁾ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions of 9 March 2021 '2030 Digital Compass: the European way for the Digital Decade', COM(2021) 118 final.

⁽³⁾ Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code (OJ L 321, 17.12.2018, p. 36).

⁽⁴⁾ Commission Decision 2005/513/EC of 11 July 2005 on the harmonised use of radio spectrum in the 5 GHz frequency band for the implementation of wireless access systems including radio local area networks (WAS/RLANs) (OJ L 187, 19.7.2005, p. 22).

⁽⁵⁾ <http://www.itu.int/pub/R-REG-RR> (2020 edition).

- (5) In several Member States, there is a critical need for the operation of military and meteorological radars in the bands between 5 250 and 5 850 MHz which require specific protection against harmful interference from WAS/RLANs. In this context, the technical and operational conditions for the use of WAS/RLANs need to ensure the protection of legitimate public interests related to other radio services, including military and meteorological radars. There is also a need to protect the viability of systems related to the Earth exploration-satellite service (active), space research service (active) and mobile-satellite service feeder links, in particular in the 5 150-5 350 MHz frequency band.
- (6) On 14 April 2020, in order to implement the results of WRC-19 that revised Resolution 229, the Commission issued, pursuant to Article 4(2) of Decision No 676/2002/EC, a mandate to the European Conference of Postal and Telecommunications Administrations (CEPT) to amend Decision 2005/513/EC on the harmonised use of radio spectrum in the 5 GHz frequency band for the implementation of WAS/RLANs. Under the mandate, CEPT was given two tasks. The first of these was to propose technical conditions in order to amend Decision 2005/513/EC based on the outcome of WRC-19 (revision of Resolution 229) for the 5 150-5 250 MHz frequency band. The second task was to propose corresponding updates of the harmonised technical conditions for WAS/RLANs in the 5 150-5 350 MHz and 5 470-5 725 MHz bands, as appropriate. The purpose of the updates would be to consider possibilities for using those WAS/RLANs on board vehicles (aircraft, road vehicles (cars, buses), trains, etc.) and to assess feasibility of using WAS/RLAN for unmanned aircraft systems (UAS) radio links.
- (7) In accordance with that mandate, CEPT published Report 79 on the harmonised use of radio spectrum in the 5 GHz band for the implementation of WAS/RLANs following WRC-19. CEPT Report 79 contains revised technical conditions for WAS/RLANs in the 5 150-5 250 MHz band for the following indoor use cases: inside buildings and installations inside road vehicles, trains and aircraft, and limited outdoor use. The operation of UAS is only permitted in the 5 170-5 250 MHz band as a specific outdoor use case. The proposed technical conditions for the 5 250-5 350 MHz band allow indoor use inside buildings only. The use of the 5 470-5 725 MHz band is possible indoors and outdoors, but excluding installations in road vehicles, trains and aircraft and use for UAS. The results of the mandate contained in CEPT Report 79 were used as a basis for this Decision.
- (8) In its Report 79, CEPT confirmed a common understanding about the importance of resolving the issue of harmful interference to meteorological radars in the 5 600-5 650 MHz band. To contribute to reducing harmful interference to meteorological radars, this Decision should lay down technical conditions for WAS/RLAN installations in road vehicles, trains and aircrafts and usage by unmanned aircraft systems (UAS) and clarify the requirements applicable to dynamic frequency selection (DFS). This Decision could be reviewed in the future to assess the effectiveness of those measures.
- (9) When other usage beside WAS/RLANs is geographically limited and known to national regulatory authorities, Member States should be entitled to authorise at national level indoor installations in trains using the 5 250-5 350 MHz and 5 470-5 725 MHz frequency bands, where WAS/RLAN usage can be controlled and geographically restricted.
- (10) This Decision builds upon and develops the principles and provisions set out in Decision 2005/513/EC. In the interest of legal certainty, Decision 2005/513/EC should be repealed.
- (11) 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 5 150-5 250 MHz, 5 250-5 350 MHz and 5 470-5 725 MHz frequency bands 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)' are broadband radio systems that allow wireless access for public and private applications regardless of the underlying network topology;
- (b) 'indoor use' is defined as use inside a closed space which will provide the necessary attenuation to facilitate sharing with other services. Indoor use can be classified in four use cases, as identified in the technical conditions of the Annex to this Decision that represent specific scenarios: inside buildings, inside road vehicles, inside trains and inside aircraft;
- (c) 'equivalent isotropically radiated power ('e.i.r.p.') means the product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna (absolute or isotropic gain);
- (d) 'mean equivalent isotropically radiated power ('e.i.r.p.') means e.i.r.p. during the transmission burst which corresponds to the highest power, if power control is implemented.

Article 3

By 31 March 2022, Member States shall designate and make available the 5 150-5 250 MHz, 5 250-5 350 MHz and 5 470-5 725 MHz frequency bands, on a non-exclusive basis, for the implementation of WAS/RLANs in accordance with the technical conditions set out in the Annex.

Article 4

Member States shall monitor the evolution of standards and technology in relation to the use of the 5 150-5 250 MHz, 5 250-5 350 MHz and 5 470-5 725 MHz frequency bands for WAS/RLANs and report their findings to the Commission at the latter's request or on their own initiative in order to allow for a timely review of this Decision.

Article 5

Decision 2005/513/EC is repealed.

Article 6

This Decision is addressed to the Member States.

Done at Brussels, 8 February 2022.

For the Commission
Thierry BRETON
Member of the Commission

ANNEX

Harmonised technical conditions for WAS/RLANs in the 5 150-5 250 MHz, 5 250-5 350 MHz and 5 470-5 725 MHz frequency bands

Table 1

WAS/RLANs in the 5 150-5 250 MHz frequency band

Parameter	Technical conditions
Frequency band	5 150-5 250 MHz
Permissible operation	Indoor, including installations inside road vehicles, trains and aircraft, and limited outdoor use (note 1). Use by unmanned aircraft systems (UAS) is limited to within the 5 170-5 250 MHz band.
Maximum mean equivalent isotropically radiated power (e.i.r.p.) for in-band emissions	200 mW Exceptions: — 40 mW maximum mean e.i.r.p. applies for installations inside train carriages with an attenuation loss on average of less than 12 dB; — 40 mW maximum mean e.i.r.p. applies for installations inside road vehicles.
Maximum mean e.i.r.p. density for in-band emissions	10 mW/MHz in any 1 MHz band

Note 1: If used outdoors, equipment shall not be attached to a fixed installation or to the external body of road vehicles, a fixed infrastructure or a fixed outdoor antenna.

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 ⁽¹⁾ 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.

Table 2

WAS/RLANs in the 5 250-5 350 MHz frequency band

Parameter	Technical conditions
Frequency band	5 250-5 350 MHz
Permissible operation	Indoor use: inside buildings only. Installations in road vehicles, trains and aircraft are not permitted (note 2). Outdoor use is not permitted.
Maximum mean e.i.r.p. for in-band emissions	200 mW
Maximum mean e.i.r.p. density for in-band emissions	10 mW/MHz in any 1 MHz band

⁽¹⁾ 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).

Parameter	Technical conditions
Mitigations techniques to be used	Transmitter power control (TPC) and dynamic frequency selection (DFS). Alternative mitigation techniques may be used if they ensure at least an equivalent performance and level of spectrum protection in order to comply with the corresponding essential requirements of Directive 2014/53/EU and if they respect the technical requirements of this Decision.
Transmitter power control (TPC)	TPC shall provide, on average, a mitigation factor of at least 3 dB on the maximum permitted output power of the systems; or, if transmitter power control is not in use, the maximum permitted mean e.i.r.p. and corresponding mean e.i.r.p. density limit shall be reduced by 3 dB.
Dynamic frequency selection (DFS)	DFS is described in Recommendation ITU-R M. 1652-1 ⁽²⁾ to ensure compatible operation with radiodetermination systems. The DFS mechanism shall ensure that the probability of selecting a given channel is the same for all available channels within the 5 250-5 350 MHz and 5 470-5 725 MHz bands. The DFS mechanism shall also ensure, on average, a near-uniform spread of the loading of the spectrum. WAS/RLAN shall implement a dynamic frequency selection providing a mitigation against interference to radar at least as efficient as DFS as described in ETSI Standard EN 301 893 V2.1.1. Settings (hardware and/or software) of WAS/RLAN related to DFS shall not be accessible to the user if changing those settings results in the WAS/RLAN no longer being compliant with the DFS requirements. This includes (a) not allowing the user to change the country of operation and/or the operating frequency band if that results in the equipment no longer being compliant with the DFS requirements and (b) not accepting software and/or firmware which results in the equipment no longer being compliant with the DFS requirements.

Note 2: Operation of WAS/RLAN installations in large aircraft ⁽³⁾ (excluding multi-engined helicopters) is permitted until 31 December 2028 with a maximum mean e.i.r.p. for in-band emissions of 100 mW.

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.

⁽²⁾ Recommendation ITU-R M. 1652-1, 'Dynamic frequency selection in wireless access systems including radio local area networks for the purpose of protecting the radiodetermination service in the 5 GHz band'.

⁽³⁾ In line with the Commission Regulation (EU) No 1321/2014, a large aircraft means an aircraft, classified as an aeroplane with a maximum take-off mass of more than 5 700 kg, or a multi-engined helicopter. Multi-engined helicopters are excluded, however, from the scope of notes 2 and 3.

Table 3

WAS/RLANs in the 5 470-5 725 MHz frequency band

Parameter	Technical conditions
Frequency band	5 470-5 725 MHz
Permissible operation	Indoor and outdoor use. Installations in road vehicles, trains and aircraft and use for UAS are not permitted (note 3).
Maximum mean e.i.r.p. for in-band emissions	1 W
Maximum mean e.i.r.p. density for in-band emissions	50 mW/MHz in any 1 MHz band
Mitigations techniques to be used	Transmitter power control (TPC) and dynamic frequency selection (DFS). Alternative mitigation techniques may be used if they ensure at least an equivalent performance and level of spectrum protection in order to comply with the corresponding essential requirements of Directive 2014/53/EU and if they respect the technical requirements of this Decision.
Transmitter power control (TPC)	TPC shall provide, on average, a mitigation factor of at least 3 dB on the maximum permitted output power of the systems; or, if transmitter power control is not in use, the maximum permitted mean e.i.r.p. and the corresponding mean e.i.r.p. density limit shall be reduced by 3 dB.
Dynamic frequency selection (DFS)	DFS is described in Recommendation ITU-R M. 1652-1 to ensure compatible operation with radiodetermination systems. The DFS mechanism shall ensure that the probability of selecting a given channel is the same for all available channels within the 5 250-5 350 MHz and 5 470-5 725 MHz bands. The DFS mechanism shall also ensure, on average, a near-uniform spread of the loading of the spectrum. WAS/RLAN shall implement a dynamic frequency selection providing a mitigation against interference to radar at least as efficient as DFS described in ETSI Standard EN 301 893 V2.1.1. Settings (hardware and/or software) of WAS/RLAN related to DFS shall not be accessible to the user if changing those settings results in the WAS/RLANs no longer being compliant with the DFS requirements. This includes (a) not allowing the user to change the country of operation and/or the operating frequency band if that results in the equipment no longer being compliant with the DFS requirements and (b) not accepting software and/or firmware which results in the equipment no longer being compliant with the DFS requirements.

Note 3: Operation of WAS/RLAN installations in large aircraft (excluding multi-engined helicopters), except in the frequency band 5 600 – 5 650 MHz, is permitted until 31 December 2028 with a maximum mean e.i.r.p. for in-band emissions of 100 mW.

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.
