

TECHNICAL CRITERIA AND PRINCIPLES

concerning the use of the frequency band 694-790 MHz for land mobile service in the Republic of Poland and aeronautical radionavigation service in the Republic of Belarus agreed between the Office of Electronic Communications of the Republic of Poland and the State Supervisory Department for Telecommunications of the Ministry of Telecommunications and Informatization of the Republic of Belarus

November, 2015

Preamble

According to Article 6 of the Radio Regulations, the representatives of the Office of Electronic Communications of the Republic of Poland and the State Supervisory Department for Telecommunications of the Ministry of Telecommunications and Informatization of the Republic of Belarus (hereinafter referred to as Parties) have agreed the present *Technical criteria and principles concerning the use of the frequency band 694-790 MHz for land mobile service in the Republic of Poland and aeronautical radionavigation service in the Republic of Belarus*.

Coordination of LMS with the broadcasting service is outside the scope of these *Technical criteria and principles* and shall be carried out separately.

These *Technical criteria and principles* do not cover coordination between LMS stations in Poland and Belarus.

The principles, conditions and technical parameters specified in the corresponding Articles of this document shall be used in the coordination¹ between LMS stations in Poland and ARNS stations in Belarus in the frequency band 694-790 MHz.

The Parties recognize that LMS and ARNS stations may be used in accordance with Article 5 § 5.1.3 of the GE06 Agreement.

If Poland plans to use the LMS in the frequency band 694-790 MHz, it shall in advance inform Belarus about the start date of LMS use. From that date on, new ARNS stations in Belarus in the frequency bands 703-733 MHz and 738-790 MHz shall be coordinated with the LMS in Poland in accordance with the procedures in these *Technical criteria and principles*. At the same time coordination of ARNS stations in Belarus with the broadcasting service of Poland in accordance with the Agreement GE06 is no longer required and therefore coordination of ARNS stations in Belarus with Poland in the frequency bands in which these *Technical criteria and principles* apply shall be deemed completed under Agreement GE06.

1. Principles

1.1. In relation to LMS service, these *Technical criteria and principles* apply to:

- 1.1.1. BS using the Frequency Division Duplex (FDD) mode, where the frequency band 703-733 MHz is used by UE (the uplink), and the frequency band 758-788 MHz is used by BS (the downlink);

¹ Coordination achieved under these *Technical criteria and principles* can be used by the Parties as an agreement obtained under RR No.9.21 procedure with respect to ARNS of Belarus.

1.1.2. BS transmitting in 738-758 MHz (the downlink).

1.2 No coordination is required for UE in the frequency range 703-733 MHz, since that is covered by coordination of base stations.

1.3. In case carrier aggregation is used in such a way that the uplink in the frequency band 790-862 MHz band is aggregated with the downlink in the frequency band 694-790 MHz, BS conditions of the «Technical criteria and principles concerning the use of the frequency band 790-862 MHz for terrestrial systems agreed between the Office of Electronic Communications of the Republic of Poland and the State Supervisory Department for Telecommunications of the Ministry of Telecommunications and Informatization of the Republic of Belarus» (Minsk, October 2011) shall apply to BS operating in the frequency band 694-790 MHz with such carrier aggregation.

1.4 In relation to ARNS service, these *Technical criteria and principles* apply to stations with parameters specified in Rec. ITU-R M.1830, i.e.:

1.4.1 RLS 2 Type 2 stations (ground receivers) in the 736-744 MHz frequency range;

1.4.2 RSBN stations (ground receivers) in the 786.5-789.5 MHz frequency range.

1.5. These *Technical criteria and principles* apply to stations (operating in accordance with the RR) that are brought into use after the signing date of the *Technical criteria and principles*.

2. Technical conditions for coordination of stations in the land mobile service with stations in the aeronautical radionavigation service

2.1 When a BS located in of Poland is operated in accordance with the principle in 1.1.1 or 1.1.2, such BS shall be deemed coordinated with ARNS stations located in Belarus if its distance from the border is 100 km or more. Otherwise items 2.2-2.3 of these *Technical criteria and principles* shall be applied, respectively.

2.2. When a BS located in Poland is operated in accordance with the principle in 1.1.1 or 1.1.2 such BS shall be deemed coordinated with ARNS stations located in Belarus if the following condition is met:

- the predicted mean field strength value produced by the station transmitting in the 748-788 MHz frequency range doesn't exceed the threshold levels defined in Table 1 at the border and 6 km into the territory of Belarus;

Table 1. Field strength value threshold (LTE case)

Border (B) of Belarus, and 6 km into the territory of Belarus	Field strength value (E) at height of 3 m, dBμV/m in BW= 5 MHz	Field strength value (E) at height of 3 m, dBμV/m in BW= 1 MHz
B	59	52
6 km	41	34

Note 1: E can be calculated for other measurement bandwidths (BW) from these values by using the following formula
 $E_{\text{new}}=E+10 \log (BW_{\text{new}} / BW)$, where BW_{new} is in MHz

or if the following condition is met:

- the LMS BS is used in accordance with Article 5 § 5.1.3 of the GE06 Agreement.

2.3. If a BS located in Poland operates in accordance with the principle in 1.1.2, such BS shall be deemed coordinated with ARNS stations located in Belarus if both of the following conditions are met:

- the predicted mean field strength value produced by the station transmitting in the 738-744 MHz frequency range doesn't exceed the threshold levels defined in Table 2 at the border and 9 km into the territory of Belarus;

Table 2. Field strength value threshold

Border (B) of Belarus, and 9 km into the territory of Belarus	Field strength value (E) at height of 3 m , dBμV/m in BW= 5 MHz	Field strength value (E) at height of 3 m м), dBμV/m in BW= 1 MHz
B	41	34
9 km	6	-1

Note 1: E can be calculated for other measurement bandwidths (BW) from these values by using the following formula
 $E_{\text{new}}=E+10 \log (BW_{\text{new}} / BW)$, where BW_{new} is in MHz

or if the following condition is met:

- the LMS BS is used in accordance with Article 5.1.3 of the GE06 Agreement.

Note. Field strength values contained in Article 2 are provided for a single LMS station. Cumulative effect of the LMS network is taken into account (JTG Doc. 4-5-6-7/307-E, 2013).

3. Technical conditions for coordination of stations in the aeronautical radionavigation service with stations in the land mobile service

3.1 An ARNS station of Belarus shall be deemed coordinated with LMS stations located in Poland if this station is located more than 100 km away from the common border. Otherwise items 3.2-3.3 of these *Technical criteria and principles* shall be applied, respectively.

3.2 An ARNS station of Belarus operated in 736-744 MHz frequency band shall be deemed coordinated with LMS stations located in Poland, if the predicted mean field strength produced by this station does not exceed 41 dB(μ V/m)/1 MHz at a height of 3 m above the ground at the border or if this station is used in accordance with Article 5.1.3 of the GE06 Agreement.

3.3 An ARNS station of Belarus operated in 786.5-789.5 MHz frequency range shall be deemed coordinated with LMS stations located in Poland, if the predicted mean field strength produced by this station does not exceed 48 dB(μ V/m)/1 MHz at a height of 3 m above the ground at the border or if this station is used in accordance with Article 5.1.3 of the GE06 Agreement.

Note. Field strength value can be calculated for other measurement bandwidths (BW) from these values by using the following formula $E_{\text{new}} = E + 10 \log (BW_{\text{new}} / BW)$, where BW_{new} is in MHz.

4. General

4.1 A new frequency assignment to a LMS BS that does not meet the conditions in Article 2 of these *Technical criteria and principles* shall be subject to coordination.

4.2. A new frequency assignment to ARNS that does not meet the conditions in Article 3 of these *Technical criteria and principles* shall be subject to coordination.

4.3. The coordination procedure shall be performed in accordance with Article 5 of these *Technical criteria and principles*.

4.4. If interference is caused by a station covered by these *Technical criteria and principles*, a Report of harmful interference shall be presented in accordance with Appendix 10 to the Radio Regulations. Upon receipt of a Report of harmful interference the Party responsible for such station shall take all possible measures to eliminate the interference and inform the other Party accordingly.

4.5 Recommendation ITU-R P.1546-5 "Method for point-to-area predictions for terrestrial services in the frequency range 30 MHz to 3 000 MHz" shall be used, taking into account agreed terrain data and/or clearance angle for calculation of the field strength values created by the terrestrial stations. The

field strength values in these *Technical criteria and principles* are calculated for 10% of the time and 50% of the locations.

4.6 Technical characteristics required to perform coordination of BS and ARNS stations shall be provided to the other Party. The information provided shall be taken into account by the other Party.

4.7. Information about a new LMS base stations located at distance not more than 100 km from the border, shall be updated by the Polish Party to the Belarusian Party at least 2 times per year. Scope the information provided should be consistent with the International Telecommunication Union notice form.

4.8. Information about a new ARNS stations located at distance not more than 100 km from the border, shall be updated by the Belarusian Party to the Polish Party at least 2 times per year. Scope the information provided should be consistent with the International Telecommunication Union notice form.

4.9. The aggregate mean field strength of BSs should be calculated using the power sum method.

4.10. During coordination process the calculated aggregate field strength values in the locations of ARNS stations shall be compared with the field strength thresholds as defined in the Table 3 of the Document. If the calculated aggregate field strength value does not exceed the value defined in Table 3 for corresponding ARNS station(s) coordination of LMS station shall be normally accepted. If LMS stations are used in accordance with Article 5 § 5.1.3 of the GE06 Agreement, then for such case values produced by corresponding broadcasting stations or allotments already agreed in accordance to GE06 Agreement in the locations of ARNS shall be applied as limit for such LMS stations.

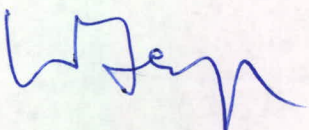
Table 3

ARNS System Types	System Type Code	Aggregate field strength threshold (dBµV/m)
RSBN	AA8	42 at 10 m in reference bandwidth 3 MHz
RLS 2 (Type 2) (ground receiver)	AA2	24 at 10 m in reference bandwidth 8 MHz

Note 1. The values in the table are the maximum allowed aggregate interference field strength in a shared channel.

Note 2. Field strength values can be calculated from the above values for other bandwidths, using the following formula:

$E_{\text{new}} = E + 10 \log (BW_{\text{new}} / BW)$, where BW_{new} is in MHz.



5. Coordination Procedure

5.1. The Party wishing to initiate the use of a frequency assignment to a station covered by these *Technical criteria and principles* that does not meet the conditions in Article 2 or Article 3 of these *Technical criteria and principles* shall send to the other Party a request to coordinate such frequency assignment. A request shall be sent by mail, fax, or e-mail. If a request is sent by e-mail, the requesting Party shall send a cover letter to the affected Party by fax and obtain a receipt confirmation for the fax.

5.2. The affected Party shall respond to such frequency assignment coordination request within 10 weeks from the date of the request receipt confirmation. If no response is received, an urgent reminder shall be sent. The Party that fails to respond within 2 weeks from the date when the urgent reminder is received, shall be deemed in agreement, except if the Party whose consent is sought asks for additional time to review the request.

5.3. If the affected Party refuses to satisfy a request for coordination, the requesting Party shall provide to the affected Party results of its calculations or propose new technical characteristics of the assignment.

5.4. If no response to the proposals referred to in Article 5.3 above is received from the affected Party within 10 weeks from the date of the receipt of the proposal, an urgent reminder shall be sent. The Party that fails to respond within 2 weeks from the date when it receives the urgent reminder shall be deemed to accept the coordination proposals submitted.

5.5. The Party that does not agree with a coordination request received shall propose a reasonable modification of such request, which shall provide for adequate protection of its existing and planned services and preserve the original objective of the coordination request as much as possible.

5.6. In case of controversies arising from application of these *Technical criteria and principles*, the Parties shall be guided by provisions and procedures of the Radio Regulations, as well as applicable international and bilateral agreements.

6. Revision and Termination

6.1. These *Technical criteria and principles* may be terminated by mutual agreement of the Parties. Termination of the *Technical criteria and principles* shall not affect operation of stations already brought into use or coordinated under these *Technical criteria and principles*.

6.2. After such termination, the Parties shall exchange lists of stations already brought into use or coordinated under these *Technical criteria and principles*.

6.3. These *Technical criteria and principles* may be revised, if both Parties agree to do so.

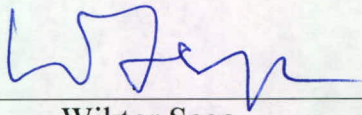
7. Entry into Force

7.1. These *Technical criteria and principles* shall enter into force on the date of signing.

7.2. These *Technical criteria and principles* are executed in the English language in two identical originals, one for the Polish Party and one for the Belarusian Party.

Done on 3 November 2015

For the Office of Electronic
Communications of the Republic
of Poland



Wiktor Segal

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



Sergey Dudarev