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| **World Radiocommunication Conference (WRC-15) Geneva, 2–27 November 2015** |  |
| **INTERNATIONAL TELECOMMUNICATION UNION** |  |
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| PLENARY MEETING | **Addendum 2 to Document 8-E** |
|  | **9 October 2015** |
|  | **Original: Russian** |
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| Regional Commonwealth in the field of Communications Common Proposals | |
| Proposals for the work of the conference | |
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| Agenda item 1.2 | |

1.2 to examine the results of ITU‑R studies, in accordance with Resolution **232 (WRC‑12)**, on the use of the frequency band 694-790 MHz by the mobile, except aeronautical mobile, service in Region 1 and take the appropriate measures;

Resolution **232 (WRC-12)**: Use of the frequency band 694-790 MHz by the mobile, except aeronautical mobile, service in Region 1 and related studies

Introduction

WRC-15 agenda item 1.2 calls for examination of the results of studies carried out by ITU-R in accordance with WRC-12 Resolution 232 and determination of the regulatory and technical conditions for use of the mobile service in accordance with the allocation established by WRC‑12 Resolution 232 in the band 694-790 MHz for the mobile, except aeronautical mobile, service in Region 1

CPM-15 identified four issues to be examined by WRC-15 under this agenda item:

• Issue A: Option for the refinement of the lower band edge

• Issue B: Technical and regulatory conditions applicable to the mobile service concerning compatibility between the mobile service and the broadcasting service

• Issue C: Technical and regulatory conditions applicable to the mobile service concerning compatibility between the mobile service and the aeronautical radionavigation service for the countries listed in RR No. 5.312

• Issue D: Solutions for accommodating applications ancillary to broadcasting requirements.

The position of the RCC Administrations on the above issues is set out below.

**Issue A:** Option for the refinement of the lower band edge

The RCC Administrations consider that the lower edge of allocation to the mobile service (including the guardband) shall not be lower than 694 MHz.

The RCC Administrations are of the view that the BS requirements (taking into account the development of new technologies in broadcasting including HDTV) can be met through further use of the frequency band 694-790 MHz. The RCC Administrations consider that use of the MS will be determined by administrations, depending on their spectrum requirements for the BS.

The IMT frequency arrangement should be chosen taking into account compatibility with the ARNS and with terrestrial TV broadcasting systems.

The RCC Administrations consider the frequency arrangement based on the existing A5 arrangement in accordance with Recommendation ITU-R M.1036-4 to be preferable (703-733 MHz uplink, 758-788 downlink).

The potential frequency arrangements for IMT systems should be taken into account while defining the conditions for protection of terrestrial TV broadcasting and ARNS systems.

When choosing the frequency arrangement, account should also be taken of the usage of the frequency band 694-790 MHz by ancillary broadcasting applications.

**Issue B:** Technical and regulatory conditions applicable to the mobile service concerning compatibility between the mobile service and the broadcasting service

The RCC Administrations consider that the conditions for allocation to the MS in the frequency band 694-790 MHz should include the necessary technical and regulatory limitations on the MS for ensuring protection for the BS. Imposing restrictions on or applying additional requirements for the BS cannot be allowed.

The RCC Administrations consider that regulatory and technical conditions for the MS should be defined directly in the Radio Regulations, including in WRC resolutions, to ensure protection of the BS.

To protect the BS from MS interference, the provisions of the Geneva-06 Agreement should be applied, as well as additional regulatory provisions and technical conditions that take account of the aggregate interference effect from MS stations in the main and adjacent frequency bands.

**Issue C:** Technical and regulatory conditions applicable to the mobile service concerning compatibility between the mobile service and the aeronautical radionavigation service for the countries listed in RR No. 5.312

The RCC Administrations consider that the conditions for allocation to the MS in the frequency band 694-790 MHz should include the necessary technical and regulatory limitations on the MS for ensuring protection for the ARNS. Imposing restrictions on or applying additional requirements for the ARNS cannot be allowed.

The protection of the ARNS applied in RCC countries under RR No. 5.312 should be ensured through the application of coordination procedures under RR No. 9.21 for the MS in relation to the ARNS using coordination thresholds based on the results of ITU-R studies, taking account of aggregate interference and on the basis of technically sound methods for assessing compatibility.

**Issue D:** Solutions for accommodating applications ancillary to broadcasting requirements

The RCC Administrations consider that spectrum harmonization issues for applications ancillary to broadcasting/programme-making (SAB/SAP) in the frequency band 694-790 MHz should be discussed in the course of developing relevant ITU-R Recommendations/Reports, as referred to in Resolution ITU-R 59. It is unnecessary for WRC-15 to take any measures with respect to SAB/SAP in the frequency band in question.

With reference to the above, the RCC Administrations propose that the stated issues be addressed on the basis of the methods set out in the CPM-15 Report: for Issue A – in accordance with Method A, Option 1; for Issue B, in accordance with Method B3; for Issue C – in accordance with Method C4; and for Issue D – in accordance with Method D2.

The proposed changes to the Radio Regulations are set out below.

Proposals

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations  
(See No. 2.1)

MOD RCC/8A2/1

460-890 MHz

|  |  |  |
| --- | --- | --- |
| Allocation to services | | |
| Region 1 | Region 2 | Region 3 |
| 460-470 FIXED  MOBILE 5.286AA  Meteorological-satellite (space-to-Earth)  5.287 5.288 5.289 5.290 | | |
| 470-694  BROADCASTING  5.149 5.291A 5.294 MOD 5.296  5.300 5.304 5.306 5.311A 5.312 | 470-512  BROADCASTING  Fixed  Mobile  5.292 5.293 | 470-585  FIXED  MOBILE  BROADCASTING  5.291 5.298 |
| 512-608  BROADCASTING  5.297 |
| 585-610  FIXED  MOBILE  BROADCASTING  RADIONAVIGATION  5.149 5.305 5.306 5.307 |
| 608-614  RADIO ASTRONOMY  Mobile-satellite except aeronautical mobile-satellite (Earth-to-space) |
| 610-890  FIXED  MOBILE 5.313A 5.317A  BROADCASTING |
| 614-698  BROADCASTING  Fixed  Mobile  5.293 5.309 5.311A |
| 694-790  MOBILE except aeronautical mobile MOD 5.312A MOD 5.317A  BROADCASTING  5.300 5.311A 5.312 |
| 698-806  MOBILE 5.313B 5.317A  BROADCASTING  Fixed   5.293 5.309 5.311A |
| 790-862  FIXED  MOBILE except aeronautical mobile 5.316B 5.317A  BROADCASTING  5.312 5.314 5.315 5.316  5.316A 5.319 |
| 806-890  FIXED  MOBILE 5.317A  BROADCASTING |
| 862-890  FIXED  MOBILE except aeronautical mobile 5.317A  BROADCASTING 5.322 |
| 5.319 5.323 | 5.317 5.318 | 5.149 5.305 5.306 5.307 5.311A 5.320 |

MOD RCC/8A2/2

5.296 *Additional allocation:* in Albania, Germany, Saudi Arabia, Austria, Bahrain, Belgium, Benin, Bosnia and Herzegovina, Burkina Faso, Cameroon, Congo (Rep. of the), Côte d'Ivoire, Croatia, Denmark, Djibouti, Egypt, United Arab Emirates, Spain, Estonia, Finland, France, Gabon, Ghana, Iraq, Ireland, Iceland, Israel, Italy, Jordan, Kuwait, Latvia, The Former Yugoslav Republic of Macedonia, Libya, Liechtenstein, Lithuania, Luxembourg, Mali, Malta, Morocco, Moldova, Monaco, Niger, Norway, Oman, the Netherlands, Poland, Portugal, Qatar, the Syrian Arab Republic, Slovakia, the Czech Republic, the United Kingdom, Sudan, Sweden, Switzerland, Swaziland, Chad, Togo, Tunisia, Turkey, Angola, Botswana, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Nigeria, South Africa, Tanzania, Zambia and Zimbabwe, the band 470-694 MHz is also allocated on a secondary basis to the land mobile service, intended for applications ancillary to broadcasting and programme-making. Stations of the land mobile service in the countries listed in this footnote shall not cause harmful interference to existing or planned stations operating in accordance with the Table in countries other than those listed in this footnote.    (WRC‑15)

MOD RCC/8A2/3

5.312A In Region 1, the use of the band 694-790 MHz by the mobile, except aeronautical mobile, service is subject to the provisions of Resolution **232 (Rev.WRC‑15)**. See also Resolution **224 (Rev.WRC‑12)**.    (WRC‑15)

MOD RCC/8A2/4

5.317A Those parts of the band 698-960 MHz in Region 2, 694-790 MHz in Region 1 and 790-960 MHz in Regions 1 and 3 which are allocated to the mobile service on a primary basis are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) – see Resolutions **224 (Rev.WRC‑12)**, **232 (Rev.WRC‑15)** and **749 (Rev.WRC‑12)**, as appropriate. This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.    (WRC‑15)

MOD RCC/8A2/5

RESOLUTION 232 (rev.WRC‑15)

Use of the frequency band 694-790 MHz by systems in the mobile, except aeronautical mobile, service in Region 1

The World Radiocommunication Conference (Geneva, 2015),

considering

*a)* that WRC‑12 allocated the band 694-790 MHz to the mobile, except aeronautical mobile, service on a primary basis in Region 1 and identified it for IMT under the conditions set out in Resolution **232 (WRC**‑**12)**;

*b)* that some administrations are planning to use the band 694-862 MHz, or part of that band, for IMT;

*c)* that the frequency band 470-806/862 MHz is allocated to the broadcasting service on a primary basis in all three Regions and used predominantly by this service, and that the GE06 Agreement applies in all Region 1 countries, except Mongolia, and in the Islamic Republic of Iran in Region 3;

*d)* that the band 645-862 MHz is allocated on a primary basis to the aeronautical radionavigation service in the countries listed in No. **5.312**;

*e)* that Resolution **232 (WRC‑12)** provided for specification of the technical and regulatory conditions applicable to the mobile service allocation in the band 694-790 MHz, taking into account the results of ITU‑R studies, including studies on compatibility between the mobile service and other services currently allocated in the frequency band 694-790 MHz,

noting

*a)* that, as a result of the transition from analogue to digital terrestrial television broadcasting, some countries are planning to make, or are making, the band 694-862 MHz, or parts of that band, available for applications in the mobile service;

*b)* that the timing of the deployment of IMT in the band 694-790 MHz is likely to vary from country to country, and that while some administrations may decide to use all or part of the band for IMT, other countries may continue to operate the broadcasting service and/or other services to which the band is also allocated;

*c)* that the transition from analogue to digital television or from one generation of digital television systems to another will result in situations where parts or all of the band 470-806/862 MHz will be used extensively for the simultaneous operation of different television systems, and that the demand for spectrum during the transition period may be even greater than the stand-alone usage of analogue broadcasting systems,

recognizing

*a)* that some countries also plan to use the band 470-862 MHz for HDTV and other higher definition modes of television broadcasting;

*b)* that in the band 694-790 MHz in Region 1, in accordance with No. **5.296**, a number of countries have deployments of applications ancillary to broadcasting and programme-making, operating on a secondary basis, which provide tools for the daily content production for the broadcast service;

*c)* that in accordance with Resolution ITU‑R 59, studies are being carried out regarding possible solutions for global/regional harmonization of frequency bands and tuning ranges for terrestrial electronic news gathering in frequency bands that are already allocated to the fixed service, mobile service or broadcasting service;

*d)* that the time-frame and transition period for the analogue to digital television switchover may not be the same for all countries;

*e)* that questions of equitable access to spectrum in the GE06 Plan can be resolved on a bilateral or multilateral basis;

*f)* that in some countries, use of the band 694-790 MHz by the mobile service may necessitate modification of the GE06 Plan in the band 470-694 MHz to compensate for spectrum losses on the part of the broadcasting service,

resolves

1 that use of the band 694-790 MHz in Region 1 by the mobile, except aeronautical mobile, serviceissubject to agreement obtained under No. **9.21** with respect to the aeronautical radionavigation service (ARNS) in countries listed in No. **5.312**, in which regard the criteria for identifying affected administrations under No. 9.21 for the mobile service with respect to the ARNS in the band 694-790 MHz are set out in Annex 1 to this resolution;

2 that to ensure compatibility with the broadcasting service, the use of the allocation to the mobile service in the frequency band 694-790 MHz shall be carried out under the following conditions:

– IMT stations shall not use frequencies below 703 MHz;

– any emissions of user equipment (UE) shall not exceed −52 dBm/8 MHz in the frequency band 470-694 MHz;

– field strength from a mobile service station at the border of another country shall not exceed the values given in Annex 2 to this resolution. When these levels are exceeded, the procedure for coordination defined in the GE06 Agreement should be applied, unless otherwise agreed with affected administrations,

invites ITU-R

1 to continue to study the compatibility between the mobile service and other services currently allocated in the frequency band 694-790 MHz and develop ITU‑R Recommendations or Reports to assist administrations in effecting coordination of the mobile service with other primary services in the band 694-790 MHz and identifying interference mitigation techniques;

2 to continue to pursue studies on the implementation ofapplications ancillary to broadcasting and programme-making on the basis of Resolution ITU‑R 59,

invites the Director of the Radiocommunication Bureau

to work, in cooperation with the Director of the Telecommunication Development Bureau, to bring assistance to developing countries wishing to implement the new mobile allocation in order to help these administrations to determine the modifications of the Geneva-06 Plan necessary to keep sufficient capacity for broadcasting.

Annex 1 to resolution 232 (rev.WRc‑15)

Criteria for the identification of affected administrations under No. 9.21  
for the mobile service in the 694-790 MHz frequency band

To identify affected administrations when applying the procedure for seeking agreement under No. **9.21** by the mobile service (MS) with respect to the aeronautical radionavigation service (ARNS) operating in countries mentioned in No. **5.312**, the coordination distances (between a base station in the MS and a potentially affected ARNS station) indicated below should be used. Table 1 shows the coordination distances for the case of operation of a mobile station in accordance with a frequency plan under which the base stations transmit only in the band 758-788 MHz and receive only in the band 703-733 MHz. Table 2 shows the coordination distances for all cases other than the one described above.

Notifying administrations may indicate in the notice sent to BR the list of administrations with which bilateral agreement has already been reached. BR shall take this into account in determining the administrations with which coordination under No. **9.21** is required.

Table 1

|  |  |  |  |
| --- | --- | --- | --- |
| ARNS station | System type code | Coordination distances for the receiving MS base stations (km) | Coordination distances for the transmitting MS base stations (km) |
| RSBN (ground receiver) | AA8 | - | 70/125/175\* |
| \* 90% ≤ land path ≤ 100% / 50% ≤ land path < 90% / 0% ≤ land path < 50%. | | | |

Table 2

|  |  |  |  |
| --- | --- | --- | --- |
| ARNS station | System type code | Coordination distances for the receiving MS base stations (km)3 | Coordination distances for the transmitting MS base stations (km) |
| RSBN | AA8 | 50 | 125/175\* |
| RLS 2 (type 1) (airborne receiver) | BD | 410 | 432 |
| RLS 2 (type 1) (ground receiver) | BA | 50 | 250/275\* |
| RLS 2 (type 2) (airborne receiver) | BC | 150 | 432 |
| RLS 2 (type 2) (ground receiver) | AA2 | 50/75\* | 300/325\* |
| RLS 1 (types 1 and 2) (ground receiver) | AB | 125/175\* | 400/450\* |
| Other ARNS ground stations | Not applied | 125/175\* | 400/450\* |
| Other ARNS airborne stations | Not applied | 410 | 432 |
| \* 50% ≤ land path ≤ 100% / 0% ≤ land path < 50%.  \*\* The coordination distances for receiving MS base stations are based on the protection of ARNS stations from mobile stations and do not guarantee the protection of receiving MS base stations from ARNS stations. | | | |

Annex 2 to resolution 232 (rev.wrc-15)

Limits for the field strength produced by mobile service stations at the   
border of an affected administration to ensure the protection of   
terrestrial broadcasting services

|  |  |  |
| --- | --- | --- |
| Service to be protected | Field-strength limit (dB(µV/m))(1) | |
| 703-718 MHz | 718-790 MHz |
| Terrestrial broadcasting | 2 | 4 |
| (1) The trigger field-strength values are related to an 8 MHz bandwidth and a height of 10 m above ground level for 1% of time and 50% of locations. For evaluation of field strength, the method given in Recommendation ITU‑R P.1546 shall be used. | | |

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