Agreement

between the Telecommunications Administration of the Republic of Poland and the Telecommunications Administration of the Russian Federation concerning the use of the frequency band 790 – 862 MHz for terrestrial systems

Warsaw, 26th of August 2011

Preamble

According to Article 6 of the Radio Regulations, on behalf of Telecommunications Administration of the Republic of Poland represented by Ministry of Infrastructure and the Telecommunications Administration of the Russian Federation represented by Ministry of Telecom and Mass Communications have concluded the present Agreement concerning the use of the frequency band 790 - 862 MHz with the purpose of avoiding mutual interference and optimising the use of the above-stated frequency band on a mutually coordinated basis.

1 Principles

1.1 This Agreement is based on the concept of coordination threshold and the idea of symmetrical conditions for both Administrations.

1.2 This Agreement covers the coordination[1] of land mobile service, fixed service and aeronautical radionavigation service.

1.3 The frequency arrangement for land mobile service conforms to the FDD frequency arrangement and parameters of transmission for base stations and user terminals in accordance with ECC/DEC(09)03. TDD frequency arrangement of fixed and land mobile services is not covered by this Agreement.

1.4 This Agreement applies to stations of the services listed in 1.2 and brought into use after the date of signing of this agreement.

1.5 This Agreement does not include the provisions concerning the use of the frequency band 821-832 MHz.

2 Use of frequencies

2.1 The Republic of Poland may use the frequency band 790 - 820 MHz without coordination with the Russian Federation if the following conditions are met:

2.1.1 In the border area with longitude less than or equal to 20E15:

- the predicted field strength produced by a station does not exceed 44 dB(μV/m)/1 MHz at a height of 10 m above the ground at the border;
- base stations of land mobile service are located at a distance from the border not less than 20 km;
- the base station e.i.r.p. of land mobile service shall not exceed 55 dBm in the frequency band 5 MHz in any direction to the border of the Russian Federation. Service radius for base station should not cover areas which are closer than 12 km from a border;
- the effective antenna height of land mobile service base station located at the distance of less than 100 km from the border shall not be more than 60 m. Deployment density of base stations operating simultaneously in the common frequency band of land mobile service shall not exceed 1 base station per 100 km^2 in area of 20 – 60 km from the border and 50 base stations per 100 km^2 in area of 60 – 100 km from the border. For the Elblag region (central point 19E2410 longitude, 54N0930 latitude with radius of 5.6 km) deployment density of base stations operating simultaneously in the common frequency band of land mobile service shall

[1] The term «coordination» should be understood as bilateral coordination between Administrations without involving BR in this process. The Agreement concluded under this bilateral coordination shall be considered by Administrations as an agreement under relevant RR procedure.

not exceed 5 base stations per 100 km^2. For the region of Hel Peninsula the deployment density of base stations operating simultaneously in the common frequency band of land mobile service shall not exceed 10 base stations per 100 km^2 (Note 1).

Note 1: Limitations of technical parameters for base stations located at a distance from the border greater than 100 km are not applied.

2.1.2 In the border area with longitude more than 20E15:

- the predicted field strength produced by a station does not exceed 46 dB(μV/m)/1 MHz at a height of 10 m above the ground at the border;
- base stations of land mobile service are located at a distance from the border not less than 15 km;
- the base station e.i.r.p. of land mobile service shall not exceed 56 dBm in the frequency band 5 MHz in any direction to the border of the Russian Federation. Service radius for base station should not cover areas which are closer than 7 km from a border;
- the effective antenna height of land mobile service base station located at the distance of less than 60 km from the border shall not be more than 60 m. Deployment density of base stations operating simultaneously in the common frequency band of land mobile service shall not exceed 1 base station per 100 km^2 in area of 15 – 60 km from the border. For the Elk region (central point 22E2144 longitude, 53N4917 latitude with radius of 5.6 km) deployment density of base stations operating simultaneously in the common frequency band of land mobile service shall not exceed 10 base station per 100 km^2. For the Suwalki region (central point 22E5548 longitude, 54N0625 latitude with radius of 5.6 km) deployment density of base stations operating simultaneously in the common frequency band of land mobile service shall not exceed 10 base station per 100 km^2 (Note 2).

Note 2: Limitations of technical parameters for base stations located at a distance from the border greater than 60 km are not applied.

Information with respect to a planned frequency assignment of base station in the ITU filing format shall be provided by Administration of the Republic of Poland to the Russian Federation preferably before but not later than 2 weeks after bringing into use this frequency assignment in the border area at a distance of up to 100 km from the border (for border area with longitude less than or equal to 20E15) and up to 60 km from the border (for border area with longitude more than 20E15).

2.2 The Republic of Poland and the Russian Federation may use the frequency band 820 - 821 MHz without coordination if the predicted field strength produced by a station does not exceed 10 dB(μV/m)/1 MHz at a height of 10 m above the ground at the border.

2.3 The Russian Federation may use the frequency band 790 - 820 MHz without coordination with the Republic of Poland if the following conditions are met:

2.3.1 In the border area with longitude less than or equal to 20E15:

- the predicted field strength produced by a station does not exceed 44 dB(μV/m)/1 MHz at a height of 10 m above the ground at the border;
- the base stations are located at a distance from the border not less than 20 km;
- the base station e.i.r.p. of land mobile service shall not exceed 55 dBm in the frequency band 5 MHz in any direction to the border of the Republic of Poland. Service radius for base station should not cover areas which are closer than 12 km from a border;

- the effective antenna height of land mobile service base station located at the distance of less than 100 km from the border shall not be more than 60 m. Deployment density of base stations operating simultaneously in the common frequency band of land mobile service shall not exceed 1 base station per 100 km^2 in area of 20 – 60 km from the border and 50 base stations per 100 km^2 in area of 60 – 100 km from the border (Note 3).

Note 3: Limitations of technical parameters for base stations located at a distance from the border greater than 100 km are not applied.

2.3.2 In the border area with longitude more than 20E15:

- the predicted field strength produced by a station does not exceed 46 dB(μV/m)/1 MHz at a height of 10 m above the ground at the border;

- base stations of land mobile service are located at a distance from the border not less than 15 km;

- the base station e.i.r.p. of land mobile service shall not exceed 56 dBm in the frequency band 5 MHz in any direction to the border of the Russian Federation. Service radius for base station should not cover areas which are closer than 7 km from a border;

- the effective antenna height of land mobile service base station located at the distance of less than 60 km from the border shall not be more than 60 m. Deployment density of base stations operating simultaneously in the common frequency band of land mobile service shall not exceed 1 base station per 100 km^2 in area of 15 – 60 km from the border except border area with longitude more than 20°E15′ and less than 20°E45′;(Note 4)

- the effective antenna height of land mobile service base station located at the distance of less than 60 km from the border shall not be more than 60 m. Deployment density of base stations operating simultaneously in the common frequency band of land mobile service shall not exceed 1 base station per 100 km^2 in area of 15 – 30 km from the border and 50 base stations per 100 km^2 in area of 30 – 60 km from the border for the border area with longitude more than 20E15 and less than 20E45 (Note 4).

Note 4: Limitations of technical parameters for base stations located at a distance from the border greater than 60 km are not applied.

Information with respect to a planned frequency assignment of base station in the ITU filing format shall be provided by Administration of the Russian Federation to the Republic of Poland preferably before but not later than 2 weeks after bringing into use this frequency assignment in the border area at a distance of up to 100 km from the border (for border area with longitude less than or equal to 20E15) and up to 60 km from the border (for border area with longitude more than 20E15).

2.4 The Republic of Poland may use the frequency band 832 - 862 MHz for user equipment of the land mobile service without coordination with the Russian Federation if compliance with 2.1 is ensured. Stations of fixed or aeronautical radionavigation services of the Republic of Poland may use this frequency band without coordination with the Russian Federation, if the predicted field strength produced by a station does not exceed 42 dB(μV/m)/1 MHz at a height of 10 m above the ground at the border (Note 5).

Note 5: Frequency bands used by user terminals operating simultaneously with common sector of the base station antenna should not be overlapped. Aggregate e.i.r.p. of all user equipment operating simultaneously with common sector of the base station antenna should not exceed 23 dBm in any band 5 MHz. Number of simultaneously active user terminals operating with one base station with 3 antenna sectors in common frequency bands should not exceed 3.

Information with respect to a planned frequency assignment in the ITU filing format shall be provided by the Administration of the Republic of Poland to the Russian Federation preferably before but not later than 2 weeks after bringing into use this frequency assignment in the border area at a distance of up to 100 km from the border (for border area with longitude less than or equal to 20E15) and up to 60 km from the border (for border area with longitude more than 20E15).

2.5 The Russian Federation may use the frequency band 832 - 862 MHz for user equipment of the land mobile service without coordination with the Republic of Poland if compliance with 2.3 is ensured. Stations of fixed or aeronautical radionavigation services of the Russian Federation may use this frequency band without coordination with the Republic of Poland, if the predicted field strength produced by a station does not exceed 42 dB(μV/m)/1 MHz at a height of 10 m above the ground at the border (see also Note 5).

Information with respect to a planned frequency assignment in the ITU filing format shall be provided by Administration of the Russian Federation to the Administration of Republic of Poland preferably before but not later than 2 weeks after bringing into use this frequency assignment in the border area at a distance of up to 100 km from the border (for border area with longitude less than or equal to 20E15) and up to 60 km from the border (for border area with longitude more than 20E15).

3 General

3.1 The technical parameters related to any new frequency assignment causing the above-mentioned coordination threshold values to be exceeded shall be coordinated.

3.2 The coordination procedure shall be performed in accordance with Article 4 of this Agreement.

3.3 Preliminary coordination may take place between any land mobile service operators concerned. The results of such preliminary coordination must be approved by the Administrations.

3.4 In the presence of interference produced by a station covered by this Agreement, the Report of harmful interference shall be presented in accordance with Appendix 10 of the Radio Regulations. The Administrations shall take all possible measures in order to eliminate the interference as soon as possible.

3.5 The field strength specified in the interference report (see Item 3.4) shall be based on the median values of measurements of field strength performed at antenna height stipulated in Article 2 at least in two different points over a range of at least 100 m along the border.

3.6 The predicted field strength values in this Agreement calculated with the ITU-R Recommendation P.1546-4 are based on antenna heights corresponding to those in Article 2 of this Agreement with 10% time and 50% locations.

3.7 The ITU-R Recommendation P.1546-4 "Method for point-to area predictions for terrestrial services in the frequency range 30-3000 MHz" shall be used for calculations of the field strength value produced by ground stations.

3.8 The ITU-R Recommendation P.525-2 "Calculation of free space attenuation" shall be used for calculations of the field strength value produced by or to airborne station.

3.9 Deployment density of base stations is determined for base stations of land mobile service operating simultaneously in the common frequency band.

3.10 The deployment density calculation method is presented in the Attachment 1 to this Agreement.

3.11 The term «border» for the purposes of the Agreement should be understood as the land border between the Republic of Poland and the Russian Federation reaching the point on the coast line Vistula Spit at 19E3817 and 54N2737".

4 Coordination procedure

4.1 The Administration wishing to initiate use of a frequency assignment to the station covered by this Agreement that does not correspond to the terms specified in Article 2 of this Agreement shall send to the other Administration a request to coordinate such frequency assignment. A request can be sent by mail, fax or e-mail. In case if a request is sent by e-mail the requesting Administration shall send by fax a covering letter to the affected Administration and to receive a confirmation of its receipt.

4.2 The affected Administration shall provide a feedback in respect of the request to coordinate assignments within 10 weeks from the date of the request receipt. If no feedback was received, an urgent reminder shall be sent. Administration that failed to respond within 2 weeks from the date of an urgent reminder receipt shall be deemed agreeing if the Administration, 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 Administration to satisfy the request for coordination the requesting Administration shall provide to the affected Administration results of its calculations, or any new technical characteristics of the assignment.

4.4 If no response from the affected Administration to the proposals provided in Item 4.3 was received within 10 weeks from the date of proposals receipt, an urgent reminder shall be sent. Administration that failed to respond within 2 weeks from the date of receipt of an urgent reminder shall be deemed agreed to the provided proposals on coordination.

4.5 The Administration objecting to the received request for coordination shall provide 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 this Agreement application Administrations shall be governed by provisions and procedures of the Radio Regulations, as well as applicable international and bilateral agreements.

5 Revision and cancellation

5.1 This Agreement may be cancelled as desired by one of the Telecommunications Administrations with notice of at least one year. This does not affect the operation of stations already brought into use or coordinated under this Agreement.

5.2 After such cancellation, Administrations will exchange the list of stations already brought into use or coordinated under this Agreement.

5.3 This Agreement may be revised or cancelled without previous notice, if mutual understanding is reached between the Telecommunications Administrations.

5.4 This Agreement shall be confirmed or revised in case the current procedures and frequency allocations of the Radio Regulations for the frequency band 790-862 MHz are changed.

6 Coming into force

6.1 This Agreement shall come into force on the date of the signing.

This Agreement has been drawn up in two identical copies, one for the Republic of Poland and one for the Russian Federation.

For the Telecommunications Administration of the Republic of Poland

Ministry of Infrastructure

M. Olszewska

For the Telecommunications Administration of the Russian Federation

Ministry of Telecom and Mass Communications

A. Mukhanov

Algorithm to define maximum deployment density of base stations

A.1. In order to have a common understanding of maximum deployment density of base stations it is necessary to define unambiguous method of calculation. The definition of maximum deployment density of base stations should be done with the use of circle with the area equal to 100 km^2. The maximum deployment density requirement is fulfilled if the circle (its center) positioned at any point within described deployment density zone (e.g. 15-60 km or 60-100 km) does not enclose more than the number of base stations stated in the Agreement. See figure A.1 for illustration.

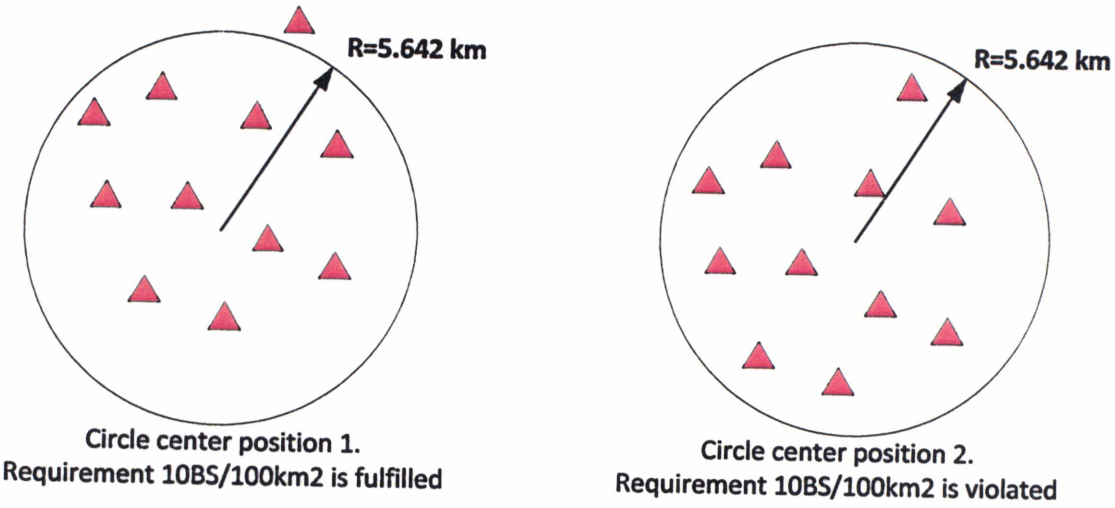

Fig.A.1. Maximum permissible deployment density calculation

A.2. In cases when circle area is intersected by the zone line (i.e. line parallel to the border and delineating zones with deployment density requirements), the area outside the zone (but still inside the circle) is ignored (i.e. base stations outside the zone are not accounted). For each deployment density zone a separate analysis is performed. See figure A.2 for illustration.

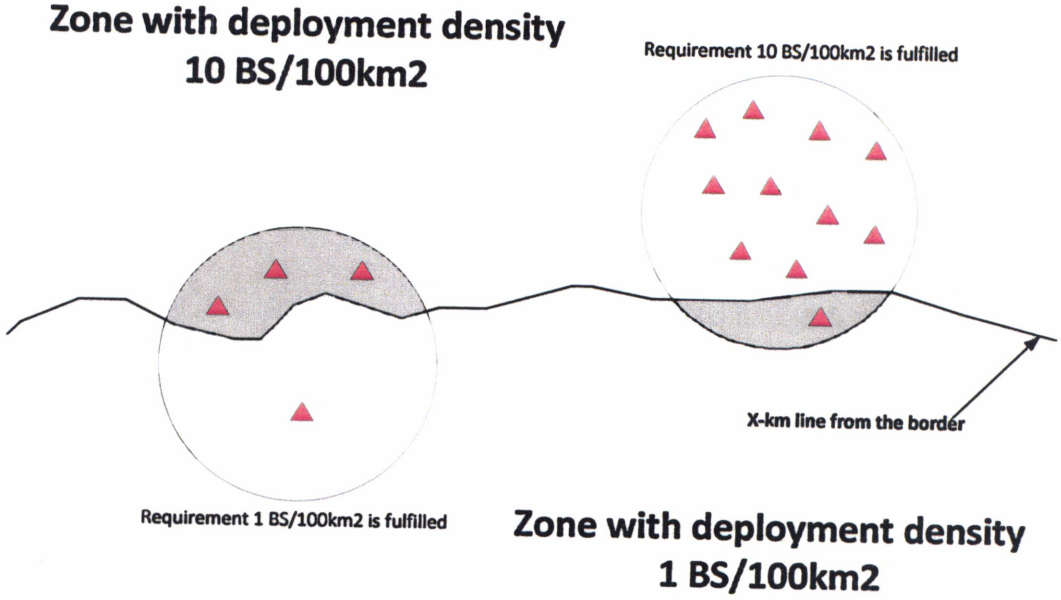

Fig.A.2. Deployment density calculation at the edge of deployment density zone

A.3. In order to achieve high accuracy implementation of the algorithm should use a high number of points defining the center of the positioned circle . It is assumed that the regular grid of points covering deployment density zone with step less than or equal to 100 m (e.g.

3 seconds grid) is sufficient. For each point within the grid a separate check with circle area is performed. See figure A.3 for illustration.

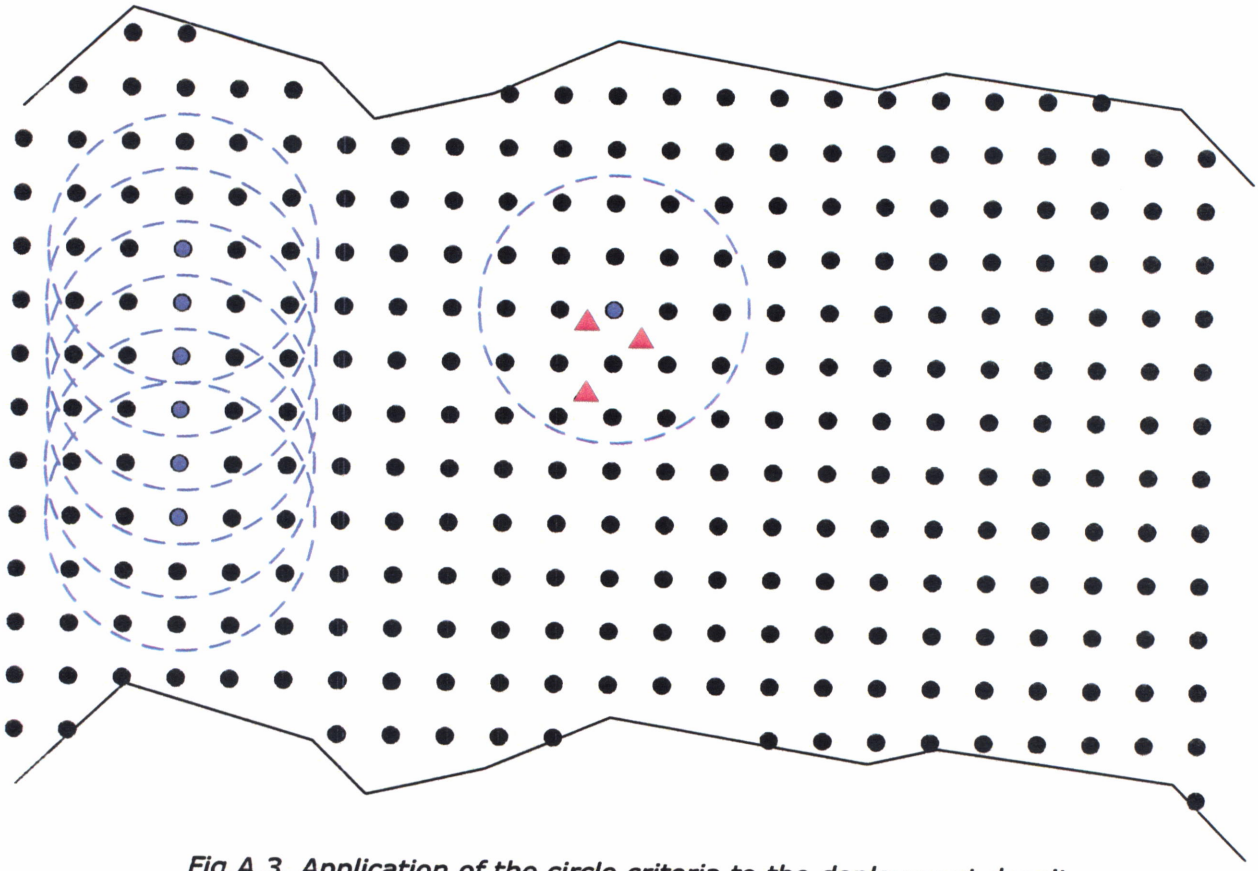

Fig.A.3. Application of the circle criteria to the deployment density zone (sparser regular grid is used for illustration purpose only)

A.4. All geographical data should be based on WGS84 geodetic system.