

## **ARRANGEMENT**

**between the Electronic Communications Office of the Republic of Latvia and the Consumer Protection and Technical Regulatory Authority of the Republic of Estonia concerning the use of the frequency band 2300-2390 MHz for terrestrial Mobile/Fixed Communications Networks (MFCN) in border areas**

**Viljandi, 20 September 2024**

## Preamble

According to Article 6 of the ITU Radio Regulations, representatives of the Electronic Communications Office of the Republic of Latvia and the Consumer Protection and Technical Regulatory Authority of the Republic of Estonia (hereinafter referred to as the Parties) have concluded this Arrangement concerning the use of the 2300-2390 MHz frequency band for terrestrial mobile/fixed communications networks (MFCN)<sup>1</sup> in border areas (hereinafter referred to as the Arrangement) with the aim of optimizing the use of the frequency band and avoiding mutual interference on a mutually coordinated basis.

This Arrangement cancels and replaces the “ARRANGEMENT between the Electronic Communications Office of the Republic of Latvia and the Estonian Technical Regulatory Authority concerning the use of the frequency bands 2300-2390 MHz for terrestrial systems for Mobile/Fixed Communications Networks (MFCN) in border areas” (Tallin, 19 December 2014).

## 1. Principles

- 1.1. This Arrangement is based on the concept of coordination field strength levels for base stations, allocation of preferential and non-preferential Physical Cell Identities (PCIs) for LTE and NR systems as described in ECC Recommendation (14)04 of 30 May 2014 (amended 28 June 2024) “Cross-border coordination for Mobile/Fixed Communications Networks (MFCN) and between MFCN and other systems in the frequency band 2300-2400 MHz” (hereinafter referred to as ECC/REC/(14)04) and on the principle of the equal access to spectrum by both Parties.
- 1.2. The following frequency arrangement for terrestrial MFCN systems presumes: TDD<sup>2</sup> mode is used in the frequency band 2300-2390 MHz. The frequency arrangements conform to ECC Decision (14)02 of 27 June 2014 (amended 10 March 2023) “Harmonised technical and regulatory conditions for the use of the band 2300-2400 MHz for Mobile/Fixed Communications Networks (MFCN)”.
- 1.3. The agreed frame structure for NR TDD systems and related parameters given in Annex 2 of this Arrangement conform to the “frame structure A” of ECC Recommendation (20)03 of 23 October 2020 “Frame structures to facilitate cross-border coordination of TDD MFCN in the frequency band 3400-3800 MHz” (hereinafter referred to as ECC/REC/(20)03).
- 1.4. Distribution of preferential and non-preferential PCIs for LTE and NR systems between Parties is given in Annex 1 of this Arrangement.
- 1.5. Field strength values in this Arrangement are based on a receiving antenna height of 3 m above ground for 10 % of time and 50 % of locations.

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<sup>1</sup> Mobile/fixed communications networks (MFCN) includes IMT and other communications networks in the mobile and fixed services.

<sup>2</sup> TDD - Time Division Duplex.

- 1.6. This Arrangement covers coordination of base stations using AAS<sup>3</sup> and non-AAS<sup>4</sup>. The coordination of mobile stations in mobile and fixed services is covered by coordination of base stations.
- 1.7. Field strength values in this Arrangement are mean values for non-AAS base stations and median values for AAS base stations.
- 1.8. In the context of this Arrangement the term “border” is understood as the international borderline between the countries of the Parties.
- 1.9. Synchronised operation – operation with common phase clock reference (i.e. a reference clock with consistent time offsets relative to a common UTC-based time reference to ensure full alignment of transmissions) and compatible frame structures (to be used on both sides of the border to avoid simultaneous UL/DL transmissions).
- 1.10. Unsynchronised operation – operation with common phase clock reference and non-compatible frame structures or without common phase clock reference and compatible or non-compatible frame structures.

## **2. Use of frequencies**

- 2.1. Each Party may use the frequency band 2300-2390 MHz for base stations of unsynchronised MFCN TDD systems on both sides of the borderline without coordination with the other Party if the field strength of each cell produced by the base station does not exceed the field strength level given in Annex 3.
- 2.2. Each Party may use the frequency band 2300-2360 MHz for base stations of synchronised NR TDD system on both sides of the borderline without coordination with the other Party if the field strength of each cell produced by the base station does not exceed the field strength level given in Annex 4.
- 2.3. For LTE TDD systems in border areas each Party shall use PCI sets according to the Annex 1 of this Arrangement.
- 2.4. For synchronised operation of NR TDD system Parties shall use the frame structure and related parameters given in Annex 2 of this Arrangement.
- 2.5. If frequency block size is other than 5 MHz, a correction, calculated by the formula  $10 \times \log_{10}(\text{frequency block size, MHz} / 5 \text{ MHz})$ , dB, shall be added to the field strength values indicated in items 2.1 and 2.2.

## **3. Procedure**

- 3.1. If the predicted mean field strength value produced by the base station exceeds the levels indicated in items 2.1, 2.2 the frequency assignment shall be coordinated with the other Party.

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<sup>3</sup> AAS – Active Antenna System.

<sup>4</sup> Non-AAS – non Active Antenna System.

- 3.2. The period of coordination shall not exceed 45 days from the date of receiving the request and 20 days after the reminder. If no reply is received within 65 days the frequency assignment shall be considered as coordinated. The exchange of coordination information shall take place by e-mail or other electronic means.
- 3.3. Coordination requests shall be drawn up according to Annex 4 of ECC/REC/(14)04 in the appropriate ITU electronic format.
- 3.4. Complaints of harmful interference shall be based on the median value of measurements of field strength, performed at a receiving antenna height of 3 m above ground at least in two different points over a distance of at least 100 m along the border.
- 3.5. Reports of harmful interference shall be presented in accordance with Appendix 10 of the ITU Radio Regulations and processed according to Article 15 of the ITU Radio Regulations. The Parties shall take all possible measures in order to eliminate harmful interference.
- 3.6. For field strength calculations the Parties shall use the latest version of Recommendation ITU-R P.1546 "Method for point-to-area predictions for terrestrial services in the frequency range 30 MHz to 4000 MHz".

#### **4. Operators arrangement**

- 4.1. Operators concerned may agree to deviate from field strength level in items 2.1 and 2.2 by mutual consent, concluding an arrangement between operators with the consent of the Parties concerned. Such operator arrangement shall only be valid as long as all participating operators hold exclusive rights of use of concerned frequencies.

**5. Revision and cancellation**

- 5.1. This Arrangement may be revised at any time on the initiative of any Party with the consent of the other Party.
- 5.2. This Arrangement 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 twelve months before.

**6. Entry into force**

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

Viljandi, 20 September 2024

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

On behalf of the Consumer  
Protection and Technical  
Regulatory Authority of the  
Republic of Estonia

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**Distribution of preferential Physical Cell Identities (PCIs) for LTE and NR systems in the 2300-2390 MHz frequency band between the Republic of Latvia and the Republic of Estonia<sup>5</sup>**

<b>Set</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
<b>PCI for LTE</b>	0 to 83	84 to 167	168 to 251	252 to 335	336 to 419	420 to 503
<b>PCI for NR</b>	0 to 83 504 to 587	84 to 167 588 to 671	168 to 251 672 to 755	252 to 335 756 to 839	336 to 419 840 to 923	420 to 503 924 to 1007
<b>Set preferential to</b>	LVA <sup>6</sup>	LVA	EST <sup>7</sup>	EST	LVA	EST

<sup>5</sup> According to Annex 5 of ECC/REC/(14)04.

<sup>6</sup> LVA – the Republic of Latvia.

<sup>7</sup> EST – the Republic of Estonia.

**Frame structure<sup>8</sup> and related parameters for NR system in the 2300-2360 MHz frequency band**

Parameter	Value		
Downlink and Uplink (DL/UL) slot pattern	DDDSU DDDSU DDDSU DDDSU		
Frame duration	10 ms		
Slot duration	0.5 ms		
Slot pattern periodicity	2.5 ms		
Special slot "S" configuration (i.e., DL:GP:UL symbols)	Downlink (DL)	Guard period (GP)	Uplink (UL)
	10	2	2
SCS (sub-carrier spacing)	30 kHz		
Time base	Start of UTC <sup>9</sup> second epoch +/- 1.5 μs		
D = Downlink slot; S = Special slot; U = Uplink slot UTC = Coordinated Universal Time			

<sup>8</sup> According to Annex 1 of ECC/REC/(20)03 (Table 1, Frame A)

<sup>9</sup> In accordance with Recommendation ITU-R TF.460

### Field strength levels of unsynchronised MFCN TDD systems

	Unsynchronised operation	
	Field strength level, dB $\mu$ V/m / 5 MHz	
	non-AAS	AAS
<b>at the border</b>	30	12
	For NR base station using AAS considering the subcarrier spacing of 30 kHz the median data channel value of 12 dB $\mu$ V/m / 5 MHz from beamforming correspond to SSB <sup>10</sup> field strength level <sup>11</sup> of 1 dB $\mu$ V/m / 30 kHz for single-beam antenna pattern and 4 dB $\mu$ V/m / 30 kHz for multi-beam antenna pattern	

<sup>10</sup> Synchronisation Signal Block for NR

<sup>11</sup> Derived for one resource element (one subcarrier during one OFDM symbol) in secondary synchronisation signal (SSS) for the subcarrier spacing (SCS) of 30 kHz



## Field strength levels of synchronised NR TDD systems

	Synchronised operation			
	Field strength level, dB $\mu$ V/m / 5 MHz			
	Synchronisation signal centre frequencies aligned / not aligned			
	Preferential PCIs		Non-preferential PCIs	
	non-AAS	AAS	non-AAS	AAS
<b>at the border</b>	65	76	49	58
<b>at a distance of 6 km inside the territory of the other Party</b>	49	58	-	-
	<p>For NR base station using AAS considering the subcarrier spacing of 30 kHz the median data channel value of 76 dB<math>\mu</math>V/m / 5 MHz from beamforming correspond to SSB field strength level of 66 dB<math>\mu</math>V/m / 30 kHz for single-beam antenna pattern and 73 dB<math>\mu</math>V/m / 30 kHz for multi-beam antenna pattern</p> <p>For NR base station using AAS considering the subcarrier spacing of 30 kHz the median data channel value of 58 dB<math>\mu</math>V/m / 5 MHz from beamforming correspond to SSB field strength level of 48 dB<math>\mu</math>V/m / 30 kHz for single-beam antenna pattern and 55 dB<math>\mu</math>V/m / 30 kHz for multi-beam antenna pattern</p>			