AGREEMENT

between the Administrations of
Croatia, Hungary and Serbia
concerning the allotment of preferential frequencies for narrowband systems and co-ordination rules for wideband systems in the band
410 - 430 MHz

Zagreb, 22nd of February 2016

1. Introduction

Based on the technical provisions of the HCM Agreement the Administrations of Croatia, Hungary and Serbia concluded this Agreement concerning the allotment of preferential frequencies for narrowband systems and co-ordination rules for wideband systems in the band 410 - 430 MHz. The relevant provisions of the version of the HCM Agreement in force (further on referred to as HCM Agreement) shall be applied unless otherwise laid down in this Agreement.

2. Principles – Background

The Administrations mentioned above deemed it necessary to conclude an agreement on the allotment of the preferential frequencies for narrowband systems (channel spacing ≤ 200 kHz) and the co-ordination rules for wideband systems (channel spacing ≥ 1.25 MHz) in the frequency band 410 - 430 MHz. If otherwise is not stated, in this agreement wideband systems incorporate broadband systems.

The co-ordination procedures shall be based on the concept of preferential frequencies (see Article 4.2 of the current version of the HCM Agreement.

In the case of narrowband systems the frequency band 410 - 430 MHz is split into preferential frequency blocks which shall be assigned equally between countries involved.

Operators shall have the possibility of using these frequencies in a different way in order to minimise interference and to achieve the most efficient use of the available spectrum. The provisions laid down in the relevant "Agreement between administrations concerned regarding the approval of arrangements between operators" shall apply.

3. Technical provisions

3.1 Preferential frequency blocks

For narrowband systems the division into preferential frequency blocks is given in the Annex.

3.2 System usage

The frequency band 410 - 430 MHz may be used in duplex (FDD) or simplex operation.

In the case of duplex operation the base station shall transmit in the band 420 – 430 MHz and the mobile station shall transmit in the band 410 – 420 MHz.

3.3 Usage of narrowband systems (bandwidths ≤ 200 kHz)

In the case of simplex use within the preferential blocks, mobile station frequencies may be used on a preferential basis and base station transmitter frequencies may only be used in the band 420 – 430 MHz on a preferential basis, but the receiver frequencies of base stations in the band 420 – 430 MHz cannot claim any protection.

Frequencies may be used under the conditions of a preferential frequency if the bandwidth of the emission is within the band limits of the preferential frequency blocks established in the Annex.

3.3.1 Preferential frequencies

3.3.1.1 Distance between the base station and the border line equal to or less than 15 km.

Preferential frequencies may be used without co-ordination if the field strength does not exceed a value of 34 dBμV/m/25 kHz at a height of 10 m above ground at a distance of 15 km inside the affected country.

The propagation curves for analogous emissions with a time probability of 10% or with a time probability of 1% for digital emissions shall be used.

3.3.1.2 Distance between the base station and the border line more than 15 km

Preferential frequencies may be used without co-ordination if the field strength does not exceed a value of 20 dBμV/m/25 kHz at a height of 10 m above ground at a distance of 50 km inside the affected country.

The propagation curves for analogous emissions with a time probability of 10% or with a time probability of 1% for digital emissions shall be used.

3.3.2 Non-preferential frequencies

Non-preferential frequencies may be used without co-ordination with a neighbouring country if the field strength does not exceed a trigger value of 20 dBμV/m/25 kHz at a height of 10 m above ground at the border line.

The propagation curves for analogous emissions with a time probability of 10% or with a time probability of 1% for digital emissions shall be used.

3.3.3 Bandwidth correction factor

For digital land mobile applications with channel bandwidth > 25 kHz the following value should be added to the field strength triggers given in sections 3.3.1.1., 3.3.1.2. and 3.3.2.:

6 x log (channel bandwidth / 25 kHz) dB

3.4 Usage of wideband systems

In this document 'wideband systems' cover all the systems that operate with channel bandwidth ≥ 1.25 MHz.

3.4.1 Frequencies for wideband systems with bandwidth = 1.25 MHz

3.4.1.1 Distance between the base station and the border line equal to or less than 15 km

Frequencies may be used for wideband systems without coordination if the field strength does not exceed a value of 37 dBμV/m/1.25 MHz at a height of 10 m above ground at a distance of 15 km inside the affected country.

The propagation curves with a time probability of 1% shall be used.

3.4.1.2 Distance between the base station and the border line more than 15 km

Frequencies may be used for wideband systems without coordination if the field strength does not exceed a value of 20 dBµV/m/1.25 MHz at a height of 10 m above ground at a distance of 50 km inside the affected country.

The propagation curves with a time probability of 1% shall be used.

3.4.2 Frequencies for wideband systems with bandwidth ≥ 1.4 MHz

3.4.2.1 Distance between the base station and the border line equal to or less than 15 km

Frequencies may be used for wideband systems without coordination if the field strength does not exceed a value of 39 dBµV/m/1.4 MHz at a height of 10 m above ground at a distance of 15 km inside the affected country.

The propagation curves with a time probability of 1% shall be used.

3.4.2.2 Distance between the base station and the border line more than 15 km

Frequencies may be used for wideband systems without coordination if the field strength does not exceed a value of 26 dBµV/m/1.4 MHz at a height of 10 m above ground at a distance of 50 km inside the affected country.

The propagation curves with a time probability of 1% shall be used.

3.4.2.3 Bandwidth correction factor

For wideband system with channel bandwidth > 1.4 MHz, the following value should be added to the field strength triggers given in sections 3.4.2.1. and 3.4.2.2.:

10 x log (channel bandwidth / 1.4 MHz) (dB).

3.5 Shared frequencies

Shared frequencies may be used on the basis of bilateral agreements between affected countries or without co-ordination on a non-protected basis.

3.6 Protection for receivers

Protection for receivers on preferential frequencies can only be claimed under the following conditions (see also Annex 1 of the HCM Agreement):

The reference transmitter with an effective radiated power of 16 dBW produces a field strength of max. 20 dBµV/m/25 kHz in a distance of 50 km (maximum cross-border range) from the border inside the other country.

The effective radiated power of the reference-transmitter has to be increased by the antenna gain of the receiver in the actual direction.

The propagation curves with a time probability of 10% are used.

3.7 Calculation method

The calculations of the interfering field strength are based on the HCM Agreement and shall be carried out with the official version of the HCM program.

4. Administrative procedure

Administrative procedure from the HCM Agreement applies.

In derogation of the HCM Agreement, the following special procedures are agreed:

Responses to notifications of preferential frequency assignments are not required.

The assignment of a preferential frequency shall be entered in the frequency register with co-ordination status P.

The assignment of frequencies to wideband systems fulfilling the conditions of paragraph 3.4 shall be entered in the frequency register with co-ordination status P and frequency category 7 (pending a future amendment of the "HCM Agreement" in this respect).

5. Status of existing stations

This Agreement shall not apply to existing frequency utilisations agreed between administrations prior to this Agreement. Frequencies included in the frequency list that will be provided between administrations concerned for the frequency range 410 - 430 MHz until the the end of April 2016, have to be protected until removal from service in accordance with their co-ordination status. Possible harmful interference caused by them shall be accepted.

Narrow-band stations, which have been included in the above mentioned frequency list, when new wideband systems are introduced, shall be protected at their receiver antenna heights at a field strength level (E_{max} per channel spacing of wideband station) determined by the following formula:
E_{max} = 14 dBµV/m + 10 log(channel spacing of wideband station (kHz) / channel spacing of narrow-band station (kHz))

6. Status of existing Agreement

Concerning the frequency band 410 – 430 MHz the "Agreement between the telecommunications administrations of Austria, Croatia, the Czech Republic, Hungary, the Slovak Republic and Slovenia concerning the allotment of preferential frequencies in the bands 410 – 420 / 420 – 430 MHz and 450.0 – 451.3 / 460.0 – 461.3 MHz (Vienna, 30 September 1994)" is replaced by this new agreement.

7. Review

This Agreement can be revised in light of administrative, regulatory or technical developments, especially in order to comply with relevant amendments of the HCM Agreement or changes in the relevant CEPT ERC/ECC decisions, recommendations and reports at the proposal of any Signatory Administration with the agreement of all other Signatory Administrations. If any of the Signatory Administrations request to apply internationally harmonized technical conditions for frequency range including the 410 – 430 MHz band, this Agreement should be modified and applied accordingly.

8. Withdrawal

Any Administration may withdraw from this Agreement by the end of a calendar month by giving notice of its intention at least six months in advance. A declaration to that effect shall be addressed to all other Signatory administrations. Frequency assignments made within the framework of this Agreement prior to the date of entry into force of the withdrawal shall remain valid and be protected according to their status.

9. Language of the Agreement

The original text of this Agreement exists in English in three originals.

10. Date of entry into force of the Agreement

This Agreement enters into force on date.

Done at Zagreb, 22nd of February 2016.

For the Croatian Administration

(Ivančica SAKAL)

For the Hungarian Administration

(Peter VÁRI)

For the Serbian Administration

(Zoran BRANKOVIĆ)

ANNEX

Frequency band	Block No	HRV/ SRB	HNG/ SRB	HNG/ HRV	HNG/ HRV/ SRB
410.000 - 410.200	1	HRV	HNG	HRV	HRV
410.200 - 410.400	2	HRV	HNG	HRV	HRV
410.400 - 410.600	3	HRV	HNG	HRV	HRV
410.600 - 410.800	4	HRV	HNG	HRV	HRV
410.800 - 411.000	5	HRV	HNG	HRV	HRV
411.000 - 411.200	6	HRV	HNG	HRV	HRV
411.200 - 411.400	7	HRV	HNG	HRV	HRV
411.400 - 411.600	8	HRV	SRB	HRV	HRV
411.600 - 411.800	9	HRV	SRB	HRV	HRV
411.800 - 412.000	10	SRB	SRB	HRV	SRB
412.000 - 412.200	11	SRB	SRB	HNG	SRB
412.200 - 412.400	12	SRB	SRB	HNG	SRB
412.400 - 412.600	13	SRB	SRB	HNG	SRB
412.600 - 412.800	14	SRB	SRB	HNG	SRB
412.800 - 413.000	15	SRB	SRB	HNG	SRB
413.000 - 413.200	16	SRB	SRB	HNG	SRB
413.200 - 413.400	17	SRB	HNG	HNG	HNG
413.400 - 413.600	18	SRB	HNG	HNG	HNG
413.600 - 413.800	19	SRB	HNG	HNG	HNG
413.800 - 414.000	20	SRB	HNG	HNG	HNG
414.000 - 414.200	21	HRV	HNG	HNG	HNG
414.200 - 414.400	22	HRV	HNG	HNG	HNG
414.400 - 414.600	23	HRV	HNG	HNG	HNG
414.600 - 414.800	24	HRV	HNG	HRV	HRV
414.800 - 415.000	25	HRV	SRB	HRV	HRV
415.000 - 415.200	26	HRV	SRB	HRV	HRV
415.200 - 415.400	27	HRV	SRB	HRV	HRV
415.400 - 415.600	28	HRV	SRB	HRV	HRV
415.600 - 415.800	29	SRB	SRB	HRV	SRB
415.800 - 416.000	30	SRB	SRB	HRV	SRB
416.000 - 416.200	31	SRB	SRB	HRV	SRB
416.200 - 416.400	32	SRB	SRB	HNG	SRB
416.400 - 416.600	33	SRB	SRB	HNG	SRB
416.600 - 416.800	34	SRB	SRB	HNG	SRB
416.800 - 417.000	35	SRB	SRB	HNG	SRB
417.000 - 417.200	36	SRB	HNG	HNG	HNG
417.200 - 417.400	37	SRB	HNG	HNG	HNG
417.400 - 417.600	38	HRV	HNG	HNG	HNG
417.600 - 417.800	39	HRV	HNG	HNG	HNG
417.800 - 418.000	40	HRV	HNG	HNG	HNG
418.000 - 418.200	41	HRV	HNG	HNG	HNG
418.200 - 418.400	42	HRV	HNG	HNG	HNG
418.400 - 418.600	43	HRV	HNG	HNG	Common
418.600 - 418.800	44	HRV	SRB	HRV	HRV
418.800 - 419.000	45	HRV	SRB	HRV	HRV
419.000 - 419.200	46	SRB	HNG	HRV	HNG
419.200 - 419.400	47	SRB	HNG	HRV	HNG
419.400 - 419.600	48	SRB	SRB	HRV	SRB
419.600 - 419.800	49	SRB	SRB	HRV	SRB
419.800 - 420.000	50	SRB	SRB	HRV	Common