TECHNICAL ARRANGEMENT

BETWEEN
THE NATIONAL FREQUENCY MANAGEMENT AUTHORITIES OF

AUSTRIA, CROATIA, HUNGARY, ROMANIA, SERBIA,
THE SLOVAK REPUBLIC AND SLOVENIA

ON BORDER COORDINATION FOR TERRESTRIAL SYSTEMS CAPABLE OF PROVIDING ELECTRONIC COMMUNICATIONS SERVICES SYSTEMS IN THE 900 MHz BAND

880-915 MHz/925-960 MHz

Budapest, 9th July 2026

1. INTRODUCTION

In the framework of Article 6 of ITU Radio Regulations, of bi- or multilateral agreements, arrangements or protocols dealing with frequency coordination in general (e.g. the "HCM Agreement"), the Croatian Regulatory Authority for Network Industries [HAKOM] (Croatia), the Federal Ministry for Housing, Arts, Culture, Media and Sports [BMWKMS] (Austria), the National Media and Infocommunications Authority [NMHH] (Hungary), the National Authority for Management and Regulation in Communications [ANCOM] (Romania), Agency for Communication Networks and Services of the Republic of Slovenia [AKOS] (Slovenia), the Regulatory Authority for Electronic Communications and Postal Services [RATEL] (Serbia) and Regulatory Authority for Electronic Communications and Postal Services of the Slovak Republic [RU] (Slovak Republic) (hereinafter called Signatory Authorities) concluded this Technical Arrangement concerning the frequency usage of 880-915 MHz/925-960 MHz bands in border areas.

The frequency bands 880-915 MHz and 925-960 MHz are designated for GSM (including EC-GSM-IoT), MFCN narrowband (NB) systems which are operating in 200 kHz channels and MFCN wideband (WB) systems which are operating in channels larger than 200 kHz according to relevant regulation in force. This Technical Arrangement is applicable to MFCN NB systems (standalone NB-IoT) and MFCN WB systems (UMTS, LTE, NR and LTE-MTC/LTE-eMTC) operating within harmonized technical conditions defined in ECC Decision ECC/DEC/(06)13. Coordination between GSM systems (including EC-GSM-IoT) in border areas operating in the frequency bands 880-915 MHz and 925-960 MHz is not under the scope of this Technical Arrangement.

The aim of this Technical Arrangement is to lay down the principles, the technical provisions and administrative procedure necessary to put MFCN stations into operation in border areas in the 900 MHz bands.

The relevant provisions of the bi- or multilateral agreements, arrangements or protocols dealing with frequency coordination in general (e.g. "HCM Agreement") shall be applied unless otherwise laid down in this Technical Arrangement.

2. PRINCIPLES OF FREQUENCY PLANNING AND FREQUENCY USAGE IN BORDER AREAS

2.1 Relevant regulation

From regulatory point of view, the following deliverables play an important role in the regulation of cross border coordination in the 900 MHz band:

- Commission Implementing Decision (2022/173) on the harmonisation of the 900 MHz and 1800 MHz frequency bands for terrestrial systems capable of providing electronic communications services in the Union and repealing Decision 2009/766/EC of 7th February 2022;

- ECC Decision (06)13
  Harmonised technical conditions for mobile/fixed communications networks (MFCN) including terrestrial IMT systems, other than GSM and EC-GSM IoT, in the bands 880-915/925-960 MHz and 1710-1785/1805-1880 MHz Approved 01 December 2006 latest amended 4 March 2022;

- ECC Recommendation (08)02
  Cross-border coordination for Mobile/Fixed Communications Networks (MFCN) in the frequency bands 900 MHz and 1800 MHz excluding GSM vs. GSM and for Railway Mobile Radio (RMR) in the 900 MHz frequency band excluding GSM-R vs. GSM-R Approved 21 February 2008 latest amended 7 November 2025.

Versions of the above deliverables being in force at the time of signing this Technical Arrangement are attached for reference.

2.2 Frequency arrangement

In accordance with the Commission Implementing Decision (2022/173) of 7th February 2022 the preferred harmonised frequency arrangement shall be as follows:

- the mode of operation shall be Frequency Division Duplex (FDD);
- the duplex spacing shall be 45 MHz;
- terminal station transmission located in the lower frequency band 880-915 MHz (FDD uplink);
- base station transmission located in the upper frequency band 925-960 MHz (FDD downlink).

2.3 Access to the spectrum in general

One of the most important aims of this Technical Arrangement is to give simple procedure and rules so that networks in border areas may be deployed in a fast and effective way ensuring proper access to the frequency spectrum.

In order to assure equitable access to the spectrum for the operators in neighbouring countries, the coordination principle applied in this Technical Arrangement is based on the concept of trigger field strength values applicable for all concerned operators in the border areas and the concept of preferential physical-layer cell-identity (PCI) codes for wideband systems.

As a consequence, according to this Technical Arrangement, neither coordination nor notification of MFCN stations is required if the trigger field strength values given in this Technical Arrangement are fulfilled and the field strength values are calculated using accurate radio wave propagation methods. It is also beneficial if the radio parameters of the systems are coordinated between neighbouring operators.

It is also important that the information about bringing the frequency bands into use by the operators is available for the interested Administrations and this information can be seen in EFIS (https://efis.cept.org/).

2.4 Radio wave propagation

Achieving equitable access to the spectrum rather depends upon the radio wave propagation method applied to calculate the field strength since that method serves as a tool for enforcing the rules of this Technical Arrangement.

2.4.1 Calculation for planning and effectuation

For the calculation of the field strength values to assess compliance with the triggers given in section 4.2 the method of the HCM Agreement shall be applied. Time probability for the calculation of field strength values is 10%.

2.4.2 Calculations in case of reported interference

As for interference field strength prediction, the following three methods are proposed to be considered by administrations in the relevant frequency coordination

1. site general model with line calculations (hereinafter called "site general method");
2. path specific model with radial calculations from base stations (more sophisticated, hereinafter called "radial calculations");
3. area calculations with a path specific model (the most sophisticated, hereinafter called "area calculations").

Using a site general method (like "HCM" Agreement") for the assessment of interference cannot ensure proper protection against harmful interference for several cases and results in less efficiency in frequency usage in border areas.

Radial calculations can only give better result than site general methods if steps along paths are small enough and the number of radial directions is high enough. Still, there may be some cases causing harmful interference.

Area calculations, especially alongside using clutter data, can eliminate the mistakes of both site general methods and radial calculations and, in addition, important geographic areas can also be protected. Therefore, area calculations are preferable in case where it is necessary to evaluate interference in detail. Thus, operators are expected to apply area calculations based on a commonly agreed wave propagation model, trigger values and method used for evaluation of interference to protect their networks or a special part of the border area and to enhance spectrum efficiency in border areas.

3. GENERAL TECHICAL PROVISIONS

In this section the general technical provisions are given while section 4 details the additional technical provisions for the trigger field strengths values in border areas.

3.1 Coordination situations

The following coordination situations are regulated in this Technical Arrangement:

1. Wideband systems vs. wideband systems;
2. Narrowband systems vs. wideband systems;

3. Narrowband systems vs. narrowband systems (excluding GSM-GSM case),

where

- Narrowband (NB) systems include:
  - GSM, EC-GSM-IoT (Extended Coverage GSM IoT) and standalone NB-IoT (Narrowband IoT).
- Wideband (WB) systems include:
  - UMTS, LTE, LTE-MTC (LTE Machine Type Communication), LTE-eMTC (evolved MTC), LTE inband NB-IoT, LTE guard-band (GB) NB-IoT and NR (New Radio).

With regard to the relationships between the WB-WB, NB-WB and NB-NB systems, the following principles shall be applied:

a) frequency coordination for EC-GSM-IoT and standalone NB-IoT systems should be based on the same requirements as for GSM;

b) frequency coordination for LTE-MTC/LTE-eMTC, in-band and guard-band NB-IoT systems should be based on the same requirements as for LTE;

c) cross-border coordination between neighbouring LTE/NR systems in border areas should be based on the preferential codes provided in ANNEX 4 and PCI's provided in ANNEX 5 of ECC Recommendation (08)02 when channel centre frequencies are aligned;

d) other radio parameters for LTE/NR may need to be coordinated on a bilateral/multilateral basis based on the guidance provided in ANNEX 3 of ECC Recommendation (08)02.

In case of any other technology or radio service the Signatory Authorities concerned shall reach an agreement for properly modifying this Technical Arrangement before putting any station into operation.

3.2 Radio parameters

Radio parameters of mobile and base stations such as power limits shall comply with the requirements given in Commission Implementing Decision (2022/173) of 7th February 2022.

Operators are required to use the preferential codes according to ANNEX 4 and preferential physical-layer cell identities (PCI) for wideband systems according to ANNEX 5 of ECC Recommendation (08)02.

In addition, it is also desirable for the operators to coordinate radio parameters of their systems to minimise the deteriorating effects of uplink interference in line with the related Recommendation.

4. TECHNICAL PROVISIONS RELATED TO TRIGGER FIELD STRENGTH VALUES

4.1 Correction Factors

4.1.1 Bandwidth Correction Factor

Trigger field strength values given in section 4.2 refer to a reference frequency block of 5 MHz and to a single channel. Therefore, the field strength trigger shall be modified according to the value of the bandwidth correction factor. The modified field strength trigger shall be applied to each individual affected carrier of a base station.

If the nominal channel bandwidth of a carrier(s) of base station is not equal to 5 MHz, the value of the bandwidth correction factor according to the following equation shall be added to the field strength trigger values given in section 4.2:

$$10 * \log (CBw/5\ MHz), \quad (dB)$$

where

"CBw" nominal channel bandwidth (MHz).

4.1.2 Aggregated power correction factor

If there is more than one transmitter within the sector operating in a respective reference frequency block, in case of single-entry interference calculation the trigger field strength values given in section 4.2 shall be decreased by the value of the aggregated power correction factor according to the following formula in each antenna sector:

$$10 * \log n \quad (dB)$$

where

"n" the number of the transmitters or transmissions in the respective antenna sector

If a transmission with nominal channel bandwidth falls into a respective reference frequency block (even if partly), it shall be included in the value of "n".

If there is more than one transmitter within the sector operating in a respective reference frequency block and the aggregated power of all transmitters is considered, this correction factor is not required.

4.2 Trigger field strength values

4.2.1 Trigger field strength levels for WB vs. WB case

- **Base stations of WB systems in the frequency band 925-960 MHz using the same technology on both sides of the borderline with centre frequencies/ synchronisation signal centre frequencies not aligned for all codes/PCIs or with centre frequencies/synchronisation signal centre frequencies aligned and for preferential codes/PCIs** may be used without coordination with a

neighbouring country if the mean field strength of each cell produced by base station does not exceed the values of 59 dBµV/m/5 MHz at a height of 3 m above ground at the borderline between countries and 41 dBµV/m/5 MHz at a height of 3 m above ground at a distance of 6 km inside the neighbouring country.

- **Base stations of WB systems using the same technology on both sides of the borderline with centre frequencies/synchronisation signal centre frequencies aligned and for non-preferential codes/PCIs** may be used without coordination with a neighbouring country if the mean field strength of each cell produced by base station does not exceed the values of 41 dBµV/m/5MHz at a height of 3 m above ground at the borderline between neighbouring countries.

- **If different technologies are deployed on both sides of the borderline**, base stations of WB systems in the frequency band 925-960 MHz may be used without coordination with a neighbouring country if the mean field strength of each cell produced by base station does not exceed the values of 59 dBµV/m/5MHz at a height of 3 m above ground at the borderline between countries and 41 dBµV/m/5MHz at a height of 3 m above ground at a distance of 6 km inside the neighbouring country for all codes/PCIs irrespective of whether the centre frequencies/synchronisation signal centre frequencies are aligned or not.

4.2.2 Trigger field strength levels for NB vs. WB case

- **for NB systems:** GSM systems can continue their operation based on the existing technical agreement (including preferential allotment of GSM frequencies) between Signatory Authorities on border coordination of the GSM systems in the band 880-915 MHz/925-960 MHz or existing agreement/arrangement between operators and the other NB systems may operate following the same principles.

- **for WB systems:** the mean field strength of each cell produced by base station does not exceed the values of 59 dBµV/m/5MHz at a height of 3 m above ground at the borderline and 41 dBµV/m/5MHz at a height of 3 m above ground at a distance of 6 km for all codes/PCIs.

4.2.3 Trigger field strength levels for NB vs. NB case

GSM systems can continue their operation based on the existing technical agreement between Signatory Authorities on border coordination of the GSM systems in the band 880-915 MHz/925-960 MHz or existing agreement/arrangement between operators and the other NB systems may operate following the same principles.

5. PROCEDURE IN CASE OF HARMFUL INTERFERENCE

In case of harmful interference all data as detailed in ANNEX 3 of ECC Recommendation (08)02 to evaluate and treat the harmful interference shall be exchanged between Signatory Authorities concerned. Administrations concerned shall endeavour to achieve a mutually satisfactory solution as soon as possible. Concerning interference calculations, a two-step procedure is described below. Based upon this procedure, operators shall adjust the characteristics of base stations.

As the first step, in case of harmful interference, field strength line calculations shall be carried out between the base stations causing harmful interference and the points of the

borderline / 6km line with regard to trigger values in section 4.2 and the characteristics of the base station shall be adjusted in such a way that the trigger values in section 4.2 are kept. For line calculations, considering the different type of radio wave propagation paths, the HCM model shall be used. Time probability in all calculations is 10 %. Operators may also apply more accurate calculations for evaluation of interference based on commonly agreed methods in the "Operator Arrangements".

As the second step, if harmful interference is still experienced despite the above adjustment, measurements shall be carried out according to international/mutually agreed procedures.

6. OPERATOR ARRANGEMENTS

To further improve the coexistence of terrestrial systems capable of providing electronic communications services, and to enhance the efficient use of radio spectrum and coverage in border areas, operators may diverge from the regulation given in this Technical Arrangement, except the cases given in section 2.2 (Frequency Arrangements) and in section 3.2 (Radio parameters), based on an arrangement concluded between operators, so-called additional "Operator Arrangements".

Operators may negotiate arrangements which concern only the common part of those frequency bands in respect of which they have been granted licences, without affecting the rights of non-involved third parties, and are subject to prior approval of their respective administration.

The "Operator Arrangements" shall be in line with the *"Agreements between administrations concerning the approval of arrangements between operators"* for the administrations that have signed such agreement.

The "Operator Arrangements" should be based on the relevant deliverables listed in section 2.1.

7. REVISION OF THE TECHNICAL ARRANGEMENT

This Technical Arrangement can be revised in light of administrative, regulatory or technical developments, especially in order to comply with relevant amendments of the bi- or multilateral agreements dealing with frequency coordination in general (e.g. the "HCM Agreement") or CEPT ERC/ECC decisions, recommendations and reports at the proposal of any Signatory Authority with the agreement of all other Signatory Authorities.

8. WITHDRAWAL FROM THIS TECHNICAL REQUIREMENT

Any Authority may withdraw from this Technical Arrangement by the end of a calendar month by giving notice of its intention at least twelve months in advance. A declaration to that effect shall be addressed to all other Signatory Authorities.

Signatory Authorities of this Technical Arrangement agree that from the date of entry into force of this Technical Arrangement the *"Technical Arrangement Between the National Frequency Management Authorities of Austria, Croatia, Hungary, Romania, Serbia, The Slovak Republic, and Slovenia on Border Coordination of Broadband Systems (UMTS, LTE and WiMAX) in the 900 MHz Band (880 – 915 MHz/925 – 960 MHz)"* will be cancelled between the concerned Parties. Existing technical arrangements including preferential

distribution of GSM frequencies shall remain valid and will be protected according to their status.

9. LANGUAGE OF THE TECHNICAL ARRANGEMENT

This Technical Arrangement has been concluded in English.

One original version of this Technical Arrangement is handed over to each Signatory Authority and a copy is submitted to the Managing Administration of the HCM Agreement.

10. DATE OF ENTRY INTO FORCE OF THE TECHNICAL ARRANGEMENT

This Technical Arrangement will enter into force for each Party on the date of their signature.

For Austria
BMWKMS
on 9 July 2026

Franz Ziegelwanger

For Croatia
HAKOM
on 9 July 2026

Danijel Vidaković

For Hungary
NMHH
on 9 July 2026

Péter Vári, PhD

For Romania
ANCOM
on 12 August 2026

Bogdan Cristian Sana

For Serbia
RATEL
on 9 July 2026

Mirjana Marčeta

For the Slovak Republic
RU
on .....

.....

For Slovenia
AKOS
on 9 July 2026

Meta Pavšek Taškov