TECHICAL AND PROCEDURAL ARRANGEMENT

for usage of the 1427-1518 MHz frequency band
by terrestrial systems in the border areas of the Slovak Republic and Ukraine

2019

Regulations. Upon receipt of the Report of harmful interference, the Administration, which is responsible for such station, shall take all possible measures to eliminate the interference and to inform the other Administration.

4.5 ITU-R Recommendation P.1546-5 "Method for point-to-area predictions for terrestrial services in the frequency range 30 MHz to 3000 MHz" shall be used for calculation of the field strength, created by the stations of MFCN. The field strength values in this Arrangement are calculated for 10% of the time and at 50% of the locations.

4.6 The aggregate average field strength of MFCN stations should be calculated by using the power sum method indicated in paragraph 3.5 of Chapter 3 to Annex 2 of GE-06 Regional Agreement.

4.7 Telecommunication Administration that puts into operation a new MFCN station, is responsible for the calculation of aggregate interference field strength and monitoring of interference field strength at the border line.

4.8 In order to avoid random factors inherent in interference behaviour both parties use agreed test points near the boundary line when calculating and measuring the aggregate interference. List of agreed test points is presented in Annex 1 to Arrangement.

5. Harmful interference

5.1 In case of harmful interference experienced by the ATS receivers Ukraine shall perform measurements in order to verify the agreed level of interferences mentioned in the items 2.1.1 - 2.1.3 the measurements should be performed in accordance with the procedure of measurements given in the Annex 1 to the Arrangement.

5.2 If the measurements mentioned in the item 5.1 show that the aggregate field strength is higher than trigger value level mentioned in the items 2.1.1 - 2.1.3, Ukraine shall notify Slovakia of interference case providing the information specified in the Annex 1 to the Arrangement.

5.3 Slovakia shall present its statement on the notice mentioned in the item 5.2 provided by Ukraine within 15 days. If there is no statement within the aforementioned period, it is deemed that Slovakia confirms the excess of the interference limit.

5.4 On confirmation of excess of the field strength level Slovakia within 15 days after confirmation shall adjust the characteristics of interfering station/network in order to fulfil the permitted field level of MFCN stations mentioned in the items 2.1.1 - 2.1.3 and inform Ukraine on the undertaken actions. If the measurement show that increased level is caused by other interfered source the time is prolonged by 10 additional days.

5.5 If analyses and measurements performed by Slovakia do not confirm the excess of interference level reported by Ukraine, then both parties should cooperate in order to investigate the matter. If it is deemed favourable for the investigation then both parties may agree on mutual measurement activities.

5.6 When performing measurements both Parties use all the information available, especially information about identification of interfering MFCN station.

6. Procedure of coordination

6.1 An Administration wishing to initiate the use of a frequency assignment to the station, covered by this Arrangement, that does not correspond to the conditions specified in the Sections 2 and 3 of this Arrangement, shall send to the other Administration a request to coordinate such frequency assignment. The request can be sent by regular or e-mail. In case the request is sent by e-mail, the requesting Administration shall send a scan-copy of the covering letter to the affected Administration, and to receive a confirmation of its receipt.

2. Technical conditions for coordination of the MFCN stations with the ATS stations

2.1 Slovakia can use the frequency band 1427-1518 MHz for the MFCN stations without coordination with Ukraine if the aggregate field strength, produced by these stations, does not exceed:

2.1.1 33 dBμV/m/5 MHz at a height of 10 meters above the ground at the border line in the frequency band 1452-1492 MHz;

2.1.2 47 dBμV/m/5 MHz at a height of 10 meters above the ground at the border line in the frequency band 1447-1452 MHz;

2.1.3 65 dBμV/m/5 MHz at a height of 10 meters above the ground at the border line in the frequency bands 1427-1447 MHz and 1492-1518 MHz.

2.2 Compliance with the levels of field strength in paragraphs 2.1.1 - 2.1.3 should be checked by calculation and periodic monitoring by the Regulatory Authority for Electronic Communications and Postal Services of Slovakia and MFCN operators of Slovakia.

3. Technical conditions for coordination of ATS stations with MFCN stations

3.1 Ukraine may use 1429-1518 MHz frequency band for new ATS stations without coordination with Slovakia, if a new ATS station is located at the distance not closer than 15 km from the border line.

4. General provisions

4.1 Frequency assignment to a MFCN station of Slovakia, which is not in compliance with the conditions indicated in Section 2 of this Arrangement, is subject to coordination. Technical characteristics of the MFCN station should be sent for coordination in the format described in Annex 2A of HCM Agreement.

In case when the placement of new single MFCN station of Slovakia leads to exceeding of the levels of aggregate interference, specified in p. 2.1.1 the use of frequencies by such station is subject to coordination and the calculation of the aggregate interference can be made relative to the location of the ATS stations of Ukraine, given in the Table below, except for the UZHHOROD station.

Site name	Location	Minimum distance to borderline, km	FSL recalculated to nearest point at borderline, dBμV/m / 5 MHz / 10 m
1	2	3	4
STARYI SAMBIR	022°59'00" E - 49°26'00" N	48	47
UZHHOROD	022°15'00" E - 48°38'00" N	1	30

4.2 A new frequency assignment to ATS station of Ukraine, which is not in compliance with the conditions indicated in Section 3 of this Arrangement, is subject to coordination. Technical characteristics of ATS stations should be sent for coordination in the format described in BR ITU Circular Letter CR/118 dated 31 March 1999 and its Addendum 1 dated 23 April 1999.

4.3 The coordination Procedure shall be performed in accordance with Section 6 of this Arrangement.

4.4 In presence of interference caused by the MFCN station covered by this Arrangement, a Report of harmful interference shall be presented in accordance with the Appendix 10 to the ITU Radio

Introduction

According to Article 6 of the Radio Regulations of the International Telecommunication Union, the Administration of the Slovak Republic (hereinafter – Slovakia) on one hand and the Administration of Ukraine (hereinafter – Ukraine) on the other hand, together referred to as "the Administartions" signed the *Technical and procedural arrangement for usage of the 1427-1518 MHz frequency band by terrestrial systems in the border areas of Slovakia and Ukraine* (hereinafter – Arrangement).

The principles, conditions and technical parameters, specified in the relevant Sections of this Arrangement, are used in coordination between stations of Mobile/Fixed Communications Networks operating in Supplemental Downlink (MFCN SDL), (hereinafter – MFCN) of Slovakia and the stations of aeronautical telemetry system (ATS) in aeronautical mobile service of Ukraine in 1427-1518 MHz frequency band.

If Slovakia plans to use MFCN SDL in 1427-1518 MHz frequency band in border area, then it shall inform Ukraine of the relevant date of commencement of such use 6 months in advance.

Since that date ATS stations of Ukraine and MFCN stations of Slovakia should undergo coordination in accordance with the procedure specified herein.

This Arrangement does not cover the coordination between MFCN stations of Slovakia and Ukraine.

The Arrangement will be reassessed in 2023 taking into account the state of operation of ATS stations.

1. Principles

1.1 This Arrangement applies to MFCN usage in accordance with ECC Decision (13)03 on 1452-1492 MHz frequency band usage, ECC Decision (17)06 on 1427-1452 and 1492-1518 MHz frequency band usage, ECC Rec (15)01 on 1427-1518 MHz frequency band, footnote 5.341A of the Radio Regulations and ATS stations usage in 1429-1518 MHz band according to footnote 5.342 of the Radio Regulations.

1.2 This Arrangement applies to MFCN stations that use frequency division duplex (FDD) and frequency band 1427-1518 MHz is limited to base stations (BS) ("downlink only").

1.3 This Arrangement applies to ATS stations with technical characteristics as specified in ITU-R Recommendation M.1459, ITU-R Report M.2314 (2014), and ECC Report 295. List of operating ATS stations of Ukraine covered by this Arrangement is contained in the Master International Frequency Register (MIFR) ITU-R.

1.4 The procedure provides for the use of the frequency band 1427-1518 MHz in the border areas of Slovakia and Ukraine for the MFCN and ATS stations, taking into account the parameters of the acting stations of ATS and restrictions on the radiation parameters of the stations of MFCN.

1.5 This Arrangement applies to the MFCN stations, operating in accordance with the ECC Decision (13)03 on 1452-1492 MHz frequency band usage, ECC Decision (17)06 on 1427-1452 and 1492-1518 MHz frequency band usage and the Radio Regulations.

6.2 The affected Administration shall provide an answer 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 by e-mail. An Administration that failed to respond within 2 weeks from the date of an urgent reminder receipt shall be deemed as agreed on the coordination request if the Administration whose agreement was sought did not ask for extra time needed to consider the coordination request.

6.3 In case of a refusal of the coordination request by the affected Administration, the requesting Administration shall provide to the affected Administration with the results of its calculations or any new technical characteristics of the assignment. The request can be sent by regular or e-mail. In case the request is sent by e-mail, the requesting Administration shall send a scan-copy of the covering letter to the affected Administration, which should send a confirmation of its receipt.

6.4 If no response from the affected Administration to the proposals provided in paragraph 6.3 was received within 10 weeks from the date of proposals receipt, an urgent reminder shall be sent by regular or e-mail. Administration that failed to respond within 2 weeks from the date of receipt of the urgent reminder shall be deemed as agreed to the provided proposals on coordination.

6.5 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 existing services and services applied by this Administration earlier in time, but to the maximal possible extent shall preserve an initial objective of the request for coordination.

6.6 In case of controversies originating from the application of this document by Administrations, they shall be governed by the Arrangements of the ITU Radio Regulations and corresponding international and bilateral Arrangements.

7. Revision and cancellation

7.1 This Arrangement may be cancelled as desired by one of the Parties with notification at least one year in advance. The cancellation does not affect operation of the stations already put into use or coordinated under this Arrangement.

7.2 After such cancellation, the Parties shall exchange their lists of stations already put into use or coordinated under this Arrangement.

7.3 This Arrangement may be revised or cancelled without notice if mutual understanding is reached between the Parties.

7.4 This Arrangement may be revised after a decision on MFCN implementation is taken by Ukraine.

8. Coming into force

8.1 This Arrangement shall come into force on 22 November 2019.

8.2 This Arrangement has been drawn up in English in two identical copies, one for the Telecommunication Administration of the Slovak Republic and one for the Telecommunication Administration of Ukraine.

Done in Sharm el-Sheikh, Egypt, __ November 2019.

For the Administration of the Slovak Republic

Milan MIZERA

For the Administration of Ukraine

Oleh MAIORNIKOV

Annex 1

Field strength measurement procedure

1. Common provisions

- Field strength measurements can be carried out on a regular basis or in the event of harmful interference. Administrations (Regulatory Authorities) shall perform measurements in order to verify the agreed level of permissible interferences. The measurements should be performed in accordance with the procedure of measurements given in CEPT/ERC Recommendation 74-02 E (Bucharest 1999).
- In case aggregated FSL of MFCN BSs exceeds the threshold level, an analysis of the highest interfering BSs sectors with their identification should be conducted.
- Due to the low threshold level of the MFCN BSs signal to be measured, the general measurement methodology consists of such stages:

a) Search for the maximum aggregated MFCN signal (channel power) with the directional antenna and spectrum analyser / certified measurement equipment;

b) Measure the aggregated level of channel power in already identified directions;

c) Identify the MFCN BSs sectors and measure power of the individual signal level (channel power).

- Measurements of interference level are carried out at the test points on the borderline or, if measurements at the test points cannot be carried out due to practical reasons (e.g. the test point is not accessible), at a point as close as possible to the test point on the borderline.

2. Requirements to the monitoring equipment

Recommended set of equipment:

- hardware (HW): spectrum analyser + scanner (digital receiver + processor);
- software (SW).

Recommended requirements for monitoring equipment:

- sensitivity – not worse than ATS receiver sensitivity for the reference bandwidth + protection criteria;
- nonconformity of measured level (with S/N ratio more than 16 dB) – not higher than 1.5 dB;
- reference frequency stability 1×10^{-6} per 1 year;
- possibility to identify MFCN network, individual BS and sectors of the BS.

Antenna equipment parameters:

- antenna mast up to 10 m height;
- calibrated cable with losses not higher than 3 dB/10 m;
- directional antenna with a determined antenna factor at MFCN BSs frequencies is recommended.

Calculation of an average field strength value ($E_{meas\ av}$, dBµV/m), for n measurements of $E_{meas\ i}$:

$$E_{meas\ av} = 20\lg\left(\frac{1}{n}\sum_{i=1}^{n} 10^{\frac{E_{meas\ i}}{20}}\right), \text{ dBµV/m}$$

3. Information to be provided by the affected Administration in case of harmful interference

1 Name of the point of measurements;
2 Coordinates of the test point (DDNMM'SS" DDDEMM'SS");
3 Height of the point of measurements above sea level (m);
4 Height of measurements antenna above ground (level) (m) (maximum 10 m);
5 Date of measurements;
6 Azimuth of measurement antenna for maximum interfering signal (degrees);
7 Polarisation ;
8 Antenna factor (dB/m);
9 Total attenuation (dB);
10 Channel width (MHz);
11 Central frequency (carrier) of MFCN BS sector channel (MHz);
12 Measured channel power (dBm);
13 Field strength (dBµV/m);
14 Information which can be useful for affecting and affected sides for investigation of the harmful interference case;
15 identifier (MCC, MNC, CID, PN): MCC - mobile country code; MNC - mobile operator code; CID - Cell ID; PN - pseudo random noise code (if needed).

4. Proposed test points

№	Title of location /Coordinates of test points (SVK)	Title of location /Coordinates of test points (UKR)
	STARYI SAMBIR	
1	Ulic/ 48°58'03" 22°25'44"	Strychava/ 48°57'26" 22°29'11"
	UZHHOROD	
2	Ulba / 48°53'21" 22°24'57"	Malyi Bereznyi/ 48°52'47" 22°25'39"
3	Nizne Nemecke / 48°38'38" 22°13'57"	Uzhhorod/ 48°37'58" 22°15'24"
4	Cierna nad Tisou/ 48°25'57" 22°07'22"	Chop/ 48°26'15" 22°08'51"