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Based on the result of a public consultation held under Section 130 of the Act No. 127/2005 Coll., on Electronic Communications and on Amendment to Certain Related Acts (the Electronic Communications Act), as amended (hereinafter “the Act”) and the decision of the Council of the Czech Telecommunication Office (hereinafter “the Office”) under Section 107(9)(b)(2) of the Act and to implement Section 16(2) of the Act, the Office as the competent administration authority under Section 108(1)(b) of the Act and Section 10 of the Act No. 500/2004 Coll., the Administrative Procedure Code, as amended, hereby issues this Measure of General Nature

**Part No. PV-P/7/02.2022-3 of the radio spectrum utilisation plan
for the frequency band 2700–4200 MHz.**

Article 1
Introductory Provisions

This part of the Radio Spectrum Utilisation Plan sets down the technical characteristics and conditions for radio spectrum utilisation in the frequency band from 2700 MHz to 4200 MHz by radiocommunication services. This part of the Radio Spectrum Utilisation Plan is a follow-up to the Common Part of the Radio Spectrum Utilisation Plan.¹⁾

Part 1
General Information on the Frequency Band

Article 2
Frequency Band Characteristics

(1) On the basis of the European Commission Implementing Decision²⁾ (hereinafter “the Commission”), the 3400–3800 MHz band is harmonised for terrestrial systems for the provision of electronic communications services. There occurs a convergence of fixed and mobile radiocommunication services and the conditions of frequencies utilisation in the fixed radiocommunication service are equal to the conditions for the mobile service.

(2) The frequency band 2700–3400 MHz is used by radiodetermination services.

¹⁾ Common Part of the Radio Spectrum Utilisation Plan No. PV/10.2005-35, as amended.

²⁾ Commission Implementing Decision (EU) 2019/235 of 24 January 2019 on amending Decision 2008/411/EC (on the harmonisation of the 3400 – 3800 MHz frequency band for terrestrial systems capable of providing electronic communications services in the Community) as regards an update of relevant technical conditions applicable to the 3400-3800 MHz frequency band.

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(3) In the frequency band 3800–4200 MHz, the utilisation by the fixed service predominates.

(4) The allocation of frequency bands to the radiocommunication services in the National Table of Frequency Allocations³⁾ complies with the European harmonisation target.⁴⁾

(5) Information stated in this Article are further detailed in Parts laying down the conditions for the band utilisation in individual radiocommunication services and bands.

Article 3 International Obligations

(1) Provisions of Radio Regulations,⁵⁾ (hereinafter “RR”) and HCM agreement⁶⁾ apply to operation and coordination.

(2) Where there is stated in this part of the Radio Spectrum Utilisation Plan that a footnote of the Radio Regulations applies, the text of a footnote of Radio Regulations stated in Part III of the Decree is to be applied.³⁾

Article 4 Information on future development

(1) The change of the 3600–3800 MHz band allocation to the mobile service from secondary to primary basis in the Radio Regulations is scheduled for the WRC-23 as point 1.3 of the programme. The mobile service is already provided on primary basis in the Czech Republic and this point of programme on radio spectrum utilisation will not influence the Czech Republic.

(2) The operation conditions of the Short Range Devices are updated periodically by the CEPT Electronic Communications Committee and by the Commission.

³⁾ Government Decree No. 105/2010 Coll., on the Frequency Band Allocation Plan (National Table of Frequency Allocation), as amended.

⁴⁾ ERC Report 25: European Table of Frequency Allocations and Applications in the frequency range 8.3 kHz to 3000 GHz, rev. 2020.

⁵⁾ Radio Regulations, International Telecommunication Union, Geneva, 2020.

⁶⁾ HCM Agreement – Agreement between the Administrations of Austria, Belgium, the Czech Republic, Germany, France, Hungary, the Netherlands, Croatia, Italy, Liechtenstein, Lithuania, Luxembourg, Poland, Romania, the Slovak Republic, Slovenia and Switzerland on the co-ordination of frequencies between 29.7 MHz and 43.5 GHz for the fixed service and the land mobile service.

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Part 2 Conditions for Utilisation

Article 5 Short Range Devices

(1) The Short Range Devices use frequencies in the bands allocated to various radiocommunication services, they must not cause harmful interference to applications of the radiocommunication services, and at the same time, they cannot claim protection from harmful interference by the stations of radiocommunication services.

(2) In accordance with the Commission Decision,⁷⁾ CEPT Decisions^{8),9),10),11)} and with CEPT Recommendations^{12),13),14)}, it is allowed to use the given sub-bands by the following Short Range Devices (SRD¹⁵⁾):

(a) The whole range characterised by this Part by ultrawideband GPR/WPR radars to display structures of walls and ground; and

(b) The whole range characterised by this Part by devices using ultrawideband technology.

(3) Specific conditions for frequency utilisation, including the technical parameters, are defined by the relevant General Authorisation.¹⁶⁾

Article 6 Mobile service

(1) In accordance with the Commission Decision,²⁾ the 3400–3800 MHz band is designated for the use by electronic communications networks. Conditions for the frequencies utilisation are specified in the annexes of the Commission Decision including the technical parameters of so called spectral block edge masks, which include the limit values of emissions both within the block of spectrum and out-of-block and the conditions of compliance with these parameters.

(2) The number of rights for the use of radio frequencies is limited in the 3400–3800 MHz band. The band can be used by the networks designated for providing high speed electronic communications services based on radio frequencies block allocations defined for the whole territory of the Czech Republic and the following conditions apply:

a) The channel spacing is in multiples of 5 MHz, where the frequency block edges are based on undivided multiples of 5 MHz starting from 3400 MHz frequency. In case of application of Section 23 of the Act, the minimal transferable unit is a block of 5 MHz size;

⁷⁾ Commission Implementing Decision (EU) 2019/785 of 14 May 2019 on the harmonisation of radio spectrum for equipment using ultra-wideband technology in the Union and repealing Decision 2007/131/EC.

⁸⁾ CEPT Decision ECC/DEC/(06)04 – The harmonised use, exemption from individual licensing and free circulation of devices using Ultra-Wideband (UWB) technology in bands below 10.6 GHz.

⁹⁾ CEPT Decision ECC/DEC/(06)08 – The conditions for use of the radio spectrum by Ground-and Wall-Probing Radar (GPR/WPR) imaging systems, approved 1 December 2006, updated 26 October 2018.

¹⁰⁾ CEPT Decision ECC/DEC/(12)03 – The harmonised conditions for UWB applications onboard aircraft.

¹¹⁾ CEPT Decision ECC/DEC/(07)01 – The harmonised use, exemption from individual licensing and free circulation of Material Sensing Devices using Ultra-Wideband (UWB) technology.

¹²⁾ CEPT Recommendation ECC/REC/(11)09 – UWB Location Tracking Systems TYPE 2 (LT2).

¹³⁾ CEPT Recommendation ECC/REC/(11)10 – Location tracking application for emergency and disaster situations.

¹⁴⁾ CEPT Recommendation CEPT/ERC/REC 70-03 – Relating to the use of Short Range Devices (SRD).

¹⁵⁾ The abbreviation SRD stands for Short Range Device.

¹⁶⁾ General Authorisation No. VO-R/10/07.2021-7 for the use of radio frequencies and for the operation of Short Range Devices, as amended.

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- b) The band is designated for the use of frequencies with time division duplex (TDD) or in other operation regime which corresponds to the parameters of spectral block edge masks;
- c) The frequency utilisation by base stations is possible based on individual authorisation for the use of radio frequencies; the operation of user's terminals is possible based on General Authorisation;¹⁷
- d) The limit values of radiated power of the base station are specified in the annex of the Commission Decision,²⁾ whereas the limit e.i.r.p. value of the base stations within the block is set as +68 dBm/(5 MHz) per antenna for base stations without active antenna systems. For base stations with active antenna systems (AAS), the corresponding limit value is +47 dBm/(5 MHz) per cell. The values specified in Table 6, line A of the annex of the Decision²⁾ shall be used for the 3400–3410 MHz sub-band;
- e) The holders of radio frequency block allocations coordinate on their own the use with other block allocations holders whose networks utilise radio frequencies adjacent to the allocated radio frequencies.¹⁸⁾ The mutual time synchronisation in terms of slots time sorting,¹⁹⁾ variants of which stem from the CEPT/ECC documents,²⁰⁾ is decisive for coordination. All transmission radio stations and networks in the 3400–3800 MHz bands shall use a single time synchronisation by 1 July 2022 at the latest. All transmission radio stations and networks in the 3400–3800 MHz band shall use the initial framework with DDDSUUDDDD DDDSUUDDDD sequence (hereinafter “type B”) or another compatible framework. As far as the technical conditions allow, in terms of coexistence with other networks, the transmission radio stations in the band can use or transfer to the target DDDSU DDDSU DDDSU DDDSU framework (hereinafter “type A”). In case of detected incompatibility of networks operation with the type A and B frameworks, it is determinative to reach an operation compatible with the type B framework, if the Office does not set differently based on the assessment of overall band utilisation situation. The duration of one slot is 0.5 ms and the total duration of the given framework is 10 ms. The time reference is tied with UTC and the beginning of the radio framework is set in accordance with Chapter 9 of the ETSI TS 138 401 (3GPP TS 38.401) specification or with more recent. The accuracy of time and phase synchronisation is $\pm 1,5 \mu\text{s}$.

Article 7 Fixed Service

(1) In the 3400–3800 MHz band, the technical conditions for the frequencies utilisation by networks designated for providing high-speed electronic communications services are described in Article 6.

(2) The 3800–4200 MHz band is designated for duplex point-to-point fixed links. The channel spacing is 29 MHz, whereas centre frequencies f_n and f_n' [MHz] of particular

¹⁷⁾ General Authorisation No. VO-R/1/12.2020-12 for the operation of user's terminals of electronic communications radio networks, as amended.

¹⁸⁾ Part of optimization of spectrum utilisation is the mutual time synchronisation of frequency adjacent stations with higher radiated power.

¹⁹⁾ Time moments of transmission and receiving. The slots are marked as follows: „D” – downlink, „U” uplink, „S” – special slot.

²⁰⁾ ECC Report 296 – National synchronisation regulatory framework options in 3400-3800 MHz: a toolbox for coexistence of MFCNs in synchronised, unsynchronised and semi-synchronised operation in 3400-3800 MHz, Efficient usage of the spectrum at the border of CEPT countries between TDD MFCN in the frequency band 3400-3800 MHz, and ECC Recommendation of 23 October 2020 on frame structures to facilitate cross-border coordination of TDD MFCN in the frequency band 3400-3800 MHz.

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operating channels are in relation to the reference frequency $f_0 = 4003.5$ MHz given by formulas

$$\begin{aligned} f_n &= f_0 - 208 + 29n \text{ in lower part of the band and} \\ f_n' &= f_0 + 5 + 29n \text{ in higher part of the band,} \\ &\text{where } n = 1, 2 \text{ up to } 6. \end{aligned}$$

The arrangement is in accordance with ITU-R Recommendation.²¹⁾

(3) International and national frequency coordination is carried out by the Office.

Article 8 **Fixed-Satellite Service**

(1) The 3400–4200 MHz band is allocated to the service in space-to-Earth direction and may be used for links from telecommunication satellites to the coordinated Earth stations.

(2) In respect of the Commission Decision,²⁾ no new individual authorisations for the new Earth fixed-satellite service stations shall be granted in the 3400–3800 MHz band.

Article 9 **Radionavigation and Aeronautical Radionavigation Service**

Utilisation of the 2700–2900 MHz band by the aeronautical radionavigation service is, in accordance with RR footnote,²²⁾ limited to ground radio locators and associated aircraft transponders which transmit only upon activation by radio locators which use frequencies in this band. Radionavigation service in the 2900–3100 MHz band has no civil utilisation in the Czech Republic.

Article 10 **Radiolocation Service**

(1) The 2900–3400 MHz band is used by the radiolocation service for non-civil purposes.

(2) The radiolocation service stations in the 2900–3100 MHz band shall, according to RR footnote,²³⁾ neither cause harmful interference to radar systems in the radionavigation service nor request a protection from them.

(3) Radiolocation service must follow the provisions in Article 17 of the RR to protect the radio astronomy service.

Article 11 **Radio Astronomy Service**

Radio astronomy service is a passive radiocommunication service based on receiving radio waves of space origin. Due to low levels of receiving signals, the operation of the service depends on the protection from interference caused by other services. According to RR footnote,²⁴⁾ users of the bands 3260–3267 MHz, 3332–

²¹⁾ Recommendation ITU-R F.382-8 – Radio/frequency channel arrangements for radio/relay systems operating in the 2 and 4 GHz bands.

²²⁾ Footnote 5.337 of RR.

²³⁾ Footnote 5.424A of RR.

²⁴⁾ Footnote 5.149 of RR.

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3339 MHz and 3345.8–3352.5 MHz shall take all practicable measures to protect the radio astronomy service.

Article 12

Earth Exploration-Satellite and Space Research Services

The 3100–3300 MHz band is used in these services by radars and active sensors for measurement of physical characteristics of the Earth's surface, oceans and the Earth's atmosphere.²⁵⁾

Article 13

Amateur Service

(1) In the Czech Republic, the 3400–3410 MHz band is allocated to the amateur service additionally on a secondary basis by footnote of the Decree.²⁶⁾

(2) The use of frequencies by the amateur service stations is governed by a special legal measure.²⁷⁾

Part 3

Final Provisions

Article 14

Repealing Provisions

The Measure of General Nature Part No. PV-P/7/06.2019-5 of the Radio Spectrum Utilisation Plan for the 2700–4200 MHz frequency band is repealed.

Article 15

Effect

This part of the Radio Spectrum Utilisation Plan shall come into effect from 1 April 2022.

²⁵⁾ Characteristics are presented in Recommendation ITU-R RS 1166-4 – Performance and interference criteria for active spaceborne sensors.

²⁶⁾ Footnote CZ7 of the Decree.

²⁷⁾ Decree No. 156/2005 Coll., on the Technical and Operating Conditions of the Amateur Radiocommunication Service.

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Explanatory memorandum

To implement Section 16(2) of the Act, the Office issues the Measure of General Nature Part No. PV-P/7/02.2022-3 of the Radio Spectrum Utilisation Plan (hereinafter “the part of the plan”), laying down the technical characteristics and conditions of the use of radio spectrum in the frequency band from 2700 MHz to 4200 MHz by radiocommunication services. This part of the plan is based on the principles embedded in the Act and in the European legislation, especially in Directive (EU) 2018/1972 of the European Parliament and of the Council establishing the European Electronic Communications Code and in Decision No. 676/2002/EC of the European Parliament and of the Council on a regulatory framework for radio spectrum policy in the European Community (Radio Spectrum Decision) as well as on principles determined in the Common Part of the Radio Spectrum Utilisation Plan No. PV/10.2005-35.

The purpose of this part of the plan is to ensure the transparency of conditions for radio spectrum use and ability to anticipate the future decisions of the Office. This part of the plan replaces Measure of General Nature Part No. PV-P/7/07.2015-4 of the Radio Spectrum Utilisation Plan for the 2700–4200 MHz frequency band.

The reasons for the new issue of a part of the Radio Spectrum Utilisation Plan is mainly to add parameters for synchronised operation of TDD networks in the 3.4–3.8 GHz band following the granting of block allocations for the operation of areawide networks designated for the provision of high-speed electronic communications services in the 3400–3600 MHz band.

Article 2 with characteristic of the band informs notably on the harmonised use of the frequencies from the 3400–3800 MHz bands designated for providing electronic communications services on the basis of the Commission Decision.²⁾

Article 3 presents international obligations represented for the given band by Radio Regulations of the International Telecommunication Union and HCM Agreement. Article 4 provides information on the future development.

Article 5 sets conditions for Short Range Devices and refers to the relevant general authorisation setting the specific conditions for the use of radio frequencies including the technical parameters.

Article 6 presents conditions for the frequencies' utilisation in the mobile service which has allocation in the 3400–3800 MHz bands. Due to the convergence of radiocommunication services in this band (i.e. removing the difference between mobile and fixed radiocommunication service), the technical conditions of the 3400–3800 MHz band utilisation are presented in this Article jointly for mobile and fixed services within the meaning of the Commission Decision.²⁾ In the described band, the high-speed access networks providing electronic communications services are operated and deployed using consolidated channel sub-bands of multiples of 5 MHz. On the EU level, the 3400–3800 MHz band is defined in the Commission decision²⁾ as a pioneer band for 5G networks. For completeness, the provision in Paragraph 2(d) has been amended with maximum radiated power for Active Antenna Systems (AAS) in accordance with the conditions set in the Invitation to Tender of 7 August 2020.

Article 6(2)(e) is also amended with condition of single time periodicity and the order of slots¹⁹⁾ aiming to minimise conflicts when sending and receiving the signal in networks with duplex operation and TDD time division. This time synchronisation stems from the ECC studies summarised in ECC documents²⁰⁾ and considers the 4G and 5G technologies differences lying among other also in different optimal time order of sending and receiving moments (slots). The reason for introducing the synchronisation is that the operational incompatibility of non-synchronised networks can cause data throughput limitations or latency when there are time-non-synchronised networks adjacent to each other in terms of frequencies and geographically. With regard to effective spectrum

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utilisation and the announced specification of conditions for spectrum utilisation in the Invitation to Tender from 2020,²⁸) an obligation of single time synchronisation was inserted with obligatory common implementation for all new as well as already operated transmission radio stations and networks from 1 July 2022 at the latest. As regards the time order of moments of sending, receiving and switching (special slot), the Office considered the fact that there are already 4G/LTE public networks operated in the 3600–3800 MHz band which can use the type B framework, but which cannot, without larger investments, change to type A framework, which is optimal for the operation of 5G NR networks and radio stations, in a short time over the whole network, i.e. including the client stations. At the same time, assumption that new 5G NR networks are being deployed in the 3400–3600 MHz band based on the radio frequencies block allocations from 2020 was taken into account, where these networks can be configured in terms of time synchronisation both of type A framework and type B framework compatible backwards with the operation of 4G/LTE networks. Another condition which the Office considered when proposing the synchronisation conditions is introducing single conditions across the whole 3400–3800 MHz band to allow implementing wide radio channels overlapping to bands of adjacent radio frequencies block allocations. Therefore, there was added a condition to implement the type B frameworks as default for the whole 3400–3800 MHz band in Point (e) provided that when (or if) the technical conditions will allow it, type A framework as the target requested for the whole 3400–3800 MHz band could be implemented. Nevertheless, in case of incompatibility of simultaneous operation of networks or transmission radio stations with types A and B frameworks, network using type B framework is determinative for mutual configuration. The compatibility condition includes also the symbols' order in S slot (special slot) within the individual synchronisation frameworks. The term "transmission radio stations" is used for the case of autonomous operation of transmitters or networks for the purposes of the Industry 4.0, campus or private networks. With regard to the conditions related to the deployment of the public access networks, it is purposeful that the setting of these private network takes account the operational needs of public networks. Regarding the aim to support the transition to type A framework, the Office will continuously monitor the situation in terms of networks development in the 3400–3800 MHz band and when needed or based on frequencies' users input, it will execute assessments in terms of introducing the conditions to support the transition to single implementation of the target type A framework. To specify the periodicity of frameworks, there are references made to the ETSI/3GPP technical specification to anchor the single beginning of the time framework and the definitions of framework and slot duration. To precisely set the network, Paragraph 2(e) is also adding the permitted tolerance of synchronisation's time deviation. The given conditions are to be considered as basic not excluding the possibility of mutual cooperation among the frequencies' users, such as setting a different configuration of time frameworks or introducing alternative network setting decreasing the probability of mutual networks interference or incompatibility.

Article 7 describes the conditions for utilisation in fixed service. The conditions for the 3400–3800 MHz band are the same as for mobile service described in Article 6.

Article 8 informs on the allocations to the fixed-satellite service. In the Czech Republic, the band is not used by stations in satellite service.

Article 9 refers to the radionavigation and aeronautical radionavigation service and conditions of use are defined in accordance with Radio Regulations.

Article 10 lays down conditions of the civil use by radiolocation service which in the 2700–3100 MHz bands shall respect allocation to the radionavigation service.

²⁸ Invitation to Tender from 7 August 2020 for Granting of the Rights to Use Radio Frequencies to Provide Electronic Communications Networks in the 700 MHz and 3400–3600 MHz Frequency Bands.

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At the same time, this service shall not interfere with the radio astronomy service, which is regulated in the Article 11.

Article 11 informs on the band allocations to the radio astronomy service which does not use the frequencies actively, but it claims protection from interference from other services from a viewpoint of Radio Regulations.

Article 12 informs on allocation of the 3100–3300 MHz band to the Earth-exploration satellite and space research services. The radio stations of these scientific services are placed on a satellite or a spaceship.

Article 13 refers to the amateur service of which national allocation is in accordance with footnote EU17 of the European Table of Frequency Allocations and Utilisations.

Article 14 contains repealing provisions, Article 15 sets down the applicability of this part of the radio spectrum utilisation plan.

Based on the Section 130 of the Act and in accordance with the Czech Telecommunication Office Rules for Conducting Consultations at the Discussion Site, the Office published a draft of the Measure of General Nature Part No. PV-P/7/XX.2022-YY of the Radio Spectrum Utilisation Plan together with a call for comments on the discussion site on 22 December 2021. During the public consultation, the Office received two comments from one subject regarding the Article 6(2)(e) on TDD networks synchronisation and on the related part of the Explanatory Memorandum. The Office accepted both comments. The settlement table with all comments published on the discussion site presents full wording of all comments and their settlement.

On behalf of the Czech
Telecommunication Office Council

Mgr. Ing. Hana Továrková
Chair of the Czech Telecommunication Office
Council

<signed>