

Technical criteria and principles

**agreed between the State Supervisory Department for Telecommunications
of the Republic of Belarus of Ministry of Communications and
Informatization and the Electronic Communications Office of the Republic
of Latvia concerning the use of the frequency bands
880-915 MHz / 925-960 MHz for terrestrial systems in border areas**

Minsk, 20 June 2019

Preamble

According to Article 6 of ITU Radio Regulations, representatives of the State Supervisory Department for Telecommunications of the Republic of Belarus of Ministry of Communications and Informatization and the Electronic Communications Office of the Republic of Latvia (hereinafter referred to as the Parties) have agreed the present technical criteria and principles concerning the use of the paired frequency bands 880-915 MHz / 925-960 MHz for terrestrial systems in border areas with the purpose of avoiding mutual interference and optimising the use of the above-stated frequency bands on a mutually coordinated basis (hereinafter referred to as the Document).

This Document supersedes:

“Technical criteria and principles between the State Supervisory Department for Telecommunications of the Ministry of Communications and Informatization of the Republic of Belarus and the Electronic Communications Office of the Republic of Latvia concerning the use of the frequency bands 880-915 MHz / 925-960 MHz for terrestrial systems in border areas” (Minsk, 26th May 2016).

1. Principles

- 1.1. This Document is based on the concept of coordination field strength levels for base stations, allocation of preferential and non-preferential channels for GSM systems, code groups for UMTS systems and Physical Cell Identifiers (PCI) for LTE systems. This is in conformity with the ECC Recommendation (05)08 of 1 February 2006 “Frequency planning and cross-border coordination between GSM Land Mobile Systems (GSM 900, GSM 1800, and GSM-R)” (amended 3 February 2017) and ECC Recommendation (08)02 of 21 February 2008 “Cross-border coordination for Mobile/Fixed Communications Networks (MFCN) in the frequency bands 900 MHz and 1800 MHz excluding GSM vs. GSM systems” (amended 8 February 2019) (hereinafter referred to as ECC/REC/(08)02).
- 1.2. This Document covers the coordination of terrestrial Narrowband (NB) and Wideband (WB) systems according to ECC/REC/(05)08 and ECC/REC/(08)02¹ in the frequency bands 880-915 MHz / 925-960 MHz. The relevant standards of terrestrial systems indicated in ECC/DEC/(06)13².
- 1.3. The FDD³ frequency arrangement is presumed: mobile stations (user equipment or terminals) transmit and receive in the frequency bands 880-915 MHz / 925-960 MHz respectively, base stations transmit and receive in the frequency bands 925-960 MHz / 880-915 MHz respectively.
- 1.4. The Parties agreed to use channel plan for GSM systems based on a 200 kHz grid. Carrier frequencies (radio frequency channels) and channel numbers shall be derived according to the latest version of ETSI standard EN 301 087⁴.
- 1.5. This Document covers coordination of base stations.
- 1.6. The frequency bands 880.9-887.9 MHz / 925.9-932.9 MHz (GSM channels 979-1013) and 903.9-907.9 MHz / 948.9-952.9 MHz (GSM channels 70-89) were also allocated to the

¹ Within this Document the terrestrial Narrowband (NB) systems include: GSM, EC-GSM-IoT (Extended Coverage GSM IoT) and stand-alone (SA) NB-IoT (Narrowband IoT); terrestrial 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).

² ECC Decision (06)13 of 1 December 2006 “Designation of the bands 880-915 MHz, 925-960 MHz, 1710-1785 MHz and 1805-1880 MHz for terrestrial UMTS, LTE, WiMAX and IoT cellular systems” (amended 8 March 2019) (Annex 1 and Annex 2).

³ FDD – Frequency Division Duplex.

⁴ Digital cellular telecommunications system (Phase 2 & Phase 2+); Base Station System (BSS) equipment specification; Radio aspects.

aeronautical radionavigation service on a primary basis in accordance with the footnote No. 5.323⁵ of the ITU Radio Regulations on the territory of the Republic of Belarus.

- 1.7. The aeronautical radionavigation equipment located on the aircraft receives in the radio frequency bands 925.9-932.9 MHz (GSM channels 979-1013) and 948.9-952.9 MHz (GSM channels 70-89), equipment located at aerodromes transmits in the bands 925.9-932.9 MHz (GSM channels 979-1013) and 948.9-952.9 MHz (GSM channels 70-89) respectively.
- 1.8. Field strength values in this Document are based on a receiving antenna height of 3 m above ground for 10% of time and 50% of locations.
- 1.9. In the context of this Arrangement the term “border” is understood as the international borderline between the countries of the Parties.

2. Use of frequencies, codes and PCI

- 2.1. Each Party may use the frequency bands 880-915 MHz / 925-960 MHz for GSM/ EC-GSM-IoT/ stand-alone (SA) NB-IoT (NB systems) using its preferential GSM channels without coordination with the other Party if the predicted mean field strength level of each carrier produced by the base station does not exceed a value of 19 dB μ V/m/200 kHz at a distance of 15 km inside the territory of the other Party.
- 2.2. Each Party may use the frequency bands 880-915 MHz / 925-960 MHz for GSM/ EC-GSM-IoT/ stand-alone (SA) NB-IoT (NB systems) using non-preferential GSM channels without coordination with the other Party if the predicted mean field strength level of each carrier produced by the base station does not exceed a value of 19 dB μ V/m/200 kHz at the border.
- 2.3. Allocation of preferential and non-preferential GSM channels between Parties is given in Annex 1.
- 2.4. Each Party may use GSM channels 984-1008 (881.9-886.9 MHz / 926.9-931.9 MHz) and 70-89 (903.9-907.9 MHz / 948.9-952.9 MHz) without coordination with the other Party if the antenna downtilt of base station located in the area of 50 km from the border does not exceed a value of 0 degree (i.e., antenna elevation angle is ≤ 0 degrees) in the azimuth of the other country (this item applies only to those WB systems stations indicated in item 1.2 brought into use after the date mentioned in Section 6 in this Document).
- 2.5. For WB systems each Party may use the frequency bands 880-915 MHz / 925-960 MHz without coordination with the other Party if the predicted mean field strength level of each carrier produced by a base station does not exceed the values given in Annex 2 at the border and at a distance of 6 km from the border inside the territory of the other Party respectively, except for the case indicated in item 2.6.
- 2.6. In the border area from 55°58'43,25"N 27°44'58.19"E to 56°10'13.51"N 28°09'03.89"E each Party may use the frequency bands 905.1-907.6 MHz / 950.1-952.6 MHz for WB systems without coordination with the other Party if the predicted mean field strength level of each carrier produced by a base station does not exceed the value of 35 dB μ V/m/5 MHz at the border. Each Party shall use only their own preferential codes (for UMTS) or PCIs (for LTE and NR) in border area.
- 2.7. For UMTS systems each Party shall use code sets according to the Annex 3 to this Document.

⁵ *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 862-960 MHz, in Bulgaria the bands 862-890.2 MHz and 900-935.2 MHz, in Poland the band 862-876 MHz until 31 December 2017, and in Romania the bands 862-880 MHz and 915-925 MHz, are also allocated to the aeronautical radionavigation service on a primary basis. Such use is subject to agreement obtained under No. 9.21 with administrations concerned and limited to ground-based radiobeacons in operation on 27 October 1997 until the end of their lifetime. (WRC-12).

- 2.8. For LTE or NR systems each Party may use all PCI available if the predicted mean field strength level of each carrier produced by a base station does not exceed the value of 41 dB μ V/m/5 MHz at the border. If the predicted mean field strength level of each carrier produced by a base station of LTE or NR systems exceeds the value of 41 dB μ V/m/5 MHz at the border each Party shall use only their own preferential PCI according to the Annex 4 to this Document (except for the case indicated in item 2.6).
- 2.9. If the frequency block size is other than 5 MHz, a correction, calculated by the formula $10 \times \lg(\text{frequency block size} / 5 \text{ MHz})$, dB, shall be added to the field strength values indicated in items 2.5, 2.6 and 2.8.

3. General

- 3.1. If the predicted mean field strength value of any carrier produced by the base station exceeds the levels indicated in items 2.1, 2.2, 2.5, 2.6 and antenna downtilt exceeds the level indicated in item 2.4 (for the case indicated in item 2.4) the frequency assignment shall be coordinated with the other Party.
- 3.2. The coordination procedure shall be performed in accordance with Section 4 of this Document.
- 3.3. In the presence of interference produced by a station covered by this Document, the Report of harmful interference shall be presented in accordance to Appendix 10 of the ITU Radio Regulations. The field strength specified in the interference report shall be based on the median values of measurements of field strength performed at antenna height of 3 m at least in two different points over a range of at least 100 m along the border. The Parties shall take all possible measures in order to eliminate the interference as soon as possible.
- 3.4. For field strength calculations the Parties shall use the latest version of ITU-R Recommendation P.1546 "Method for point-to-area predictions for terrestrial services in the frequency range 30 MHz to 3 000 MHz".
- 3.5. In case of interference between systems indicated in items 1.2 and 1.7 in the frequency bands 926.9-931.9 MHz (GSM channels 984-1008) and 948.9-952.9 MHz (GSM channels 70-89), while complying with the provisions in Section 2, the Parties should consider additional measures to eliminate this interference of an interfering station (this item applies only to those WB systems stations indicated in item 1.2 brought into use after the date mentioned in Section 6 in this Document).
- 3.6. Parties assume that, while complying with the provisions in Section 2, some harmful interference between systems indicated in item 1.2 at the border areas could occur. In that case the Parties shall consider additional measures to eliminate this interference by involving the mobile operators concerned.

4. Coordination procedure

- 4.1. Coordination requests shall be drawn up according to Annex 4 of the ECC/REC/(08)02. A request can be sent by mail, fax or e-mail. In case if a request is sent by e-mail the requesting Party shall send by fax a covering letter to the affected Party and to receive a confirmation of its receipt.
- 4.2. The affected Party shall provide a feedback in respect of the request to coordinate assignments within 60 days from the date of the request receipt. If no feedback was received, an urgent reminder shall be sent. Parties that failed to respond within 30 days from the date of an urgent reminder receipt shall be deemed agreeing if the Party, a consent of which is sought, did not ask for extra time needed to coordinate the request review.
- 4.3. In case of a refusal of the affected Party to satisfy the request for coordination the affected Party shall inform the requesting Party about its disagreement and provide appropriate information regarding its frequency assignments justified given disagreement. The requesting Party shall

provide to the affected Party results of its calculations, or any new technical characteristics of the assignment.

- 4.4. If no response from the affected Party to the proposals provided by requesting Party in item 4.3 was received within 30 days from the date of proposals receipt, an urgent reminder shall be sent. Parties that failed to respond within 15 days from the date of receipt of an urgent reminder shall be deemed agreed to the provided proposals on coordination.
- 4.5. The Party objecting to the received request for coordination shall provide results of its calculations and a proposal for reasonable changing of the request that shall not only provide for adequate protection for its available and planned services, but to the maximal possible extent shall preserve an initial objective of the request for coordination.
- 4.6. In case of controversies originating from applying of this Document Parties shall be governed by provisions and procedures of the ITU Radio Regulations, as well as applicable International and bilateral Agreements.

5. Revision and cancellation

- 5.1. This Document may be revised at any time on the initiative of any Party with the consent of the other Party.
- 5.2. This Document may be cancelled by a mutual decision of both Parties on terms and conditions adopted by the Parties or by a decision of one Party notifying the other Party on its intention at least one year before.

6. Entry into force

- 6.1. This Document shall come into force on the date of signing it by both Parties.
- 6.2. This Document has been drawn in English in two identical copies, one for the Republic of Latvia and one for the Republic of Belarus.

Minsk, 20 June 2019.

On behalf of
the State Supervisory Department for
Telecommunications of the Republic
of Belarus of Ministry of
Telecommunications and
Informatization

On behalf of the Electronic
Communications Office of the
Republic of Latvia

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**Allocation of preferential GSM channels in the 880-915 MHz / 925-960 MHz frequency bands
between the Republic of Latvia and the Republic of Belarus**

975 LVA (25) 999	1000 BLR (25) 1024	1 BLR (11) 11	12 LVA (6) 17	18 BLR (20) 37	38 LVA (29) 66	67 BLR (2) 68	69 LVA (15) 83
84 BLR (6) 89	90 LVA (12) 101	102 BLR (23) 124					

Summary:

LVA⁶ - 87 channels

BLR⁷ - 87 channels

⁶ LVA - the Republic of Latvia.

⁷ BLR - the Republic of Belarus.

**Coordination field strength levels for land mobile base stations
in the 880-915 MHz / 925-960 MHz frequency bands
between the Republic of Latvia and the Republic of Belarus**

	UMTS (channel bandwidth 5 MHz)		All other cases ^{8,9,10}	
	Centre frequencies aligned / Centre frequencies not aligned		Frequency block size, MHz	
Coordination field strength level, dB μ V/m	Preferential codes used	Non-preferential codes used	5	other than 5 MHz
at the border	59	41	59	$59+10 \times \lg(\text{frequency block size} / 5 \text{ MHz})$
at a distance of 6 km inside the territory of the other Party	41	<41	41	$41+10 \times \lg(\text{frequency block size} / 5 \text{ MHz})$

⁸ For the case NB systems (GSM/EC-GSM-IoT/stand-alone (SA) NB-IoT) vs. WB systems (UMTS/LTE/LTE-MTC/LTE-eMTC/LTE in-band NB-IoT/LTE guard-band (GB) NB-IoT/NR) the coordination field strength level for GSM/EC-GSM-IoT/stand-alone (SA) NB-IoT shall be used according to item 2.1 and 2.2 to this Document.

⁹ The "All other cases" refers to the terrestrial systems and utilization described in the Introduction part of the ECC/REC/(08)02:

- WB systems vs. WB systems (between UMTS, LTE, LTE-MTC, LTE-eMTC, LTE in-band NB-IoT, LTE guard-band (GB) NB-IoT and NR).
- WB systems (UMTS/LTE/LTE-MTC/LTE-eMTC/LTE in-band NB-IoT/LTE guard-band (GB) NB-IoT/NR) vs. NB systems (GSM/EC-GSM-IoT/stand-alone (SA) NB-IoT).

¹⁰ Using Party's own preferential codes (for UMTS) or PCIs (for LTE and NR).

**Allocation of preferential code groups for UMTS systems
in the 880-915 MHz / 925-960 MHz frequency bands
between the Republic of Latvia and the Republic of Belarus¹¹**

Set	A	B	C	D	E	F
Code indices	0...10	11...20	21...31	32...42	43...52	53...63
Set preferential to	LVA	LVA	BLR	BLR	LVA	BLR

¹¹ According to Annex 3 of the ECC/REC/(08)02.

**Allocation of preferential Physical Cell Identifiers (PCI) for LTE and NR systems
in the 880-915 MHz / 925-960 MHz frequency bands
between the Republic of Latvia and the Republic of Belarus¹²**

Set	A	B	C	D	E	F
PCI for LTE	0...83	84...167	168...251	252...335	336...419	420...503
PCI for NR	0...83 504...587	84...167 588...671	168...251 672...755	252...335 756...839	336...419 840...923	420...503 924...1007
Set preferential to	LVA	LVA	BLR	BLR	LVA	BLR

¹² According to Annex 5 of the ECC/REC/(08)02.