



Czech Telecommunication Office
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Based on the results 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 under the Act No. 500/2004 Coll., the Administrative Procedure Code, as amended, and based the decision of the Council of the Czech Telecommunications Office (hereinafter “the Office”) under Section 107(9)(b)(2) of the Act and to implement Sections 9 and 12 of the Act, the Office as the competent administration body under Section 108(1)(b) of the Act hereby issues this Measure of General Nature

**General Authorization No. VO-R/24/08.2023-6 for the operation of
equipment of infrastructure for transmitting radio signals inside
tunnels, buildings and trains**

Article 1

Introductory provisions

The device operating conditions¹⁾ relating to the operation of the transmitting radio equipment – repeaters which are part of the equipment infrastructure for local additional coverage of premises, i.e., tunnels, spaces inside buildings and inside passenger carriages of trains by a signal transmitted outside these objects (hereinafter “stations”) by natural or legal persons (hereinafter “user”) by electronic communication networks of the operators who have been granted with individual authorisation for the use of radio frequencies, are laid down in the Act and in this General Authorisation pursuant to Section 10(1) of the Act.

Article 2

Specific common conditions

The specific conditions related to Section 10(2)(f) of the Act are as follows:

- (1) The stations may be operated without individual authorisation for the use of radio frequencies;
- (2) The stations only amplify the signals transmitted by networks of the operators

¹⁾ Sections 73 to 74 of the Act.

who have been granted an individual authorisation for the use of radio frequencies;

(3) In a case where a geographic territory has been defined in the framework of an individual authorisation for the use of radio frequencies, it is possible to use radio frequencies and operate stations only on these territories;

(4) The stations shall not cause harmful interference to the stations which use, on the basis of individual authorisation, the radio frequencies within the radiocommunication service on a primary basis. Also, they have no protection against harmful interference from these stations as well.

(5) The stations shall not be modified neither electrically, nor mechanically.

Article 3

Specific conditions for stations designated for additional coverage of buildings and other constructions with signal of broadcasting service

(1) The stations serve for additional coverage of road and railway tunnels and of spaces inside buildings by the one-way signals of broadcasting service.

(2) The stations are operated with transmitting antennas located inside a construction consisting of one or more radiating cables or one or more individual antennas.

(3) In road and railway tunnels, it is possible to ensure the additional coverage by analogue and digital broadcasting service signal. In other constructions, it is possible to ensure additional coverage only by the digital terrestrial broadcasting service signal (so-called DVB and DAB repeaters).

(4) The stations only amplify the signal available around the construction. A change of signal (content of transmission) is possible only in road and rail tunnels in the case of announcing warnings, instructions or information necessary for safety or protection of users of these tunnels under the valid regulations for technological equipment of tunnels.²⁾

(5) The stations shall not interfere with the receipt of radio broadcasting or television signals outside the construction, including the area around tunnel entrances.

Article 4

Specific conditions for stations designated for additional coverage of buildings and other constructions by signal of terrestrial mobile service networks

(1) The stations serve for the additional coverage of spaces inside buildings and road or railway tunnels by signals of the terrestrial mobile service networks (e.g., public mobile networks, TETRA, trunk networks, etc.).

(2) For communication with user's terminals, the stations are operated with antennas located inside a building or tunnel consisting of one or more radiating cables or one or more individual antennas.

(3) The stations can be operated only on the basis of a written consent of the operators of the networks, the signal of which the station extends. The written consent is not

²⁾ ČSN 73 7507 – Design of road tunnels; ČSN 73 7508 – Rail tunnels.

necessary for dissemination of transmitting networks signals serving exclusively for ensuring the fire protection, public order and security of inhabitants.

(4) The stations shall not interfere with the operation of any electronic communications networks outside the buildings or tunnels, including the area around their entrances.

(5) The harmonized standards for the stations are ČSN ETSI EN 303 609,³⁾ ČSN ETSI EN 301 908-11,⁴⁾ and ČSN ETSI EN 301 908-15.⁵⁾

Article 5
Specific conditions for stations designated for additional coverage of train carriages by broadband mobile networks

(1) The stations serve for additional coverage of interiors of passenger train carriages by signal of broadband mobile networks.

(2) The technical parameters of the stations are:

| Frequency band | Technology | Max. e.i.r.p. ⁶⁾ in the uplink ⁷⁾ | Max. e.i.r.p. ⁶⁾ in the downlink ⁷⁾ | Min. spacing of the station gain against the system isolation ⁸⁾ (in uplink and downlink ⁷⁾) |
|-----------------------------------|---|---|---|---|
| 700 MHz 800 MHz, 900 MHz | technologically neutral (except for GSM and GPRS) | 23 dBm | 36 dBm; spectral density shall not exceed the level of 10 dBm/5 MHz | 15 dB |
| 900 MHz | GSM | 33 dBm | 33 dBm | 15 dB |
| 1800 MHz | GSM | 30 dBm | 30 dBm | 15 dB |
| 1800 MHz, 2100 MHz 2600 MHz | technologically neutral (except for GSM and GPRS) | 24 dBm | 36 dBm; spectral density shall not exceed the level of 30 dBm/5 MHz | 15 dB |

(3) The stations shall not interfere the operation of any kind of electronic communications networks outside the train.

(4) If there is no user terminal actively connected to the station for a period of five minutes, the station shall turn to a mode in which the signal power in uplink direction will not exceed the value of -70 dBm/MHz on the connector for outdoor antenna connection.

(5) The station operator may increase the maximum e.i.r.p. values, referred to in Paragraph 2, only on the basis of a written consent of the operators of the networks, the signal

³⁾ ČSN ETSI EN 303 609 – Global System for Mobile communications (GSM) – GSM Repeaters – Harmonised Standard covering the essential requirements of Article 3.2 of the Directive 2014/53/EU.

⁴⁾ ČSN ETSI EN 301 908-11 – IMT cellular networks – Harmonised Standard covering the essential requirements of Article 3.2 of the Directive 2014/53/EU – Part 11: CDMA Direct Spread (UTRA FDD) Repeaters.

⁵⁾ ČSN ETSI EN 301 908-15 – IMT cellular networks – Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU – Part 15: Evolved Universal Terrestrial Radio Access (E-UTRA FDD) Repeaters.

⁶⁾ The abbreviation e.i.r.p. stands for equivalent isotropic radiated power.

⁷⁾ The term “uplink direction” – (uplink) stands for transmission from signal extension stations to base stations; The term “downlink direction” – (downlink) stands for transmission from base stations to the signal extension stations.

⁸⁾ The term “system isolation” marks the difference in signal level from the network base station measured at the location of external antenna, and the same signal measured at the location of internal antenna (radiating cable) of the station. The difference is reported in dB.

of which the station extends, except of the values set in this consent.

(6) The stations shall be equipped with an “echo/interference cancellation” function and shall allow power allocation individually for individual bands and networks of individual operators. The response time of the station shall not exceed 5 μ s.

(7) The harmonised standards for the stations are ČSN ETSI EN 303 609,³⁾ ČSN ETSI EN 301 908-11,⁴⁾ and ČSN ETSI EN 301 908-15.⁵⁾

Article 6 Final provisions

Any station for which the Office decided to approve the radio equipment in accordance with Section 10 of the Act No. 151/2000 Coll., on Telecommunications and on Amendment to Certain Related Acts, as amended, shall be considered a station complying with the Government Order No. 426/2016 Coll., on the assessment of conformity of radio devices/equipment when delivered to the market, provided that such a station was placed to the market before 1 April 2003.

Article 7 Repealing Provisions

This is to repeal the General Authorisation No. VO-R/24/07.2022-14 for the operation of equipment of infrastructure for transmitting radio signals inside tunnels, buildings and trains of 20 July 2022 published in Volume 7/2022 of the Telecommunications Bulletin.

Article 8 Effect

This General Authorisation comes into effect on 1 October 2023.

Explanatory Memorandum

To implement Section 9 and 12 of the Act, the Office issues the General Authorisation No. VO-R/24/08.2023-6 for the operation of equipment of infrastructure for transmitting radio signals inside tunnels, buildings and trains (hereinafter “the General Authorisation”).

This General Authorisation is based on the principles set out in the Act, the frequency plans and EU harmonisation targets, and it replaces the General Authorisation No. VO-R/24/07.2022-14, repealed by Article 7 of this General Authorisation.

The purpose of the General Authorisation is to enable reception of radio broadcasting and communication by means of land mobile service networks in the railway and the road tunnels and inside the buildings as well as to enable communication inside the train carriages. These requirements proceed from legal measures which regulate requirements on the construction and facilities of tunnels and from the initiatives of the Fire Rescue Service, keepers and users of buildings and other constructions, producers/importers of devices and mobile network operators.

Article 2 contains specific conditions for the operation of infrastructure equipment for the dissemination of radio signals inside the constructions which are set out in Articles 3 up to 5 for the individual types of devices. These conditions are based on Directive 2014/53/EU of the European Parliament and of the Council, 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 as well as on requirements that proceed from the administration of radio spectrum management. Within the meaning of Article 6, these provisions do not hinder the operation of the equipment placed on the market before the date this General Authorisation comes into effect. Articles 7 and 8 repeal the existing General Authorisation No. VO-R/24/05.2019-4 and set the date of effect of the General Authorisation pursuant to Section 124(2) of the Act.

After the General Authorisation No. VO-R/24/07.2022-14 was published, the Office received suggestions from mobile network operators regarding requests for changes to the parameters in Article 5 based on practical experience. The Office also took into account its own findings from the comparison measurement of mobile network signal coverage inside the train sets and the fact that attenuation varies considerably in individual train carriages types. For these reasons, in the framework of the administration of radio spectrum management, in comparison with the previous General Authorisation No. VO-R/24/07.2022-14, in sense of Section 12 of the Act, the Office carried out following changes in this General Authorisation:

In Article 5(2) which relates to the extended coverage for the signal of mobile broadband networks inside the train carriages, the 2600 MHz band was added. Further, the radiated power values in the downlink direction were adjusted and instead of the maximum allowed gain of the station, the minimum spacing of the station gain against the system isolation was defined. Article 5(6) has been newly added to define the use of echo/interference cancellation function and the station response time. The purpose of these modifications is to improve coverage inside the train carriage (higher allowed downlink performance), to improve the possibility of preventing interference in particular in stations (echo/interference cancellation requirement) and to reduce the administrative burden for train and network operators, as the change from maximum allowed gain to minimum spacing from the system isolation will reduce the number of cases where the user needs to seek the network operator's consent in the sense of Article 5(5). In Article 5(5), the wording has been formalised for clarity of interpretation.

This is an unofficial translation. The legally binding text is the original Czech version.

On the basis of the Section 130 of the Act and according to the Czech Telecommunication Office's Rules for Conducting Consultations at the Discussion Site, the Office published on 26 June 2023 the draft Measure of General Nature laying down the General Authorisation No. VO-R/24/xx.2023-y for the operation of equipment of infrastructure for transmitting radio signals inside tunnels, buildings and trains, and a call for comments at the Discussion Site. In the framework of the 30 days long public consultation, the Office didn't receive any comment.

On behalf of the Council of the Czech
Telecommunication Office

Marek Ebert

Council Chairman
of the Czech Telecommunication Office

<signed>