|  |  |  |  |
| --- | --- | --- | --- |
| A close up of a sign  Description automatically generated | **World Radiocommunication Conference (WRC-23) Dubai, 20 November - 15 December 2023** | |  |
|  | |  | |
|  | |  | |
| PLENARY MEETING | | **Addendum 15 to Document 148-E** | |
|  | | **25 October 2023** | |
|  | | **Original: English** | |
|  | | | |
| Iran (Islamic Republic of) | | | |
| Proposals for the work of the conference | | | |
|  | | | |
| Agenda item 1.15 | | | |

1.15 to harmonize the use of the frequency band 12.75-13.25 GHz (Earth-to-space) by earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service globally, in accordance with Resolution **172 (WRC‑19)**;

Introduction

The World Radiocommunication Conference 2019 (WRC-19) adopted agenda item 1.15 that calls for studies on the possible operation of earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service in the frequency band 12.75-13.25 GHz (Earth-to-space), in accordance with Resolution **172 (WRC-19)**.

The ITU has addressed aeronautical and maritime earth stations operating with GSO FSS satellites in Study Group 4 and at several WRCs that adopted technical and regulatory regimes to allow such operations. In the Radio Regulations Resolution **902 (WRC-03)** and Resolution **169 (WRC-19)** define technical and regulatory rules to allow GSO FSS networks to communicate with earth stations on aircraft or vessels to provide broadband communications.

WRC-15 adopted Resolution **156 (WRC-15)** allowing the use of ESIM communicating with GSO FSS networks in the 19.7-20.2 GHz and 29.5-30.0 GHz bands and WRC-19 adopted Resolution 1**69 (WRC-19)** allowing the use of ESIM communicating with GSO FSS networks in the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz.

Resolution **172 (WRC-19)** calls for studies to ensure that RR Appendix **30B** allotments and assignments as well as other allocated services to which the frequency band is allocated are protected.

Sharing studies are needed in ITU-R to ensure protection of the other primary services in the band such as fixed-satellite Service, fixed service, and mobile service, as well as the protection of Earth exploration-satellite service (EESS) (active) and aeronautical radionavigation service operating in the adjacent band to 13.25-13.4 GHz.

For this agenda item, two methods have been identified:

̶ Method A: This method proposes no changes to the RR and suppression of Resolution **172 (WRC‑19)** due to the existence of various uncertainties in the implementation of several courses of action referred to in the potential Resolution associated with Method B.

̶ Method B: This method proposes to add a new footnote No. **5.A115** in RR Article **5** and a reference to a new WRC Resolution providing the conditions for the operation of ESIM and protection of the services to which the frequency bands are allocated, and consequential suppression of Resolution **172 (WRC‑19)**.

Discussion

In view of all problems, difficulties, inconsistencies, limitation of service area that according to the review by the BR of the service area of the Appendix **30B** assignments recorded in the Master International Frequency Register (MIFR) showed that generally the service areas of RR Appendix **30B** networks applied Article 6 and recorded in the List or MIFR are non-contiguous and the number of countries in these service areas ranges from one to fifty countries. Additionally, § 6.16 of RR Appendix **30B** provides that an administration may at any time exclude its territory from the service area of an AP**30B** assignment. Therefore, A-ESIM and M-ESIMs in the 12.75‑13.25 GHz band subject to this agenda item need to have the capability to restrict operations in territories of those administrations the agreement of which under § 6.6 has been obtained and authorization for A-ESIM and M-ESIM operations has been granted. Also, distinctive and specific aspects of RR Appendix **30B** including but not limited to Reference situations for all Plan allotments and assignments in the List.

This administration supports Method A **(NO CHANGE)**.

However, it may consider Method B, if, and only if, all remaining elements as mentioned below are finalized and agreed, taking into account the disclaimer text which has been placed at the beginning of the draft Resolution attached to CPM Report.

***Quote***

“There are several areas on which no consensus either on the text or on how to proceed with the implementation of this Resolution. Consequently, the text below is not consistent with *resolves* 9 of Resolution **172 (WRC-19)** as shown below.

9 to ensure that the results of ITU-R studies are agreed by Member States taking into account the required consensus on this matter;”

***Unquote***

The above-mentioned elements are:

– interference management mechanism to deal with interference occurs from operation of ESIM to other administrations;

– switching facility allowing transmission over these territories of countries which agreed to be included in the service area and/or authorized operation of the service on the territory under jurisdiction and no transmission over these countries if they are not in the service areas or they have not given their authorization for operation of that ESIM;

– methodology to enable the Radiocommunication Bureau to examine the conformity with pfd limit as contained in Annexes of draft resolution;

– lack of contiguous service area on regional and/ or worldwide, except merely one satellite network having regional service area;

– depositing a firm objective, enforceable and measurable commitment at the time of submission of RR Appendix **4** data element for planned ESIM(s);

– review by the RRB, as an enforceable mechanism in case of raising any problem during the implementation raised, by any administration in particular occurrence and persistence of unacceptable interference;

– deciding on responsibilities issues to be attributed to one single entity i.e. the notifying administration of the GSO satellite network if the ESIM is associated with that single GSO satellite network, or if multiple GSO satellite is used to provide service(s);

– various operative and mandatory parts stipulated and referred to in the associated Resolution;

– avoiding to impose and mandatory action(s) to the administration(s) authorizing the operation for the resolution of potential occurrence of any interference;

– the use of the frequency band 12.75-13.25 GHz (Earth-to-space) by earth stations on aircraft and vessels shall not limit the access of other administrations to their national resources in Appendix **30B** as well as implementation of Resolution **170 (WRC‑19)**;

– the use of the frequency band 12.75-13.25 GHz (Earth-to-space) by earth stations on aircraft and vessels shall not cause unacceptable interference to nor claim protection from the operation of terrestrial services and their future development. With respect to the sharing and compatibility studies between earth stations on aircraft and vessels and terrestrial services, the protection of terrestrial services shall be ensured under all circumstances and conditions in the various sharing scenarios;

– the implementation of ESIM shall ensure the protection of and shall not adversely affect the existing services and their future development, taking into account allotments in the Plan, assignments in Appendix **30B** List and those submitted under Articles 6 and 7 of Appendix **30B** as well as under Resolution **170 (WRC-19)**;

– supports the development of a methodology regarding examination by the Bureau of compliance with pfd limits by A-ESIM, or of adequate transitional measures should WRC‐23 not finalize the methodology;

– the use of earth stations on board aircraft and vessels shall not cause unacceptable interference (more than what is stipulated in relevant annexes to Appendix **30B** of the Radio Regulations) to allotments, assignments converted from allotments within the limits of initial characteristics as contained in Plan or modified characteristics, for providing services to national territory as well as those from application of Articles 6 and 7 of Appendix **30B** and those submitted under Resolution **170 (WRC-19)** as well as all existing and planned services in that **frequency** band and adjacent bands operating in accordance with the Radio Regulations;

– earth stations on board aircraft and vessels shall not claim protection from the allotment plan, assignments in the List of Appendix **30B** for national coverage, and other services including terrestrial services to which the frequency band is allocated and operating in accordance with the provisions of Radio Regulations;

– with respect to the sharing and compatibility studies between earth stations on board aircraft and vessels communicating with geostationary space stations in the fixed-satellite service and the fixed service in the frequency band 12.75-13.25 GHz, both long-term and short-term interference scenarios under relevant ITU-R Recommendations should be considered and carried out in these studies;

– for the operation of A-ESIM and M-ESIM, the technical, operational and regulatory provisions including responsibilities of administrations and entities responsible for the operation, authorization and the interference management system of these earth stations need to be clearly defined;

– the only administration that could notify ESIM is the same administration as the one notifying the GSO network to which the ESIM communicate. Thus, notification of any frequency assignment for ESIMs shall only be made by one single administration, which will be responsible for resolving potential interference, operational issues and monitoring of ESIM to comply with the Radio Regulations as well as other tasks mentioned in the associated Resolution. Therefore, the notifying administration of the satellite system is responsible for the compliance of ESIM with all relevant regulatory and administrative provisions including cases of interferences;

– an administration the territory of which is situated inside the service area of a satellite and has provided explicit authorization to receive the service/ to be served by any type of ESIM, unless that administration has formally and explicitly agreed to collaborate within its technical ability and possibility to provide assistance, has no obligation nor any mandate, whatsoever, to be involved directly or indirectly in detection, identification, reporting, resolution of any interference caused by the operation of the ESIM the operation of which was authorized;

– the notifying administration of the GSO satellite network is also responsible for ensuring that ESIMs operate only in the territories under the jurisdiction of any administration / country which:

*a)* located within the service area of the space station,

*b)* explicit agreement to that effect was obtained and,

*c)* the required authorization for operation over its territory was sought and explicitly granted from which explicit authorization has been obtained;

– A-ESIM and M-ESIMs in the 12.75‑13.25 GHz band need to have the capability to restrict operations in territories of those administrations the agreement of which under § 6.6 of RR Appendix **30B** has been obtained and authorization for A-ESIM and M‑ESIM operations has been granted;

– regarding the use of pfd mask in A-ESIM operation, it is an acceptable way to provide a pfd mask as guidance to administration intending to authorize the operation of the A‑ESIMs to determine whether or not the interference which may be caused to its terrestrial stations/assignments are acceptable;

– the notifying administration of A-ESIM and M-ESIM when submitting Appendix **4** data elements to the Bureau shall also send a firm commitment undertaking that in case of any interference to Allotment in the Plan, assignments in the List and MIFR shall immediately cease emission or reduce it to the minimum level acceptable to the interfered assignments of administration(s);

– the compliance with the relevant technical conditions (such as the pfd mask of A-ESIM and separation distance of M-ESIM) does not release the notifying administration of the ESIM with respect to discharging its responsibility that such earth station shall not cause unacceptable interference to nor claim protection from terrestrial stations/ assignments;

– an administration authorizing the operation of A-ESIM and M-ESIM in their territories (air space and territorial waters) shall be within the service area of the subject satellite network and authorize the operation of the associated gateway earth station as needed;

– Any transmissions from M-ESIM within the minimum distance, as specified in the Resolution for this agenda item, in order to protect terrestrial services shall be subject to prior agreement of the concerned administration;

– For M-ESIM with respect to the terrestrial service, both long-term and short-term interference scenarios should be considered, in which [133 or X] km should be treated as the minimum distance for M-ESIM sharing and compatibility with FS from the low-water mark as officially recognized by the coastal State;

X: The minimum distance ranges from 86 to 190 km as the current result of ITU-R WP 4A studies;

– there are still several issues on the operation of ESIMs to be clarified and specified in the draft new Resolution **[A115]** **(WRC-23)**, such as interference management mechanism and its due functionality. Moreover, the proper function of switching facility to respond to authorization provided for the operation of ESIM as well as exclusion of territory of countries that did not agree with operation.

Proposals

This Administration supports Method A (NO CHANGE).

NOC IRN/148A15/1#1871

ARTICLES

**Reasons:** Based on the explanation mentioned above in section 2. Proposals.

NOC IRN/148A15/2#1872

APPENDICES

**Reasons:** Based on the explanation mentioned above in section 2. Proposals.

SUP IRN/148A15/3#1873

RESOLUTION 172 (WRC‑19)

Operation of earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service in the frequency band 12.75-13.25 GHz (Earth-to-space)

Alternative proposal

This Administration may consider Method B, if, and only if, all remaining elements as mentioned in discussion part are finalized and agreed, taking into account the disclaimer text which has been placed at the beginning of the draft resolution attached to CPM Report.

Also, below, several amendments to the draft new Resolution **[A115] (WRC-23)** contained in section 4/1.15/5.2 of the report of the CPM to the WRC-23, are proposed that could help develop Method B.

ADD IRN/148A15/4#1876

DRAFT new RESOLUTION [A115] (WRC‑23)

There are several areas on which there are no consensus either on the text or how to proceed with the implementation of this Resolution. Consequently, the text below is not consistent with *resolves* 9 of Resolution 1**72 (WRC-19)** as shown below.

9 to ensure that the results of ITU-R studies are agreed by Member States taking into account the required consensus on this matter;

Use of the frequency band 12.75-13.25 GHz by earth stations in motion   
on aircraft and vessels communicating with geostationary   
space stations in the fixed-satellite service

The World Radiocommunication Conference (Dubai, 2023),

considering

*a)* that WARC Orb‑88 established an Allotment Plan for the use of the frequency bands 4 500-4 800 MHz, 6 725-7 025 MHz, 10.70-10.95 GHz, 11.20-11.45 GHz and 12.75-13.25 GHz;

*b)* that WRC‑07 revised the regulatory regime governing the use of the frequency bands referred to in *considering a)* above;

*c)* that the objective of providing broadband mobile satellite communications may also be met by allowing earth stations in motion (ESIMs), on aircraft (A‑ESIMs) and vessels (M‑ESIMs), to communicate with the geostationary space stations of a fixed-satellite service network in the frequency band 12.75-13.25 GHz (Earth-to-space) and the associated downlink frequency bands of that satellite, thus for example the frequency bands 10.70-10.95 GHz and 11.20-11.45 GHz of Appendix **30B** may be used;

*d)* that the frequency band 12.75-13.25 GHz is currently allocated on a primary basis to the fixed-satellite service (FSS) (Earth-to-space), fixed and mobile services and on a secondary basis to the space research (deep space) (space-to-Earth) service;

*e)* that the operation of services to which the frequency band 12.75-13.25 GHz is allocated and those in adjacent bands needs to be protected from A‑ESIM and M‑ESIM;

*f)* that the frequency band 12.75-13.25 GHz (Earth-to-space) is used by the geostationary-satellite orbit (GSO) FSS in accordance with the provisions of Appendix **30B** (No. **5.441**) and that there are many existing GSO FSS satellite networks operating in this frequency band;

*g)* that the objective of the procedures in Appendix **30B** is to guarantee, for all countries, equitable access to the GSO in the frequency bands of the FSS covered by this Appendix;

*h)* that appropriate regulatory and interference-management mechanisms, including necessary mitigation measures and associated techniques, are required for the operation of A‑ESIM and M‑ESIM in the frequency band 12.75-13.25 GHz (Earth-to-space) to protect other space and terrestrial services in this frequency band as well as services in adjacent frequency bands and without adversely affecting those services and their future development, taking into account the provisions of Appendix **30B** (see also *resolves* *further* 1 to 5 on responsibilities);

*i)* that, in Appendix **30B**, the frequency bands in the space-to-Earth direction corresponding to the frequency band 12.75-13.25 GHz (Earth-to-space) are 10.7-10.95 GHz and 11.2‑11.45 GHz, which may be used by A‑ESIM and M‑ESIM, subject to not claiming protection from other services and applications of the FSS and other radiocommunication services to which the frequency band is allocated;

*j)* that there is no publicly available information on coordination agreements reached among administrations regarding GSO FSS satellite networks except whether coordination has been completed, which is provided to, and published by, the Radiocommunication Bureau (BR);

*k)* that the operation of A‑ESIM and M‑ESIM requires the establishment of one or more gateway earth station facilities in one or several countries that are within the service area of the associated satellite network and that are authorized by the administration of the territory where such earth stations are located,

considering further

*a)* that A‑ESIMs and M‑ESIMs operating within the agreed service area of the satellite network with which they communicate may provide service within the territories under the jurisdiction of multiple administrations;

*b)* that the operation of ESIMs within the territory under the jurisdiction of administrations/countries mentioned in *considering further a)* above is subject to obtaining authorization from those administrations,

recognizing

*a)* that Article 44 of the ITU Constitution contains the basic principles for the use of the radio-frequency spectrum and the GSO and other satellite orbits, taking into account the needs of developing countries;

*b)* that administrations intending to authorize A‑ESIMs and M‑ESIMs, when establishing national licensing rules, may consider adopting other interference management procedures and/or mitigation measures than those contained in this Resolution;

*c)* that, pursuant to the relevant paragraph in Appendix **30B**, the operation of ESIM in the frequency band 12.75-13.25 GHz could be only within the service area of the Appendix **30B** network for which the explicit agreement of any administration whose territory is partially or wholly included in this service area has been obtained;

*c bis)* that § 6.16 of Article 6 of Appendix **30B** provides the opportunity to any administration at any time to request that its territory be excluded from the service area of any assignment governed by Appendix **30B**, therefore the service area can change;

*d)* that the operation of an A‑ESIM and M‑ESIM pertaining to and communicating with a space station of a given satellite network needs that earth station to be within the coordinated and agreed service area of that satellite under the relevant provisions of Appendix **30B**;

*e)* that, based on the available information in the Bureau’s database in May 2022, there is no contiguous regional or worldwide coordinated and agreed service area for any satellite using the Appendix **30B** frequency band 12.75-13.25 GHz recorded in the Master International Frequency Register (MIFR);

*f)* that, in order for A‑ESIM and M‑ESIM to operate in the frequency band 12.75-13.25 GHz (Earth-to-space) of Appendix **30B** in the most efficient and operationally viable manner, having a contiguous regional or worldwide coordinated and agreed service area is an important issue to be taken into account;

*g)* that the administration authorizing ESIMs on the territory under its jurisdiction has the right to require that the ESIMs referred to above only use those assignments associated with GSO FSS networks which have been successfully coordinated, notified, brought into use and recorded in the MIFR with a favourable finding under § 8.11 of Article 8 of Appendix **30B**, except those arising from the application of § 6.25 of Appendix **30B**;

*h)* that Resolution **170 (WRC‑19)** provides the procedure to enhance equitable access to frequency bands under Appendix **30B** by developing countries;

*i)* that the protection of current usage and future development of Appendix **30B** in the frequency band 12.75-13.25 GHz (Earth-to-space) is a fundamental issue without any adverse effect thereto;

*j)* that the availability of the methodology to examine conformity to the power flux-density (pfd) limit as contained in Annex 2 to this Resolution is a fundamental and crucial element;

*k)* that there is need to establish regulatory, technical and recording procedures for the usage of these type of ESIMs that may differ from the current FSS Appendix **30B** Plan and List recording procedures;

*l)* that successful compliance with this Resolution does not oblige any administration to authorize/license A‑ESIM and M‑ESIM communicating with geostationary space stations in the FSS in the frequency band 12.75‑13.25 GHz (Earth-to-space) to operate within the territory under its jurisdiction (see *resolves*7);

Option 1

*m)* that affected administrations retain their right to directly contact the aircraft or vessel on which the ESIM operates;

*n)* that any administration experiencing unacceptable interference from an ESIM may request the assistance of the administration authorizing the ESIM on the territory under its jurisdiction;

Option 2

Not to add *m)* and *n)*

*o)* that, in accordance with Appendix **30B**, the examination of the Bureau in the frequency band 12.75-13.25 GHz (Earth-to-space) is limited to the test-points on land, it is necessary to perform the examination of A‑ESIM and M‑ESIM using grid points generated everywhere within the service area of A‑ESIM and M‑ESIM submitted under Appendix **4** (see Annex 1 to this Resolution),

recognizing further

*a)* that, under *resolves* 1.1.3 of this Resolution, frequency assignments to ESIMs need to be notified to the BR;

*b)* that, for the operation of ESIMs, notification of any frequency assignment under Annex 1 of this Resolution shall only be made by one single administration which is the notifying administration of the GSO FSS network with which ESIMs communicate;

*c)* that an administration authorizing the operation of ESIMs within the territory under its jurisdiction may modify and/or withdraw that authorization at any time;

*d)* that the three elements consisting of interference management mechanism, switching facility for on/off function and the function of NCMC and their relations with each other and sequence of actions together with estimated time for that action/function are needed for the proper and factual operation of the ESIM;

**Option** 1 see *resolves* 1.17, 1.1.8 and 1.19 for **Option 2**

*e)* the operation of A‑ESIM and M‑ESIM shall comply with provision No. **5.340**;

*f)* when the Appendix **30B** GSO FSS satellite network with which A‑ESIM and M‑ESIM communicate transmits in the frequency bands 10.7-10.95 GHz and 11.2‑11.45 GHz, it shall operate under the levels that were coordinated and included in the List, and these Appendix **30B** satellite transmissions will not change to accommodate A‑ESIM and M‑ESIM;

*g)* the operation of A‑ESIM and M‑ESIM in the frequency bands 10.7‑10.95 GHz and 11.2‑11.45 GHz, if any, shall not adversely affect the allotments in the Plan or the assignments in the List and not claim protection from other applications of the FSS as well as other radiocommunication services to which the frequency band is allocated,

resolves

1 that, for any A‑ESIM and M‑ESIM communicating with a GSO FSS space station within the frequency band 12.75-13.25 GHz (Earth-to-space) or parts thereof, the following conditions shall apply:

1.1 with respect to space services in the frequency band 12.75-13.25 GHz and adjacent bands, A‑ESIM and M‑ESIM shall comply with the following conditions:

1.1.1 the use of the frequency band 12.75-13.25 GHz (Earth-to-space) by A‑ESIM and M‑ESIM shall not result in any changes or restrictions to the allotment in the Plan, assignments in the List of Appendix **30B**, and those recorded in the MIFR, including the assignments arising from the implementation of Resolution **170 (WRC‑19)**;

1.1.2 with respect to satellite networks or systems of other administrations, the characteristics of A‑ESIM and M‑ESIM shall remain within the envelope of typical characteristics of notified earth stations associated with the satellite networks with which these earth stations communicate, as published by the Bureau and included in relevant International Frequency Information Circular (BR IFIC), and Annex 1 applies;

1.1.2*bis* the use of A‑ESIM and M‑ESIM shall not cause any interference to Appendix **30B** allotments, assignments received by the Bureau under Article 6 either in process or yet to be processed, assignments in the List, assignments notified under Article 8 of that Appendix, and assignments recorded in the MIFR as well as submission under Appendix **30B** beyond that specified in the relevant Annexes to that Appendix;

1.1.3 for the implementation of *resolves* 1.1.1, 1.1.2 and 1.1.2*bis* above, the notifying administration for the GSO FSS network with which the above-mentioned A‑ESIM and M‑ESIM communicate shall follow the procedure in Annex 1 of this Resolution, together with the commitment that the operation of ESIM shall be in conformity with the Radio Regulations, including this Resolution;

1.1.4 upon receipt of the notification information referred to in *resolves* 1.1.3 above, the BR shall process the submission in accordance with Annex 1 of this Resolution;

1.1.5 for the protection of non-GSO FSS systems operating in the frequency band 12.75-13.25 GHz, the above-mentioned A‑ESIM and M‑ESIM communicating with GSO FSS networks referred to above shall comply with the provisions contained in Annex 3 of this Resolution;

1.1.6 the notifying administration of the GSO FSS network with which the above-mentioned earth stations communicate shall ensure that the operation of these A‑ESIM and M‑ESIM complies with the coordination agreements for the frequency assignments of the earth station of this GSO FSS satellite network of Appendix **30B** obtained under the relevant provisions of that Appendix;

**Option 2** (See *recognizing* *further* *a)*, *b)* and *c)* for **Option 1**)

1.1.7 the operation of A‑ESIM and M‑ESIM shall comply with provision No. **5.340**;

1.1.8 when the Appendix **30B** GSO FSS satellite network with which A‑ESIM and M‑ESIM communicate transmits in the frequency bands 10.7-10.95 GHz and 11.2‑11.45 GHz, it shall operate under the levels that were coordinated and included in the List, and these Appendix **30B** satellite transmissions will not change to accommodate A‑ESIM and M‑ESIM;

1.1.9 the operation of A‑ESIM and M‑ESIM in the frequency bands 10.7‑10.95 GHz and 11.2‑11.45 GHz, if any, shall not adversely affect the allotments in the Plan nor the assignments in the List and not claim protection from other applications of the FSS as well as other radiocommunication services to which the frequency band is allocated;

1.2 with respect to the protection of terrestrial services to which the frequency band 12.75-13.25 GHz is allocated and that operate in accordance with the Radio Regulations, A‑ESIM and M‑ESIM shall comply with the following conditions:

1.2.1 transmitting A‑ESIM and M‑ESIM in the frequency band 12.75-13.25 GHz (Earth-to-space) shall not cause unacceptable interference to terrestrial services to which this frequency band is allocated and that operate in accordance with the Radio Regulations, and Annex 2 to this Resolution shall apply;

1.2.2 the receiving part of the above-mentioned ESIM in their associated frequency band shall not claim protection from terrestrial services to which this frequency band is allocated and that operate in accordance with the Radio Regulations;

1.2.3 the requirement to not cause unacceptable interference to terrestrial services to which the frequency band 12.75-13.25 GHz is allocated and that operate in accordance with the Radio Regulations shall be respected, irrespective of compliance with Annex 2 (see *resolves*7);

1.2.4 for the application of Part II of Annex 2 as referred to in *resolves*1.2.1 above, the BR shall examine the characteristics of A‑ESIM with respect to the conformity with the pfd limits on the Earth’s surface specified in Part II of Annex 2, and publish the results of such examination in the BR IFIC;

**Option 1**

1.2.5 however, the compliance with the technical conditions in Annex 2 does not release the notifying administration of the A‑ESIM and M‑ESIM with respect to discharging its responsibility that such earth station shall not cause unacceptable interference and any interrelated receiving part shall not claim protection from the terrestrial stations;

**Option 1 deletes 1.2.6 and 1.2.7**

**Option 2**

1.2.5 the compliance with the technical conditions in Annex 2 does not release the notifying administration of the A‑ESIM and M‑ESIM with respect to discharging its responsibility that such earth station shall not cause unacceptable interference and any interrelated receiving part shall not claim protection from the terrestrial stations;

1.2.6 if the BR is unable to examine, in accordance with *resolves* 1.2.4 above, the A‑ESIM with respect to conformity with the pfd limits on the Earth’s surface specified in Part II of Annex 2, the notifying administration shall send to BR a commitment that the A‑ESIM shall comply with those limits;

1.2.7 the BR shall formulate a qualified favourable finding with respect to the limits contained in Part II of Annex 2 if *resolves* 1.2.6 is applied successfully, otherwise it shall formulate an unfavourable finding;

1.2.7*bis* that, after the application of *resolves*1.2.6 and 1.2.7 successfully, once the methodology to examine the characteristics of aeronautical GSO ESIMs with respect to conformity with the pfd limits on the Earth’s surface specified in Part II of Annex 2 is available, *resolves*1.2.4 shall be applied by the Bureau;

**End of** **Option 2**

1.2.8 if administrations authorizing A‑ESIM agree to pfd levels higher than the limits contained in Part II of Annex 2 within the territory under its jurisdiction, such agreement shall in no way affect other countries that are not party to that agreement;

1.2.9 the following obligation and statement shall be submitted to the Bureau:

*a)* the notifying administration of GSO-ESIMs when submitting Appendix **4** information / data elements shall also send a firm objective, measurable, enforceable with actionable evidence commitment that in case of reported unacceptable interference shall immediately cease the interference or reduce it to an acceptable level. Such commitment shall be objective, measurable and enforceable;

*b)* in the commitment the notifying administration of GSO ESIMs shall state that in case of no action taken in regard with obligation referred to in *a)* above the Bureau shall send a reminder and request that administration to comply with the requirements referred to in commitment;

*c)* should the interference persist 30 days after the dispatch date of the above- mentioned reminder, the Bureau shall submit the case to the subsequent meeting of the RRB for review and eventual suppression from the date base of the Bureau and inform the notifying administration accordingly;

1.3 with respect to the aeronautical radionavigation systems operating in the frequency band 13.25-13.4 GHz, A‑ESIM and M‑ESIM communicating with GSO FSS networks shall not cause unacceptable interference to the aeronautical radionavigation service (ARNS) operating in accordance with the Radio Regulations in the 13.25-13.40 GHz band;

Option 1

2 that, for assignments of Appendix **30B** recorded in the List, only frequency assignments entered in the List under § 6.17 can be used as supporting assignments by earth stations on aircraft and vessels communicating with GSO networks in the FSS in the frequency band 12.75-13.25 GHz (Earth-to-space), if those assignments are recorded in the MIFR with a favourable finding under § 8.11 of Article 8 of Appendix **30B**, except assignments recorded under § 6.25 of Article 6 of the Appendix;

Option 2

2 that only frequency assignments of Appendix **30B** recorded in the List can be used as supporting assignments by A‑ESIMs and M‑ESIMs communicating with GSO networks in the FSS in the frequency band 12.75-13.25 GHz (Earth-to-space), if those assignments are recorded in the MIFR with a favourable finding under § 8.11 of Article 8 of Appendix **30B**;

Option 3

2 that only frequency assignments of Appendix **30B** recorded in the List can be used as supporting assignments by A‑ESIMs and M‑ESIMs communicating with GSO networks in the FSS in the frequency band 12.75-13.25 GHz (Earth-to-space), if those assignments are recorded in the MIFR with a favourable finding under § 8.11 of Article 8 of Appendix **30B** provided that assignments recorded under § 6.25 of Article 6 used for A‑ESIM and M‑ESIM operations shall not cause unacceptable interference or claim protection from those assignments for which agreement was not obtained;

3 that operation of A‑ESIM and M‑ESIM communicating with GSO space stations in the FSS in the frequency band 12.75-13.25 GHz (Earth-to-space) shall be within the coordinated and notified service area of the GSO FSS network with which the earth stations communicate;

4 that, for the implementation of *resolves*3 above, the notifying administration for the GSO FSS network with which the A‑ESIM and M‑ESIM communicate shall ensure that necessary arrangements and switching facilities are built into the above-mentioned earth stations to cease emissions once approaching the territory under the jurisdiction of those administrations which either are not within the notified and coordinated service area of the subject space station or have not authorized the operation over their territories;

5 that any course of action taken under this Resolution has no impact on the original date of receipt of the frequency assignments of the GSO FSS satellite network with which A‑ESIM and M‑ESIM communicate, or on the coordination requirements of that satellite network;

6 that A‑ESIM and M‑ESIM shall not be used or relied upon for safety-of-life applications;

7 that the operation of A‑ESIM and M‑ESIM within territorial waters and/or airspace under the jurisdiction of an administration shall be carried out only if a licence according to No. **18.1** of the Radio Regulations/authorization of that administration is obtained;

8 that gateway earth station facilities for A‑ESIM and M‑ESIM shall be within the service area of the satellite network associated to that gateway;

9 that, in the case unacceptable interference caused by A‑ESIM and/or M‑ESIM is reported:

Option 1

9.1 only the notifying administration of the GSO FSS network/non-GSO FSS systems with which ESIMs communicate is responsible for resolving the case of unacceptable interference;

Option 2

9.1 the notifying administration of the GSO FSS network/non-GSO FSS systems with which ESIMs communicate is responsible for resolving the case of unacceptable interference;

9.2 the notifying administration of the GSO FSS network with which the ESIMs communicate shall immediately take the required action to eliminate or reduce interference to an acceptable level;

9.3 the affected administration(s) may assist resolving or provide information that would facilitate resolving the case of unacceptable interference;

Option 1

9.4 the administration authorizing the operation of A‑ESIM and M‑ESIM on territory under its jurisdiction, subject to its explicit agreement, may provide assistance, including information for the resolution of unacceptable interference;

Option 2

9.4 the administration authorizing the operation of A‑ESIM and M‑ESIM on the territory under its jurisdiction shall, to the extent of its ability, cooperate to assist in the resolution of unacceptable interference, including providing information as necessary;

Option 3

9.4 an administration that the territory of which is situated inside the service area of a satellite and has provided explicit authorization to receive the service/to be served by any type of ESIM has no obligation nor any mandate, whatsoever, to be involved directly or indirectly in detection, identification, reporting, resolution of any interference caused by the operation of the ESIM the operation of which was authorized;

9.5 the administration responsible for the aircraft or vessel on which the ESIM operates shall provide a point of contact to assist identifying the notifying administration of the satellite with which the ESIM communicates;

10 that the notifying administration of the GSO FSS satellite network with which the ESIM communicates shall ensure that:

10.1 for the operation of A‑ESIM and M‑ESIM, techniques are employed to maintain adequate 10 pointing accuracy with the associated GSO/non-GSO FSS satellite;

10.2 all necessary measures shall be taken so that A‑ESIM and M‑ESIM are subject to permanent monitoring and control by a Network Control and Monitoring Centre (NCMC) in order to comply with the provisions in this Resolution, and are capable of receiving and immediately acting upon, *inter alia*, “enable transmission” and “disable transmission” commands from the NCMC;

10.3 measures are taken so that the A‑ESIM and/or M‑ESIM do not transmit on the territory, under the jurisdiction of an administration, including its territorial waters and its national airspace, that is neither in the service area of the GSO satellite network and/or has not authorized its use on its territory;

10.4 a permanent point of contact shall be provided, in the Appendix **4** submission under Annex 1 of this Resolution and published in the special section, by the notifying administration of the GSO FSS network for the purpose of tracing any suspected cases of unacceptable interference from earth stations on aircraft and vessels and to immediately respond to such requests;

Option 1

11 the implementation of this Resolution remains in abeyance pending an agreement to be universally reached on the issue of the interference management system, monitoring facilities’ effectiveness and immediate response of MCNC, cessation of transmission over territories which have not explicitly authorized the functioning and operation of any ESIM over their territories providing satisfactory resolution of the problem, as referred to in *recognizing further d)* above;

Option 2

11 the implementation of this Resolution is conditioned on providing a description to the administrations whose authorization is sought of interference management system(s), monitoring facilities (NCMC), dealing with the cessation of transmission over territories which have not explicitly authorized (see *resolves* 7) the functioning and operation of any ESIM over their territories in order to provide a satisfactory resolution of the problem as referred to in *recognizing* *further* *d)* above;

NOTE: Provided the description mentioned above is properly addressed and concluded, *resolves*11 above may be deleted at WRC-23.

12 the compliance to this Resolution does in no way, whatsoever, release the notifying administration(s) from its obligation to not causing unacceptable interference nor claiming protection from the incumbent services as indicated in the Resolution,

resolves further

1 that ESIMs shall not cause unacceptable interference to nor claim protection from other services as referred to in *resolves*1.2.1 and 1.2.2;

2 that the notifying administration for the ESIMs shall send to the BR, when submitting the relevant Appendix **4** data, a commitment (as stipulated in *resolves*1.2.9) that, upon receiving a report of unacceptable interference, the notifying administration for the GSO satellite network with which ESIMs communicate shall remove such interference;

3 that the commitment referred to in *resolves further*2 shall be objective, measurable and enforceable;

4 that, in case of continued unacceptable interference despite of the commitment referred to in *resolves further*2, the assignment causing interference shall be submitted to the Radio Regulations Board for review;

5 that compliance with the provisions contained in Annex 2 does not release the notifying administration of the GSO satellite network with which ESIMs communicate of its obligations mentioned in *resolves further*1 above (see *resolves*1.2.3);

6 that frequency assignments in the frequency band 12.75-13.25 GHz (Earth-to-space) by A‑ESIM and M‑ESIM communicating with geostationary space stations in the FSS shall be notified by the notifying administration of the satellite network with which the ESIM communicates;

7 that the notifying administration of the satellite network shall ensure that ESIMs operate only in the territory under the jurisdiction of an administration from which an authorization has been obtained, taking into account *recognizing further c)* above;

8 that, for the implementation of *resolves further*2 above, the notifying administration of the satellite network with which ESIMs communicate shall ensure that ESIMs are designed and operate so as to cease transmission in the territory of any administration from which authorization has not been obtained;

Option 1

8*bis* that, for the implementation of *resolves further* 7 and 8 above, the system shall employ the minimum capabilities listed in Annex 5;

Option 2

8*bis* is not required if Annex 5 is not maintained.

9 that, for the implementation of *resolves further*6 above, the notifying administration responsible for the operation of A‑ESIM and M‑ESIM shall also be responsible for observing and complying with all relevant regulatory and administrative provisions applicable to the operation of the above-mentioned ESIMs as included in this Resolution and those contained in the Radio Regulations;

10 that the authorization for an ESIM to operate in the territory under the jurisdiction of an administration shall in no way release the notifying administration of the satellite network with which the ESIM communicates from the obligation to comply with the provisions included in this Resolution and those contained in the Radio Regulations,

instructs the Director of the Radiocommunication Bureau

1 to take all necessary actions to facilitate the implementation of this Resolution, together with providing any assistance for the resolution of interference, when required;

2 to report to future world radiocommunication conferences any difficulties or inconsistencies encountered in the implementation of this Resolution, including whether or not the responsibilities relating to the operation of A‑ESIMs and M‑ESIMs have been properly addressed;

3 to review, if necessary, once the methodology to examine the characteristics of A‑ESIMs with respect to conformity with the pfd limits on the Earth’s surface specified in Part II of Annex 2 is available;

Option 1

4 to publish the list of assignments in the Appendix **30B** ESIM brought into use with information about its service area and countries authorize such use if any; this information shall be updated regularly,

Option 2

4 to publish the list of assignments in the Appendix **30B** ESIM brought into use, with information about their service area; this information shall be updated regularly,

Note: It was agreed that the issue of identifying the notifying administration is still ambiguous and requires further discussions before taking the decision regarding this draft new resolution, in order to develop a means for the affected administration to identify the notifying administration of the satellite network space station with which the ESIM communicates.

instructs the Secretary-General

1 to bring this Resolution to the attention of the Council with a view to consider if cost recovery should be applied to ESIM;

2 to bring this Resolution to the attention of the Secretary-General of the International Maritime Organization and of the Secretary General of the International Civil Aviation Organization.

ANNEX 1 TO draft new RESOLUTION [A115] (WRC‑23)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_