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| **World Radiocommunication Conference (WRC-15) Geneva, 2–27 November 2015** |  |
| **INTERNATIONAL TELECOMMUNICATION UNION** |  |
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| PLENARY MEETING | **Addendum 7 to Document 85-E** |
|  | **15 July 2015** |
|  | **Original: English** |
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| Burundi (Republic of)/Kenya (Republic of)/Uganda (Republic of)/  Rwanda (Republic of)/Tanzania (United Republic of) | |
| Proposals for the work of the conference | |
|  | |
| Agenda item 1.7 | |

1.7 to review the use of the band 5 091-5 150 MHz by the fixed-satellite service (Earth-to-space) (limited to feeder links of the non-geostationary mobile-satellite systems in the mobile-satellite service) in accordance with Resolution **114 (Rev.WRC‑12)**;

Introduction

Resolution 114 (Rev.WRC‑12) calls for a review of allocations to both the aeronautical radionavigation service (ARNS) and the fixed‑satellite service (FSS) in the band 5 091-5 150 MHz. In particular, studies are called for in *resolves* 3 between any new ARNS and the systems of the FSS providing feeder links of non‑GSO systems in the mobile-satellite service (MSS) (Earth‑to‑space). In the *invites*, ICAO is asked to supply technical and operational criteria suitable for sharing studies for new aeronautical systems. During the study cycle, no additional information was received from ICAO in regards to the *invites* 1 in Resolution 114 (Rev.WRC-12) as no new ARNS systems in the band 5 091-5 150 MHz are foreseen other than the international standard system (microwave landing system (MLS)) for precision approach and landing. On this basis, no new studies were required in the band 5 091‑5 150 MHz and ITU-R concluded that the regulatory conditions contained in Resolution 114 (Rev.WRC-12) and the technical and operational requirements contained in Recommendation ITU-R S.1342 will continue to ensure the compatibility of the FSS providing Earth-to-space feeder links in the band 5 091‑5 150 MHz and international standard MLS operating in the adjacent band 5 030-5 091 MHz. Accordingly, the time limitations attached to the FSS allocation can be suppressed, while maintaining the application of Resolution 114 (Rev.WRC-12), with consequential modifications.

EACO member countries (BDI/KEN/UGA/RRW/TZA) support the proposed method in the CPM Report.

Proposal

BDI/KEN/UGA/RRW/TZA (EACO member countries) propose the following according to the proposed method:

ARTICLE 5

Frequency allocations

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

MOD BDI/KEN/UGA/RRW/TZA/85A7/1

4 800-5 570 MHz

|  |  |  |
| --- | --- | --- |
| Allocation to services | | |
| Region 1 | Region 2 | Region 3 |
| 5 091-5 150 FIXED-SATELLITE (Earth-to-space) 5.444A  AERONAUTICAL MOBILE 5.444B  AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA  AERONAUTICAL RADIONAVIGATION  5.444 | | |
| 5 150-5 250 FIXED-SATELLITE (Earth-to-space) 5.447A  MOBILE except aeronautical mobile 5.446A 5.446B  AERONAUTICAL RADIONAVIGATION  5.446 5.446C 5.447 5.447B 5.447C | | |

**Reasons:** The FSS allocation has been moved from footnote RR No. 5.444A to the Table of Frequency Allocations as a consequence of rendering the FSS allocation without time limits.

MOD BDI/KEN/UGA/RRW/TZA/85A7/2

5.444A The use of the allocation to the fixed‑satellite service (Earth-to-space) in the band 5 091-5 150 MHz is limited to feeder links of non‑geostationary satellite systems in the mobile-satellite service and is subject to coordination under No. **9.11A**. The use of the band 5 091-5 150 MHz by feeder links of non‑geostationary satellite systems in the mobile-satellite service shall be subject to application of Resolution **114 (Rev.WRC‑15)**. Moreover, to ensure that the aeronautical radionavigation service is protected from harmful interference, coordination is required for feeder-link earth stations of the non-geostationary satellite systems in the mobile-satellite service which are separated by less than 450 km from the territory of an administration operating ground stations in the aeronautical radionavigation service.

**Reasons:** To remove time limitations from the FSS allocation (limited to feeder links of non-geostationary systems in the MSS), while keeping all the other applicable regulatory provisions, i.e. RR No. 9.11A and Resolution 114 (Rev.WRC-15).

APPENDIX 7 (REV.WRC‑12)

Methods for the determination of the coordination area around an earth  
station in frequency bands between 100 MHz and 105 GHz

ANNEX 7

System parameters and predetermined coordination distances for determination of the coordination area around an earth station

# 3 Horizon antenna gain for a receiving earth station with respect to a transmitting earth station

MOD BDI/KEN/UGA/RRW/TZA/85A7/3

TABLE 10     (WRC‑15)

Predetermined coordination distances

|  |  |  |
| --- | --- | --- |
| Frequency sharing situation | | Coordination distance (in sharing situations involving services allocated with equal rights) (km) |
| Type of earth station | Type of terrestrial station |
| Ground-based in the bands below 1 GHz to which No. **9.11A** applies. Ground-based mobile in the bands within the range 1‑3 GHz to which No. **9.11A** applies | Mobile (aircraft) | 500 |
| Aircraft (mobile) (all bands) | Ground-based | 500 |
| Aircraft (mobile) (all bands) | Mobile (aircraft) | 1 000 |
| Ground-based in the bands:  400.15-401 MHz 1 668.4-1 675 MHz | Station in the meteorological aids service (radiosonde) | 580 |
| Aircraft (mobile) in the bands:  400.15-401 MHz 1 668.4-1 675 MHz | Station in the meteorological aids service (radiosonde) | 1 080 |
| Ground-based in the radiodetermination-satellite service (RDSS) in the bands:  1 610-1 626.5 MHz 2 483.5-2 500 MHz  2 500-2 516.5 MHz | Ground-based | 100 |
| Airborne earth station in the radiodetermination-satellite service (RDSS) in the bands:  1 610-1 626.5 MHz 2 483.5-2 500 MHz 2 500-2 516.5 MHz | Ground-based | 400 |
| Receiving earth stations in the meteorological-satellite service | Station in the meteorological aids service | The coordination distance is considered to be the visibility distance as a function of the earth station horizon elevation angle for a radiosonde at an altitude of 20 km above mean sea level, assuming 4/3 Earth radius (see Note 1) |
| Non-GSO MSS feeder‑link earth stations (all bands) | Mobile (aircraft) | 500  (see Note 2) |
| Ground-based in the bands in which the frequency sharing situation is not covered in the rows above | Mobile (aircraft) | 500 |
| NOTE 1 – The coordination distance, *d* (km), for fixed earth stations in the meteorological-satellite service vis-à-vis stations in the meteorological aids service assumes a radiosonde altitude of 20 km and is determined as a function of the physical horizon elevation angle ε*h* (degrees) for each azimuth, as follows:  for          ε*h*  ≥  11°  for 0° < ε*h*  <  11°  for          ε*h*  ≤  0°  The minimum and maximum coordination distances are 100 km and 582 km, and correspond to physical horizon angles greater than 11° and less than 0°. (WRC‑2000)  NOTE 2 – For the coordination distance in the band 5 091-5 150 MHz vis-à-vis stations in the aeronautical radionavigation service, see No. **5.444A**.      (WRC‑15) | | |

**Reasons:** In order to avoid any confusion, the coordination distance vis-à-vis a specific service determined by a specific footnote (i.e. RR No. 5.444A) needs to be specified.

MOD BDI/KEN/UGA/RRW/TZA/85A7/4

RESOLUTION 114 (Rev.WRC‑15)

Compatibility between new systems of the aeronautical radionavigation service and the fixed-satellite service (Earth-to-space)   
(limited to feeder links of the non-geostationary mobile-satellite   
systems in the mobile-satellite service) in the   
frequency band 5 091-5 150 MHz

The World Radiocommunication Conference (Geneva,2015),

considering

*a)* the current allocation of the frequency band 5 000-5 250 MHz to the aeronautical radionavigation service;

*b)* the requirements of both the aeronautical radionavigation and the fixed-satellite (FSS) (Earth-to-space) (limited to feeder links of non-geostationary satellite (non‑GSO) systems in the mobile-satellite service (MSS)) services in the above-mentioned band,

recognizing

*a)* that priority must be given to the microwave landing system (MLS) in accordance with No. **5.444** and to other international standard systems of the aeronautical radionavigation service in the frequency band 5 030-5 091 MHz;

*b)* that, in accordance with Annex 10 of the Convention of the International Civil Aviation Organization (ICAO) on international civil aviation, it may be necessary to use the frequency band 5 091-5 150 MHz for the MLS if its requirements cannot be satisfied in the frequency band 5 030-5 091 MHz;

*c)* that the FSS providing feeder links for non-GSO systems in the MSS will need continuing access to the frequency band 5 091-5 150 MHz,

noting

*a)* that Recommendation ITU‑R S.1342 describes a method for determining coordination distances between international standard MLS stations operating in the band 5 030-5 091 MHz and FSS earth stations providing Earth-to-space feeder links in the band 5 091-5 150 MHz;

*b)* the small number of FSS stations to be considered,

resolves

that administrations authorizing stations providing feeder links for non-GSO systems in the MSS in the frequency band 5 091-5 150 MHz shall ensure that they do not cause harmful interference to stations of the aeronautical radionavigation service,

invites administrations

when assigning frequencies in the band 5 091-5 150 MHz to stations of the aeronautical radionavigation service or to stations of the FSS providing feeder links of the non-GSO systems in the MSS (Earth-to-space), to take all practicable steps to avoid mutual interference between them,

instructs the Secretary-General

to bring this Resolution to the attention of ICAO.

**Reasons:** Consequential changes as a result of rendering the FSS allocation (limited to feeder links of non-geostationary systems in the mobile-satellite service) without time limits.

MOD BDI/KEN/UGA/RRW/TZA/85A7/5

RESOLUTION 748 (REV.WRC‑15)

Compatibility between the aeronautical mobile (R) service and the fixed-satellite service (Earth-to-space) in the band 5 091-5 150 MHz

The World Radiocommunication Conference (Geneva,2015),

considering

*a)* that the allocation of the 5 091-5 150 MHz band to the fixed-satellite service (FSS) (Earth-to-space) is limited to feeder links of non-geostationary-satellite (non-GSO) systems in the mobile-satellite service (MSS);

*b)* that the frequency band 5 000-5 150 MHz is currently allocated to the aeronautical mobile-satellite (R) service (AMS(R)S), subject to agreement obtained under No. **9.21**, and to the aeronautical radionavigation service (ARNS);

c) that WRC‑07 allocated the band 5 091-5 150 MHz to the aeronautical mobile service (AMS) on a primary basis subject to No. **5.444B**;

*d)* that the International Civil Aviation Organization (ICAO) is in the process of identifying the technical and operating characteristics of new systems operating in the AM(R)S in the band 5 091-5 150 MHz;

*e)* that the compatibility of one AM(R)S system, to be used by aircraft operating on the airport surface, and the FSS has been demonstrated in the 5 091-5 150 MHz band;

*f)* that ITU-R studies have examined potential sharing among aeronautical applications and the FSS in the band 5 091-5 150 MHz;

*g)* that the frequency band 117.975-137 MHz currently allocated to the AM(R)S is reaching saturation in certain areas of the world, and therefore that band would not be available to support additional surface applications at airports;

*h)* that this new allocation is intended to support the introduction of applications and concepts in air traffic management which are data intensive, and which will support data links that carry safety-critical aeronautical data,

recognizing

*a)* that in the frequency band 5 030-5 091 MHz priority is to be given to the microwave landing system (MLS) in accordance with No. **5.444**;

*b)* that ICAO publishes recognized international aeronautical standards for AM(R)S systems;

*c)* that Resolution **114 (Rev.WRC‑15)** applies to the sharing conditions between the FSS and ARNS in the 5 091-5 150 MHz band,

noting

*a)* that the number of FSS transmitting stations required may be limited;

*b)* that the use of the band 5 091-5 150 MHz by the AM(R)S needs to ensure protection of the current or planned use of this band by the FSS (Earth-to-space);

*c)* that ITU-R studies describe methods for ensuring compatibility between the AM(R)S and FSS operating in the band 5 091-5 150 MHz, and compatibility has been demonstrated for the AM(R)S system referred to in *considering e)*,

resolves

1 that any AM(R)S systems operating in the band 5 091-5 150 MHz shall not cause harmful interference to, nor claim protection from, systems operating in the ARNS;

2 that any AM(R)S systems operating in the frequency band 5 091-5 150 MHz shall meet the SARPs requirements published in Annex 10 of the ICAO Convention on International Civil Aviation and the requirements of Recommendation ITU‑R M.1827-1, to ensure compatibility with FSS systems operating in that band;

3 that, in part to meet the provisions of No. **4.10**, the coordination distance with respect to stations in the FSS operating in the band 5 091-5 150 MHz shall be based on ensuring that the signal received at the AM(R)S station from the FSS transmitter does not exceed −143 dB(W/MHz), where the required basic transmission loss shall be determined using the methods described in Recommendations ITU‑R P.525‑2 and ITU‑R P.526‑11,

invites

1 administrations to supply technical and operational criteria necessary for sharing studies for the AM(R)S, and to participate actively in such studies;

2 ICAO and other organizations to actively participate in such studies,

instructs the Secretary-General

to bring this Resolution to the attention of ICAO.

**Reasons:** To improve the operational flexibility of the aeronautical-mobile (Route) service and to reflect the revision of Recommendation ITU-R M.1827.

NOTE - Resolution 748 (Rev.WRC-12) is referred to in *recognizing c)* of Resolution 418 (Rev.WRC-12). Should WRC-15 revise Resolution 748 (Rev.WRC-12), a consequential update of the reference would be needed in Resolution 418 (Rev.WRC-12).

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