



2024/340

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COMMISSION IMPLEMENTING DECISION (EU) 2024/340

of 22 January 2024

on harmonised conditions for the use of radio spectrum for mobile communication services on board vessels in the Union, repealing Decision 2010/166/EU

(notified under document C(2024) 236)

(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⁾, in particular Article 4(3) thereof,

Whereas:

- (1) Adding 5G connectivity to vessels improves communication services for people travelling, while making use of the latest available technology and ensuring efficient spectrum use. This helps achieve the objectives set out in the 5G Action Plan as well as the Commission's strategy on connectivity as set out in its Communication 'Connectivity for a Competitive Digital Single Market – towards a European Gigabit Society' ⁽²⁾ and updated with its Communication '2030 Digital Compass: the European way for the Digital Decade' ⁽³⁾ and Decision (EU) 2022/2481 of the European Parliament and of the Council ⁽⁴⁾.
- (2) Commission Decision 2010/166/EU ⁽⁵⁾ harmonised the technical conditions for using radio spectrum in the 900 MHz frequency band (880–915 MHz and 925–960 MHz frequency bands), the 1 800 MHz frequency band (1 710–1 785 MHz and 1 805–1 880 MHz frequency bands), the paired terrestrial 2 GHz frequency band (1 920–1 980 MHz and 2 110–2 170 MHz frequency bands), and the paired 2,6 GHz frequency band (2 500–2 570 MHz and 2 620–2 690 MHz frequency bands). It allowed the operation of mobile communication services on board vessels (MCV services) in the Union with different technologies and set out the applicable harmonised technical conditions.
- (3) Decision 2010/166/EU called on the Member States to keep under review the use of frequency bands by systems that provide MCV services in their territorial seas, in particular with regard to the continued relevance of all the conditions set out in that Decision and to instances of harmful interference. Member States were also required to submit a report to the Commission on their findings, and the Commission was required, where appropriate, to review Decision 2010/166/EU.
- (4) On 16 August 2022, the Commission issued a mandate to the European Conference of Postal and Telecommunications Administrations (CEPT), pursuant to Article 4(2) of Decision 676/2002/EC, to study and develop harmonised technical conditions with the aim of including 5G technology to facilitate the deployment of advanced MCV services in the Union.
- (5) In response to that mandate, CEPT adopted Report 83 on 10 March 2023. It provides harmonised technical conditions for non-Active Antenna Systems (non-AAS) 5G New Radio (5G NR) on board vessels in the 1 800 MHz and the paired 2,6 GHz frequency bands.

⁽¹⁾ OJ L 108, 24.4.2002, p. 1.

⁽²⁾ COM(2016) 587.

⁽³⁾ COM(2021) 118.

⁽⁴⁾ Decision (EU) 2022/2481 of the European Parliament and of the Council of 14 December 2022 establishing the Digital Decade Policy Programme 2030 (OJ L 323, 19.12.2022, p. 4).

⁽⁵⁾ Commission Decision 2010/166/EU of 19 March 2010 on harmonised conditions of use of radio spectrum for mobile communication services on board vessels (MCV services) in the European Union (OJ L 72, 20.3.2010, p. 38).

- (6) The report concludes that similar technical and regulatory conditions that applied to MCV Long Term Evolution (LTE) systems can also be applied to MCV 5G NR non-AAS systems for protecting both LTE and 5G NR land-based mobile networks.
- (7) The harmonised technical conditions recommended in the report constitute the technical basis for this Decision for non-AAS 5G NR on board vessels in the 1 800 MHz and the paired 2,6 GHz frequency bands. The harmonised technical conditions in Decision 2010/166/EU should be amended accordingly, while pursuing a technology and service neutral approach as set out in Directive (EU) 2018/1972 of the European Parliament and of the Council ⁽⁶⁾.
- (8) In the interests of legal consistency and clarity and in line with the better regulation principles, Decision 2010/166/EU, which includes references to Commission Decision 2011/251/EU ⁽⁷⁾ that has been repealed by Commission Decision (EU) 2022/173 ⁽⁸⁾, should be repealed and replaced by this Decision.
- (9) For legal clarity, the implementation dates set by Decision 2010/166/EU should be maintained. Similarly, Commission Recommendation 2010/167/EU ⁽⁹⁾ should continue to apply with regard to this Decision, as this Decision repeals and replaces Decision 2010/166/EU.
- (10) This Decision cannot be considered to impose obligations on Member States that do not have territorial seas. This is without prejudice to the authorisation of MCV services, which is outside the scope of this Decision, but which may require action by Member States in conformity with EU law in regard to vessels of their nationality.
- (11) MCV technical specifications should remain under review to ensure that they keep up with technological progress and market developments.
- (12) 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 establishes harmonised technical conditions for the availability and efficient use of the 900 MHz, 1 800 MHz, paired terrestrial 2 GHz and paired 2,6 GHz frequency bands for systems that provide mobile communication services on board vessels within territorial seas of the Member States in the Union.

Article 2

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

- (1) 'mobile communication services on board vessels' (MCV services) means electronic communication services, as defined in Article 2, point (4), of Directive (EU) 2018/1972, provided by an undertaking to enable persons on board a vessel to communicate via public communication networks using a system subject to Article 3 without establishing direct connections with land-based mobile networks;

⁽⁶⁾ 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).

⁽⁷⁾ Commission Implementing Decision 2011/251/EU of 18 April 2011 amending Decision 2009/766/EC on the harmonisation of the 900 MHz and 1 800 MHz frequency bands for terrestrial systems capable of providing pan-European electronic communications services in the Community (OJ L 106, 27.4.2011, p. 9).

⁽⁸⁾ Commission Implementing Decision (EU) 2022/173 of 7 February 2022 on the harmonisation of the 900 MHz and 1 800 MHz frequency bands for terrestrial systems capable of providing electronic communications services in the Union and repealing Decision 2009/766/EC (OJ L 28, 9.2.2022, p. 29).

⁽⁹⁾ Commission Recommendation 2010/167/EU of 19 March 2010 on the authorisation of systems for mobile communication services on board vessels (MCV services) (OJ L 72, 20.3.2010, p. 42).

- (2) 'the 900 MHz frequency band' means the 880–915 MHz frequency band for uplink (terminal transmit, base station receive) and 925–960 MHz frequency band for downlink (base station transmit, terminal receive);
- (3) 'the 1 800 MHz frequency band' means the 1 710–1 785 MHz frequency band for uplink (terminal transmit, base station receive) and 1 805–1 880 MHz frequency band for downlink (base station transmit, terminal receive);
- (4) 'the paired terrestrial 2 GHz frequency band' means the 1 920–1 980 MHz frequency band for uplink (terminal transmit, base station receive) and 2 110–2 170 MHz frequency band for downlink (base station transmit, terminal receive);
- (5) 'the paired 2,6 GHz frequency band' means the 2 500–2 570 MHz frequency band for uplink (terminal transmit, base station receive) and 2 620–2 690 MHz frequency band for downlink (base station transmit, terminal receive);
- (6) 'on a non-interference and non-protected basis' means that MCV services may not cause harmful interference to any other radio-communication service nor can MCV services claim protection against harmful interference originating from other radio-communication services;
- (7) 'territorial sea' is to be understood as defined in the United Nations Convention on the Law of the Sea;
- (8) 'vessel base transceiver station' (vessel-BS) means a mobile pico-cell located on a vessel and supporting mobile systems in compliance with the Annex to this Decision.

Article 3

1. Member States shall make available at least 2 MHz of spectrum in both the uplink direction and in the corresponding paired spectrum in the downlink direction within the 900 MHz and/or 1 800 MHz frequency bands for the mobile systems listed in the Annex that provide MCV services on a non-interference and non-protected basis in their territorial seas.
2. Member States shall make available 5 MHz of spectrum in both the uplink direction and in the corresponding paired spectrum in the downlink direction within the paired terrestrial 2 GHz frequency band and within the 1 800 MHz and paired 2,6 GHz frequency bands for the mobile systems listed in the Annex that provide MCV services on a non-interference and non-protected basis in their territorial seas.
3. Member States shall ensure that the systems referred to in paragraphs 1 and 2 comply with the conditions and implementation deadlines set out in the Annex.

Article 4

Member States shall keep under review the use of frequency bands by systems that provide MCV services in their territorial seas, referred to in Article 3(1) and 3(2), in particular with regard to the continued relevance of the conditions set out in Article 3 and in the Annex, and to instances of harmful interference.

Article 5

Member States shall submit a report to the Commission on their findings with regard to the review referred to in Article 4. The European Commission shall, where appropriate, proceed to a review of this Decision.

Article 6

Decision 2010/166/EU is repealed.

Article 7

This Decision is addressed to the Member States.

Done at Brussels, 22 January 2024.

For the Commission
Thierry BRETON
Member of the Commission

ANNEX

Systems providing MCV services in the territorial seas of the Member States of the Union, and conditions to be met by those systems, in order to avoid harmful interference to land-based mobile networks

1. List of systems referred to in Article 3(1)

Table 1

System	Implementation deadline
GSM complying with the GSM standards as published by ETSI, in particular EN 301 502 and EN 301 511, or equivalent specifications.	20 March 2011

2. List of systems referred to in Article 3(2)

Table 2

System	Allowed frequency bands	Implementation deadline
UMTS complying with the UMTS standards as published by ETSI, in particular EN 301 908-1, EN 301 908-2, EN 301 908-3 and EN 301 908-11, or equivalent specifications.	Paired terrestrial 2 GHz band	2 August 2017
LTE complying with LTE standards, as published by ETSI, in particular EN 301 908-1, EN 301 908-13, EN 301 908-14, and EN 301 908-15, or equivalent specifications.	1 800 MHz band and Paired 2,6 GHz band	2 August 2017
5G NR non-AAS complying with the 5G NR standards as published by ETSI, in particular EN 301 908-24 and EN 301 908-25, or equivalent specifications.	1 800 MHz band and Paired 2,6 GHz band	As soon as possible and no later than six months after notification of this Decision.

3. Technical parameters

(1) The conditions to be met by GSM systems operating in the 900 MHz and 1 800 MHz frequency bands providing MCV services in the territorial seas of the Member States, in order to avoid harmful interference to land-based mobile networks shall be the following:

(a) The system providing MCV services shall not be used closer than 2 nautical miles ⁽¹⁾ from the baseline, as defined in the United Nations Convention on the Law of the Sea;

(b) Only indoor vessel-BS antenna(s) shall be used between 2 and 12 nautical miles from the baseline;

⁽¹⁾ One nautical mile = 1 852 metres.

(c) Limits to be set for mobile terminals when used on board vessel and for vessel-BS:

Parameter	Description
Transmit power/power density	For mobile terminals used on board vessels and controlled by the vessel-BS in the 900 MHz frequency band, the maximum radiated output power is set to: 5 dBm
	For mobile terminals used on board vessels and controlled by the vessel-BS in the 1 800 MHz frequency band, the maximum radiated output power is set to: 0 dBm
	For base stations on board vessels, the maximum power density measured in external areas of the vessel, with reference to a 0 dBi measurement antenna gain: -80 dBm/200 kHz
Channel access and occupation rules	Techniques to mitigate interference that provide at least equivalent performance to the following mitigation factors based on GSM standards shall be used: <ul style="list-style-type: none"> — between 2 and 3 nautical miles from the baseline, the receiver sensitivity and the disconnection threshold (ACCMIN ⁽¹⁾ and min RXLEV ⁽²⁾ level) of the mobile terminal used on board vessel shall be equal to or higher than -70 dBm/200 kHz and between 3 and 12 nautical miles from the baseline equal to or higher than -75 dBm/200 kHz; — discontinuous transmission ⁽³⁾ shall be activated in the MCV system uplink direction; — the timing advance ⁽⁴⁾ value of the vessel-BS shall be set to the minimum.

⁽¹⁾ ACCMIN (RX_LEV_ACCESS_MIN); as described in GSM standard ETSI TS 144 018.
⁽²⁾ RXLEV (RXLEV-FULL-SERVING-CELL); as described in GSM standard ETSI TS 148 008.
⁽³⁾ Discontinuous transmission, or DTX; as described in GSM standard ETSI TS 148 008.
⁽⁴⁾ Timing advance; as described in GSM standard ETSI TS 144 018.

(2) The conditions to be met by UMTS systems in the paired terrestrial 2 GHz frequency band providing MCV services in the territorial seas of the Member States, in order to avoid harmful interference to land-based mobile networks shall be the following:

- (a) The system providing MCV services shall not be used closer than 2 nautical miles from the baseline, as defined in the United Nations Convention on the Law of the Sea;
- (b) Only indoor vessel-BS antenna(s) shall be used between 2 and 12 nautical miles from the baseline;
- (c) Only bandwidth up to 5 MHz (duplex) can be used;
- (d) Limits to be set for mobile terminals when used on board vessel and for vessel-BS:

Parameter	Description
Transmit power/power density	For mobile terminals transmitting in the 1 920–1 980 MHz frequency band used on board vessels and controlled by the vessel-BS transmitting in the 2 110–2 170 MHz frequency band, the maximum radiated output power is set to: 0 dBm/5 MHz

Parameter	Description
Emissions on deck	The vessel-BS emission on deck shall be equal or below -102 dBm/5 MHz (Common Pilot Channel)
Channel access and occupation rules	Between 2 and 12 nautical miles from the baseline, the quality criteria (minimum required received signal level in the cell) shall be equal to or higher than: -87 dBm/5 MHz
	The Public Land Mobile Network selection timer shall be set to 10 minutes
	The timing advance parameter shall be set according to a cell range for the MCV distributed antenna system equal to 600 m
	The Radio Resource Control user inactivity release timer shall be set to 2 seconds
Non-alignment with land networks	MCV carrier centre frequency shall not be aligned with land network carriers

(3) The conditions to be met by LTE non-AAS systems in the 1 800 MHz frequency band and paired 2,6 GHz frequency band providing MCV services in the territorial seas of the Member States, in order to avoid harmful interference to land-based mobile networks shall be the following:

- (a) The system providing MCV services shall not be used closer than 4 nautical miles from the baseline, as defined in the United Nations Convention on the Law of the Sea;
- (b) Only indoor vessel-BS antenna(s) shall be used between 4 and 12 nautical miles from the baseline;
- (c) Only a bandwidth of up to 5 MHz (duplex) can be used per frequency band (1 800 MHz and paired 2,6 GHz);
- (d) Limits to be set for mobile terminals when used on board vessel and for vessel-BS:

Parameter	Description
Transmit power/power density	For mobile terminals used on board vessels and controlled by the vessel-BS in the 1 800 MHz frequency band and paired 2,6 GHz frequency band, the maximum radiated output power is set to: 0 dBm
Emissions on deck	The vessel-BS emission on deck shall be equal or below -98 dBm/5 MHz (equivalent to -120 dBm/15 kHz)
Channel access and occupation rules	Between 4 and 12 nautical miles from the baseline, the quality criteria (minimum required received signal level in the cell) shall be equal to or higher than -83 dBm/5 MHz (equivalent to -105 dBm/15 kHz)
	The Public Land Mobile Network selection timer shall be set to 10 minutes
	The timing advance parameter shall be set according to a cell range for the MCV distributed antenna system equal to 400 m

Parameter	Description
	The Radio Resource Control user inactivity release timer shall be set to 2 seconds
Non-alignment with land networks	MCV carrier centre frequency shall not be aligned with land network carriers

(4) The conditions to be met by 5G non-AAS systems in the 1 800 MHz frequency band and in the paired 2,6 GHz frequency band providing MCV services in the territorial seas of the Member States, in order to avoid harmful interference to land-based mobile networks shall be the following:

- (a) The system providing MCV services shall not be used closer than 4 nautical miles from the baseline, as defined in the United Nations Convention on the Law of the Sea;
- (b) Only indoor vessel-BS antenna(s) shall be used between 4 and 12 nautical miles from the baseline;
- (c) Only a bandwidth of up to 5 MHz (duplex) can be used per frequency band (1 800 MHz and paired 2,6 GHz);
- (d) Limits to be set for mobile terminals when used on board vessel and for vessel-BS:

Parameter	Description
Transmit power/power density	For mobile terminals used on board vessels and controlled by the vessel-BS in the 1 800 MHz frequency band and paired 2,6 GHz frequency band, the maximum radiated output power is set to: 0 dBm
Emissions on deck	The vessel-BS emission on deck shall be equal or below -98 dBm/5 MHz (equivalent to -120 dBm/15 kHz) (Note 1)
Channel access and occupation rules	Between 4 and 12 nautical miles from the baseline, the quality criteria (minimum required received signal level in the cell) shall be equal to or higher than -83 dBm/5 MHz (equivalent to -105 dBm/15 kHz) (Note 1)
	The Public Land Mobile Network selection timer shall be set to 10 minutes
	The timing advance parameter shall be set according to a cell range for the MCV distributed antenna system equal to 400 m (Note 2)
	The Radio Resource Control user inactivity release timer shall be set to 2 seconds
Non-alignment with land networks	MCV carrier centre frequency shall not be aligned with land network carriers

Note 1: For SSB channel bandwidth other than 15 kHz, a conversion factor of $10 \cdot \log_{10}(\text{SSB BW}/15 \text{ kHz})$ shall be added.

Note 2: The timing advance parameter has to be set according to the corresponding cell range.

- (e) Recommendation for operation beyond the territorial sea

In order to avoid a harmful interference from a system beyond the territorial sea towards terrestrial mobile networks' base stations, it is recommended that Member States limit the transmitting (Tx) power of user equipment (UE) connected to a system in the 1 800 MHz and paired 2,6 GHz frequency bands in accordance with the following formula:

$$\text{UE Tx Power (dBm)} = 2 + (D - 12) \cdot 0,75$$

where:

D is the distance from the baseline and $12 < D \leq 41$ nautical miles.

This limitation could be included in the licence granted by the flag state and the established procedure for complaint in case of interference, as contained in the ITU Radio Regulations, applies.
