

Prague 21 December 2005
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On the basis of public consultation 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 on the basis of the decision of the Council of the Czech Telecommunications Office (hereinafter „the Office”) under Section 107(8)(b)(2) of the Act and in order to implement Section 16(2) of the Act, the Office, as the appropriate state administration body under Section 108(1)(b) of the Act, hereby issues this Measure of General Nature

**Part No. PV-P/16/12.2005-44
of the Radio Spectrum Utilisation Plan
for the frequency band 21.2–24.25 GHz.**

Article 1
Introductory provision

This part of the Radio Spectrum Utilisation Plan sets down the technical characteristics and conditions of use of radio spectrum in the frequency band from 21.2 GHz to 24.25 GHz by radiocommunication services. This part of the Radio Spectrum Utilisation Plan is a follow-up to the Common part of the Radio Spectrum Utilisation Plan¹⁾.

Part 1
General information on the frequency band

Article 2
Frequency bands

Band (GHz)	Current conditions		Future harmonisation ²⁾	
	Allocation	Utilisation	Allocation	Utilisation
21.2–21.4	EARTH EXPLORATION- SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)	Fixed links Passive scientific applications	EARTH EXPLORATION- SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)	One-way fixed and mobile links SAP/SAB Passive scientific applications

¹⁾ Common part of the Radio Spectrum Utilisation Plan Nr. PV/10.2005-35 published in the Telecommunication Journal 14/2005 .

²⁾ ERC Report 25: European Table of Frequency Allocations and Utilisations covering the frequency range 9 kHz to 275 GHz, rev. Copenhagen, 2004.

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

21.4–22	FIXED MOBILE BROADCASTING- SATELLITE ³⁾	Fixed links	BROADCASTING- SATELLITE ³⁾	High definition satellite television
22–22.21	FIXED MOBILE except aeronautical mobile	Fixed links Radio astronomy	FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive)	Fixed links SAP/SAB Passive scientific applications Radio astronomy
22.21–22.5	EARTH EXPLORATION- SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive)	Fixed links Passive scientific applications Radio astronomy	FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) Earth exploration- satellite (passive)	Fixed links SAP/SAB Passive scientific applications Radio astronomy
22.5–22.55	FIXED MOBILE	Fixed links	FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive)	Fixed links SAP/SAB Passive scientific applications Radio astronomy
22.55–23	FIXED INTER-SATELLITE MOBILE	Fixed links Radio astronomy	FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive)	Fixed links SAP/SAB Passive scientific applications Radio astronomy
23–23.55	FIXED INTER-SATELLITE MOBILE	Fixed links ENG/OB Radio astronomy	FIXED INTER-SATELLITE MOBILE	Fixed links SAP/SAB Radio astronomy
23.55–23.6	FIXED MOBILE	Fixed links	FIXED INTER-SATELLITE MOBILE	Fixed links SAP/SAB
23.6–24	EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) ⁴⁾	Transmission forbidden Passive scientific applications Radio astronomy	EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) ⁴⁾	Transmission forbidden Passive scientific applications Radio astronomy

³⁾ In accordance with footnote 5.530 of the Radio Regulations the allocation to the broadcasting-satellite service will come into effect on 1 April 2007.

⁴⁾ In accordance with footnote 5.340 of the Radio Regulations all emissions are prohibited.

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24–24.05	AMATEUR AMATEUR-SATELLITE	Amateur applications ISM Non-specific SRD Telecommand equipment	AMATEUR AMATEUR-SATELLITE	Amateur applications ISM Non-specific SRD SAP/SAB
24.05–24.25	RADIOLOCATION Amateur Earth exploration-satellite (active) Fixed Mobile	MD Amateur applications ISM Non-specific SRD Telecommand equipment Satellite radars for observation of precipitations	RADIOLOCATION Amateur Earth exploration-satellite (active) Fixed Mobile	MD Amateur applications ISM Sensors of movement Non-specific SRD Satellite radars for observation of precipitations SAP/SAB

Article 3 Frequency band characteristics

(1) The band is for civil purposes utilised mainly by fixed links. For planning of links is important to take into account the atmospheric impacts (particularly rain, fog and water vapour in atmosphere), which cause the attenuation of electromagnetic waves. The attenuation is greatest around the frequency of 22.3 GHz and varies pursuant to current meteorological conditions. Practical length of fixed links reaches 15 km, but it should be taken into account, that in case of dry weather, the links in several times greater distance may mutually interfere each other.

(2) In accordance with footnote⁵⁾ of the Radio Regulations⁶⁾ (hereinafter only “RR”) shall users of the bands 22.01–22.21 GHz, 22.21–22.5 GHz, 22.81–22.86 GHz and 23.07–23.12 GHz take all practicable steps to protect the radio astronomy service.

(3) The band 24–24.25 GHz may be, in accordance with RR footnote⁷⁾, used for industrial, scientific a medical purposes ISM⁸⁾. ISM means use of radio frequencies for other purposes than is transmission of information, e.g. for technological warming, lighting, boiling, scientific experiments and so on. Harmful interference caused by operation of these applications shall be limited to minimum. Radiocommunication services operated in this band shall tolerate harmful interference caused by this use.

(4) In accordance with footnote⁹⁾ of ERC Report No. 25 is the band 24.05 – 24.25 GHz shared by military and civil applications.

Article 4 International obligations

Provisions of RR and provisions of HCM Agreement¹⁰⁾ apply to operation and coordination.

⁵⁾ Footnote 5.149 of Radio Regulations.

⁶⁾ Radio Regulations of the International Telecommunication Union, Geneva, 2004.

⁷⁾ Footnote 5.150 of Radio Regulations.

⁸⁾ Abbreviation ISM stands for Industrial, Scientific and Medical.

⁹⁾ Footnote EU2 of ERC Report No. 25.

Part 2
Fixed service

Article 5
Current conditions in the fixed service

(1) The bands 22.0–22.6 / 23.0–23.6 GHz may be used currently by fixed links and operated equipment shall fulfil following conditions:

- a) duplex separation of transmitting and receiving frequency 1008 MHz;
- b) digital modulation;
- c) the channel separation is 28 MHz, whereas centre frequencies f_n and f_n' [MHz] of particular operating channels are in relation to the reference frequency $f_0 = 21\,196$ MHz given by formulas

$$\begin{aligned} f_n &= f_0 + 798 + 28n \text{ in the lower part of the band and} \\ f_n' &= f_0 + 1806 + 28n \text{ in the upper part of the band,} \\ &\text{where } n = 1, 2 \text{ up to } 20, \end{aligned}$$

or 14 MHz, whereas centre frequencies f_n and f_n' [MHz] of particular operating channels are in relation to the reference frequency $f_0 = 21\,196$ MHz given by formulas

$$\begin{aligned} f_n &= f_0 + 805 + 14n \text{ in the lower part of the band and} \\ f_n' &= f_0 + 1813 + 14n \text{ in the upper part of the band,} \\ &\text{where } n = 1, 2 \text{ up to } 41, \end{aligned}$$

or 7 MHz, whereas centre frequencies f_n and f_n' [MHz] of particular operating channels are in relation to the reference frequency $f_0 = 21\,196$ MHz given by formulas

$$\begin{aligned} f_n &= f_0 + 808.5 + 7n \text{ in the lower part of the band and} \\ f_n' &= f_0 + 1816.5 + 7n \text{ in the upper part of the band,} \\ &\text{where } n = 1, 2 \text{ up to } 83, \end{aligned}$$

or 3.5 MHz, whereas centre frequencies f_n and f_n' [MHz] of particular operating channels are in relation to the reference frequency $f_0 = 21\,196$ MHz given by formulas

$$\begin{aligned} f_n &= f_0 + 805 + 3.5n \text{ in the lower part of the band and} \\ f_n' &= f_0 + 1813 + 3.5n \text{ in the upper part of the band,} \\ &\text{where } n = 1, 2 \text{ up to } 168. \end{aligned}$$

Arrangements are in accordance with Recommendations ITU-R¹¹⁾ and CEPT¹²⁾.

(2) In the band 22.6–22.7 GHz 4 channels are reserved for ENG/OB¹³⁾ application, i.e for electronic handover of current news from places of events, which is in this band

¹⁰⁾ 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 39.5 GHz for the fixed service and the land mobile service, Vilnius, 2005.

¹¹⁾ Recommendation ITU-R F.637-3 – Radio frequency channel arrangements for radio relay systems operating in the 23 GHz frequency band.

¹²⁾ Recommendation CEPT/ERC/REC 13-02 – Preferred channel arrangements for fixed services in the range 22.0-29.5 GHz.

¹³⁾ Abbreviation ENG/OB stands for Electronic News Gathering / Outside Broadcasting.

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

planned in framework of the fixed service. Centre frequencies of particular channels are 22 606 MHz, 22 634 MHz, 22 662 MHz and 22 690 MHz. Width of occupied band is 28 MHz. In accordance with CEPT Recommendation¹⁴⁾ are operated wireless cameras and temporary point-point links for transmission of pictures.

Article 6

Information on future development in the fixed service

Allocation to this service in the band 21.4–22 GHz will terminate on 1 April 2007, because an operation of satellite television transmission with high definition is expected here in future.

Part 3

Mobile service

Article 7

Current conditions in the mobile service

(1) The band 24–24.25 GHz may be, in accordance CEPT Recommendation¹⁵⁾, used by non-specific short range stations and the band 24.05–24.25 GHz also by equipment for movement detection and searching for property. Operation is possible on basis of General Authorisation¹⁶⁾.

(2) Links of auxiliary applications SAB/SAP¹⁷⁾ including ENG/OB¹³⁾ are currently for planning purposes in this band included in the fixed service.

Article 8

Information on future development in the mobile service

Future development of the mobile service in this band is, in accordance with footnote of ERC Report No. 25¹⁸⁾, limited to SAP/SAB¹⁷⁾.

Part 4

Amateur and amateur-satellite service

Article 9

Current conditions in amateur and amateur-satellite service

(1) The band 24–24.05 GHz is allocated to amateur and amateur-satellite service on a primary basis. The band 24.05–24.25 GHz is allocated to the amateur service on a secondary basis.

(2) Operation of amateur and amateur-satellite service is governed by special legal measure¹⁹⁾.

¹⁴⁾ Recommendation CEPT/ERC/REC 25-10 – Frequency ranges for the use of temporary terrestrial ENG/OB video links during events in other CEPT member countries.

¹⁵⁾ Recommendation CEPT/ERC/REC 70-03 – Relating to the use of Short Range Devices (SRD).

¹⁶⁾ General Authorisation No. VO-R/10/08.2005-24 for the use of radio frequencies and for the operation of Short Range Devices.

¹⁷⁾ Abbreviation SAB/SAP stands for Service Ancillary for Broadcasting / Service Ancillary for Program.

¹⁸⁾ Footnote EU17A of ERC Report No. 25.

¹⁹⁾ Decree No. 156/2005 Coll., on the technical and operating conditions of the amateur radio communication service.

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Article 10

Information on future development in amateur and amateur-satellite service

No changes in utilisation of the band by this radiocommunication service on international and national level are expected.

Part 5

Earth exploration-satellite service and space research service

Article 11

Current conditions in Earth exploration-satellite service and space research service

Services are operated as passive on a primary basis with exception of the Earth exploration-satellite service (active) in the band 24.05–24.25 GHz which is operated on a secondary basis. Active use lies in operation of satellite radars for observation of rain precipitations.

Article 12

Information on future development in Earth exploration-satellite service and space research service

According to ERC Report²⁾ it is expected, that passive scientific applications in the bands 21.2–21.4 GHz and 22.21–22.5 GHz will terminate its operation before 2015.

Part 6

Radio astronomy service

Article 13

Current conditions in the radio astronomy service

The radio astronomy service is passive radiocommunication service based on reception of radio waves of cosmic origin. With regard to low levels of received signals the operation of this service depends on protection from interference from other radiocommunication services. In accordance with RR footnote⁶⁾ shall users of the bands 22.01–22.21 GHz, 22.21–22.5 GHz, 22.81–22.86 GHz and 23.6–24 GHz take all practicable steps to prevent an interference of the radio astronomy from their transmitting radio equipment. In the Czech Republic is not operated any radio astronomy station in this band.

Article 14

Information on future development in the radio astronomy service

No changes in utilisation of the band by this radiocommunication service on international and national level are expected.

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Part 7
Radiolocation service

Article 15
Current conditions in the radiolocation service

(1) The band 21.5–26.5 GHz (known as 24 GHz) may be, in accordance with European Commission Decision²⁰), used by automotive short range radars under following conditions:

a) devices are designated for use in the area of safety of traffic, for prevention of road vehicles crashes and mitigation of their consequences;

b) devices are operated on non-interference and non-protection basis, it means that shall not cause to other users of the band any harmful interference and shall not claim protection from interference caused by other systems and services operating in above mentioned band;

c) the use of the band by devices is possible until reference date of 30 June 2013;

d) for ultra wide band UWB²¹) part of automotive short-range radar equipment is available whole above mentioned band. Maximum mean power density is –41.3 dBm/MHz e.i.r.p., peak power density is 0 dBm/50 MHz e.i.r.p., except for frequencies below 22 GHz, where the maximum mean power density shall be limited to –61.3 dBm/MHz e.i.r.p.;

e) radio spectrum in the 24.05–24.25 MHz band is designated for regime / component of narrowband emission, which may consist of an unmodulated carrier, with maximum peak power of 20 dBm e.i.r.p. and duty cycle limited to 10 % during one hour for peak emissions higher than –10 dBm e.i.r.p. Emissions within the 23.6–24.0 GHz band that appear with angle 30° or greater above horizontal plane shall be attenuated by at least 25 dB for automotive short-range radars placed on the market before 2010 and thereafter by at least 30 dB;

f) devices may operate only if vehicle is active and by means of automatic termination of emission or by other method without action of driver shall ensure the protection of radio astronomy stations operating in the 22.21–24 GHz band. Until 30 June 2007 the manual deactivation of automotive radar is permissible method of protection.

(2) Protected radio astronomy stations are listed in Annex to Decision²⁰). On territory of the Czech Republic is not established any protected radio astronomy station.

Article 16
Information on future development in the radiolocation service

Development of use of the band by automotive short-range radars in the radiolocation service is supposed. New generations of automotive radars then will start to use the band 79 GHz designated for this application before 2013.

Part 8
Inter-satellite service

²⁰) Commission Decision 2005/50/EC of 17 January 2005 on the harmonisation of the 24 GHz range radio spectrum band for the time-limited use by automotive short-range radar equipment in the Community.

²¹) Abbreviation UWB stands for Ultra Wide Band.

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

Article 17

Current conditions in the inter-satellite service

The band 22.55–23.55 GHz is allocated to this service on a primary basis. In the Czech Republic the allocation is not used.

Article 18

Information on future development in the inter-satellite service

No changes in utilisation of the band by this radiocommunication service on international and national level are expected.

Part 9

Broadcasting-satellite service

Article 19

Current conditions in the broadcasting-satellite service

The band 21.4–22 GHz is allocated to this service on a primary basis for operation of satellite television transmission with high definition HDTV²²⁾. This allocation will come into force in accordance with RR footnote³⁾ on 1 April 2007. Trial operation of service is possible to carry out before above mentioned date, however it shall not interfere already operated applications of other radiocommunication services²³⁾.

Article 20

Information on future development in the broadcasting-satellite service

Development of satellite television transmission HDTV is expected in future.

Part 10

Final provision

Article 21

Effect

This part of the Radio Spectrum Utilisation Plan comes into effect on 1 April 2006.

²²⁾ Abbreviation HDTV stands for High Definition Television.

²³⁾ Resolution 525 of World Administrative Radiocommunication Conference 1992 WARC-92.

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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/16/12.2005-44 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 21.2 GHz to 24.25 GHz by radiocommunication services.

The part of the plan is based on the principles embedded in the Act and in European legislation, especially in Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services (Framework Directive) and 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 the ability to anticipate the future decisions of the Office.

Article 2 consists of information from National Table of Frequency Allocations amended by current utilisation of applications. Column “Future harmonisation” presents future intentions, i.e. allocation to services and utilisation by applications according to ERC Report 25: European Table of Frequency Allocations and Utilisations. The major applications are listed here and more details about applications are in relevant articles on individual radiocommunication services.

Article 3 presents characteristics of the frequency band together with information common to radiocommunication services using the described band.

Article 4 contains international obligations which in this case are determined by the Radio Regulations of the International Telecommunication Union and the HCM Agreement, which replaced original Agreement Berlin 2003.

The most significant use of the band is operation of fixed links in framework of the fixed service described in the Part 2. Information on other radiocommunication services having allocations in the band is contained in subsequent Parts.

On the basis of Section 130 of the Act and in accordance with the Czech Telecommunication Office’s Rules for conducting consultations with the entities concerned at the Discussion Site, the Office published at the Discussion Site a draft Part No. PV-P/16/XX.2005-Y of the Radio Spectrum Utilisation Plan together with a call for comments on 16 November 2005.

During this public consultation the Office received minor comments in order to correct typing error and to precise information on future development in scientific applications in services Earth exploration-satellite and space research.

David Stádník
Chairman of the Council
of the Czech Telecommunication Office
<signed>