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|  | ASIA-PACIFIC TELECOMMUNITY | Document No: |
| **The 6th Meeting of the APT Conference Preparatory**  **Group for WRC-23 (APG23-6)** | **APG23-6/OUT-27** |
| 14 – 19August 2023, Brisbane, Australia | 19 August 2023 |

Working Party 4

**APT VIEW and Preliminary APT Common Proposal on**

**WRC-23 agenda item 1.15**

**Agenda Item 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)****;*

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)*

**1. Background**

ITU has addressed earth stations on aircraft and vessels at previous WRCs.

WRC‑23 agenda item 1.15 calls for studies on the possible operation of A-ESIM and M-ESIM communicating with geostationary space stations in the fixed-satellite service in the frequency band 12.75-13.25 GHz (Earth-to-space). The use of the frequency band 12.75-13.25 GHz by geostationary-satellite networks in the fixed-satellite service is subject to RR Appendix **30B**, which contains a worldwide fixed-satellite service allotment Plan and assignments in the List and has its own regulatory procedures and technical criteria.

In RR Appendix **30B**, the explicit agreement of an administration for the inclusion partially or wholly of its territory in the service area of a proposed RR Appendix **30B** assignment (§ 6.6 of RR Appendix **30B**) is required. A review by the BR of the service areas of the RR Appendix **30B** assignments recorded in the MIFR showed that generally the service areas of RR Appendix **30B** networks 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 RR Appendix **30B** assignment. Therefore, A‑ESIM and M-ESIM in the frequency band 12.75‑13.25 GHz need to have the capability to restrict operations as discussed below in Section 3.2 to territories of those administrations where agreement under § 6.6 of RR Appendix **30B** has been obtained and authorization for such operations has been granted. Also, a distinctive aspect of RR Appendix **30B** is the existence of a Reference situation for all Plan allotments and assignments in the List.

Moreover, 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 defined.

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)**.

**2. Documents**

* Input Documents APG23-6/INP-20 (IND), INP-26 (BGD), INP-38 (J), INP-50 (INS), INP-56 (SNG), INP-61 (THA), INP-68 (IRN), INP-83 (AUS), INP-90R1 (KOR), INP-96 (PNG), INP-106 (CHN), INP-112 (MLA), INP-120 (VTN).
* Information Documents APG23-6/INF-02 (WMO), INF-25 (ICAO), INF-28 (GSOA), INF-45 (RCC), INF-46 (CEPT), INF-52 (CITEL).

**3. Summary of discussions**

**3.1 Summary of APT Members’ views**

**3.1.1 India** - **Document APG23-6/INP-20**

* India supports Method A- No changes to the Radio Regulations and suppression of Resolution 172(WRC-19).

**3.1.2 Bangladesh** - **Document APG23-6/INP-26**

* Bangladesh administration prefers method A of the CPM report to WRC-2023 i.e., no change to the RR, since there are no overall results of different studies available for the sharing between terrestrial service and A-ESIM or M-ESIM.

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**3.1.3 Japan** - **Document APG23-6/INP-38**

* In Japan, the frequency band 12.75–13.25 GHz is allocated to the fixed service, the mobile service, the fixed-satellite service (Earth-to-space), and the space research service (deep space) (space-to-Earth). Those incumbent services are necessary to be protected.
* At this stage, Japan does not support any particular Method.

**3.1.4 Indonesia** - **Document APG23-6/INP-50**

* Indonesia considers A-ESIM and M-ESIMs as an opportunity to enable the provision of telecommunication infrastructure over a wider service area in Indonesia. However, the implementation of A-ESIM and M-ESIM shall ensure the protection of and not impose undue constraints on 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 172 (WRC-19). In addition, A-ESIM and M-ESIM shall not claim protection from existing and planned terrestrial services in the frequency band of 12.75-13.25 GHz including services allocated in the adjacent bands. Furthermore, Indonesia believes that the issues of interference management and responsibilities of administrations in case unacceptable interference is caused by ESIM operations must be resolved before A-ESIM and M-ESIM can be widely deployed.
* Therefore, Indonesia supports Method B, which may provide possible technical, operational and regulatory provisions for the operation of A-ESIM and M-ESIM communicating with GSO space stations in the fixed-satellite service in the frequency band 12.75-13.25 GHz (Earth-to-space).

**3.1.5 Singapore** - **Document APG23-6/INP-56**

* Based on the recent discussions and development of ITU-R studies under Agenda Item 1.15, Singapore supports **Method B** to satisfy Agenda Item 1.15 supporting specific options contained in the current draft new Resolution [A115] which could be referred to the embedded document below in track changes. Singapore proposes the adoption of the embedded document below as the PACP under Agenda Item 1.15.



**3.1.6 Thailand** - **Document APG23-6/INP-61**

Thailand is of the view that there is a need of a new WRC Resolution to define the technical, operational and regulatory conditions for the 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) while ensuring protection of allocated services.

Thailand supports Method B in the CPM Report, together with the views that:

* the implementation of earth stations on aircraft and vessels communicating with geostationary space stations should ensure protection of the existing primary services, including their future developments, in this frequency band and adjacent frequency bands.
* earth stations on aircraft and vessels communicating with geostationary space stations need to have the capability to cease transmission in territories where authorization has not been granted.
* responsibilities of the notifying administration related to the operation of earth stations on aircraft and vessels in the frequency band 12.75-13.25 GHz (Earth-to-space) should be clearly defined.

**3.1.7 Iran** - **Document APG23-6/INP-68**

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 AP**30B** including but not limited to Reference situations for all Plan allotments and assignments in the List.

APT members support Method A **(NO CHANGE)**.

However, APT members 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 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 **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 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 in to 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 **AP30B** 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 Article 6 and 7 of **AP30B** 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 **AP30B** 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 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 – 190 km as the current result of ITU-R WP4A studies

There are still several issues on the operation of ESIMs to be clarified and specified in the Draft New Resolution [A115], 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.

Also, in the attachment, several amendments to the draft New Resolution [A115] 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.

Attachment: 1

ATTACHMENT

Proposed modification in Section 4/1.16/5.2 of the report of the CPM to the WRC-23

Regarding agenda item1.15, it is proposed that the No. 1.2.9 of the resolves part of 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, be modified and supplemented as follows:

Proposals

Mod. On4/1.15/5.2 of the report of the CPM to the WRC-23

**4/1.15/5 Regulatory and procedural considerations**

**4/1.15/5.2**

**For Method B**,

**MOD**

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 **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;

**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 bands 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 *resolvesfurther* 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 GHzrecorded 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);

*m)* 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;

*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;

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‑ESIMwith 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;

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;

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 for the implementation of *resolves* 9, the following actions need to be pursued:

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

b) in the commitment the notifying administration of non-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 necessary action, as appropriate.

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;

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;

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:

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;

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;

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;

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,

*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;

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

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,

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 over their territories providing satisfactory resolution of all problems,difficulties and inconsistencies mentioned above

*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;

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,

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.

**3.1.8 Australia** - **Document APG23-6/INP-83**

* Australia supports Method B to satisfy Agenda Item 1.15 in the CPM Report and supports specific options of the remaining issues contained in the current draft new Resolution [A115] in the embedded document below in track changes and turquoise highlighted text.
* Australia proposes a Preliminary APT Common Proposal as follows:



**3.1.9 Korea** - **Document APG23-6/INP-90**

* The Republic of Korea has a view that the studies and discussion conducted in ITU-R have not concluded the interference management mechanism and operation mechanism of ESIMs clearly and the technical provisions for protecting the terrestrial services from ESIM are not determined either. Therefore, the Republic of Korea supports Method A described in the CPM Report that is ‘No changes to the Radio Regulations and suppression of Resolution **172 (WRC-19)’**with respect to the agenda item 1.15.
* Nevertheless, the Korea (Rep. of) would like to propose the modifications of the draft new Resolution describedin the CPM Report taking into account the protection of existing services, particularly terrestrial services with regard to the operation of ESIM in the frequency band 12.75-13.25 GHzwhen Method B is considered at APG23-6. The proposals are embedded in this document as follows.



**3.1.10 Papua New Guine** - **Document APG23-6/INP-96**

* Based on the development of ITU-R studies under Agenda Item 1.15 (WRC-23), Papua New Guinea supports **Method B** to satisfy this agenda itemsupporting specific options contained in the current draft new Resolution [A115] which could be referred to the embedded document below in track changes.Papua New Guinea proposes the adoption of the embedded document below as the PACP under Agenda Item 1.15.



**3.1.11 China** - **Document APG23-6/INP-106**

With respect to the different Options expressed in the Draft New Resolution [A115] (WRC-23), this administration would like to share its views and proposals as follows:

**2.1 recognizing m) and n)**

*recognizing*

*…*

*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)*

**Views and Proposals**: We agree to Option 2.

**Reason**: Even though we do not have a strong position on these two Options, *resolves* 9.1 stipulates that the notifying administration of the GSO FSS network with which ESIMs communicate is responsible for resolving the case of unacceptable interference. We also noted that, without these two paragraphs *recognizing m)* and *n)*, the affected administrations still have the right to consult and/or can request the mentioned assistance as the case may be.

**2.2 recognizing further e), f) and g)**

*recognizing further*

*…*

***Option*** *1 see resolves 1.1.7, 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,*

***Option 2*** *(See recognizingfurthere), f) and g) for* ***Option1****)*

*resolves*

*…*

*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;*

**Views and Proposals**: To delete both Options 1 and 2 including the contents in both Options.

**Reason**: We propose the deletion because of the following reasons:

1. *resolves* 1.1.3 which stipulates as follows says that “*the operation of ESIM shall be in conformity with the Radio Regulations, including this Resolution*.” Therefore, RR No.**5.340** is included, and no repetition is necessary in either *recognizing furthere)* or *resolves* 1.1.7.

*1.1.3 for the implementation of resolves 1.1.1, 1.1.2 and 1.1.2bis 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. With respect to *recognizing further f)* and *g)*, or *resolves* 1.1.8and 1.1.9, *considering i)* says the following:
2. *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;*

Even though it is not the *resolves* part, it is clear that when the frequency bands 10.7-10.95 GHz and 11.2‑11.45 GHz are used in a downlink by A‑ESIM and M‑ESIM, it shall be “*subject to not claiming protection from other services and applications of the FSS and other radiocommunication services to which the frequency band is allocated*.”

It should be noted that *resolves* 1.2.5 also stresses that “*any interrelated receiving part shall not claim protection from the terrestrial stations.”*

*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 to and any interrelated receiving part shall not claim protection from the terrestrial stations;*

1. In addition, the use of these downlink frequency bands shall also meet the provisions of Appendix **30B**, including coordination agreement.

**2.3 resolves 1.2.5**

*resolves*

…

***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 to 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 to 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‑ESIMwith 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;*

*1.2.7bis 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***

**Views and Proposals**: We agree to Option 1, and the paragraph *1.2.7bis* should also be suppressed.

**Reason**: WP 4A reached agreement on the methodology to examine the characteristics of GSO A-ESIMs with respect to conformity with the pfd limits on the Earth’s surface as established by Resolution **169 (WRC-19)**. This methodology has been adopted by SG4 and can be used in the examination of the pfd limits specified in Part II of Annex 2 of the Draft New Resolution **[A115] (WRC-23)** in which the indication of the specific frequency band 27.5-29.5 GHz is suggested to be modified or suppressed.

**2.4 resolves 2**

*resolves*

…

*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 to or claim protection from those assignments for which agreement was not obtained;*

**Views and Proposals**: We agree to Option 2.

**Reason**: We agree to Option 2 because of the following reasons:

1. The submission of frequency assignments for entering into the Appendix **30B**ESIM List has different provisions from those of Appendix **30B**. The protections to frequency assignments of Appendix **30B** by the frequency assignments of Appendix **30B** ESIM arestipulated in the provisions of Annex 1 To Draft New Resolution **[A115] (WRC-23)**, such as paragraphs 15 to 15*ter* and 16. To protect Appendix **30B** Plan and its assignment, the use of supporting Appendix **30B** assignments which is recorded in the MIFR based on paragraph 6.25 of Appendix **30B** by Appendix **30B**ESIM without further coordination is regulatorily avoided, or the protection shall be given before the use of Appendix **30B** ESIM. Please refer to the following Table for the detail.

Application of Appendix 30B Paragraph 6.25

|  |  |  |
| --- | --- | --- |
| Appendix 30B Assignment Protection | Supporting Appendix 30B Assignment | Appendix 30B ESIM Assignment |
| Appendix **30B** Plan | √ | √ |
| Assignment converted from the Plan without modification or with modification within the initial Appendix **30B** Plan Allotment | √ or 6.25 | √ |
| Art. 7 request transferred to Art. 6 | √ or 6.25 | √ |
| Submissions under Res. **170** | √ or 6.25 | √ |
| Additional system assignment | √ or 6.25 | √ or 6.25 |

1. As indicated in the Table above, paragraph 6.25 of Appendix **30B** can be applied by assignments of supporting network with respect to the Appendix **30B** assignments except for the Appendix **30B** Plan. Besides Paragraphs 6.26 and 6.29 of Appendix **30B** which can be applied to assignments of supporting network, Draft New Resolution [A115] (WRC-23)stipulates that:

- The use of Appendix **30B** ESIM shall not cause any interference to Appendix **30B** allotments and assignments, including ARNS, and shall comply with the coordination agreements. It shall also operate under the levels that were coordinated and included in the List (Ref: paragraphs 1.1.2 bis, 1.1.8, 1.3 and Annex 1 of the Draft New Resolution).

- The notifying administration shall perform its responsibility that such earth station shall not cause unacceptable interference to and any interrelated receiving part shall not claim protection from the terrestrial stations (Ref: paragraph 1.2.5 of the Draft New Resolution).

* 1. **resolves 9.1**

*resolves*

…

***Option 1:***

*9.1 only the notifying administration of the GSO FSS network 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 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;*

**Views and Proposals**: We agree to Option 2.

**Reason**: We agree to Option 2 because of the following reasons:

1. Based on the points raised in the Reason in the above Section 2.4, the unacceptable interference caused by Appendix **30B** ESIM shall be eliminated. Similar to paragraph 6.29 of Appendix **30B**, we believe that the communication between the notifying administration and the affected administration would be beneficial to eliminate or reduce interference to an acceptable level.

2) From the above paragraph 9.3, “*the affected administration(s) may assist resolving or provide information that would facilitate resolving the case of unacceptable interference.”* It should be noted that there is no forced assistance imposed on the affected administration(s), and cooperation between the notifying administration and the affected administration is always encouraged as indicated in Section 3.2 of the CPM Report.

* 1. **resolves 9.4**

*resolves*

…

***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;*

**Views and Proposals**: We agree to Option 2.

**Reason**: We agree to Option 2 because of the following reasons:

As it is indicated above, when unacceptable interference occurs, it needs to be eliminated as soon as possible under cooperation between the concerned administrations, in which the notifying administration of the GSO FSS network with which ESIMs communicate is responsible for resolving the case of unacceptable interference. Having the phase *“to the extent of its ability”*, there should be no heavy burden on the administration authorizing the operation of A‑ESIM and/or M‑ESIM on the territory under its jurisdiction.

* 1. **resolves 11**

*resolves*

…

***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 recognizingfurther d) above,*

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

**Views and Proposals**: We propose to delete these two Options including their contents.

**Reason**: These two Options are descriptive expressions on study status of the agenda item 1.15 and conditions on the implementation the Draft New Resolution [A115] (WRC-23) based on the required agreement on some unresolved issues. So, we propose to delete these two Options including their contents, noting the descriptive paragraph on the unresolved issues in the beginning of this Draft New Resolution.

* 1. **resolves further 8bis**

*resolves further*

…

*Option 1*

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

*Option 2*

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

**Views and Proposals**: We modified the text, but do not have a strong position on this issue.

**Reason**: With respect to *resolves further 7 and 8,* explicit agreements shall be required from those administrations whose territories are included in the service area for the use of Appendix **30B** ESIM pursuant to 2 *d)* of Section A in PART I of Annex 1 to Draft New Resolution [A115] (WRC-23). Therefore, the list of authorizing administrations shall be contained in the notification information pursuant to paragraph 6.2 of Section B in PART I of Annex 1 to Draft New Resolution [A115] (WRC-23). The elements in Annex 5 of Draft New Resolution [A115] (WRC-23) may be a way on ESIM management. But the notifying administration has its own regulatory rules to meet the Radio Regulations. This kind of specific details on software and hardware configuration of ESIM network could be dealt with by operators in their actual operation. When necessary these elements can be captured in the ITU-R Reports and/or Recommendations.

* 1. **Instructs the Director of the Radiocommunication Bureau**

*Instructs the Director of the Radiocommunication Bureau*

…

*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.*

**Views and Proposals**: We modified the text, but do not have a strong position on this issue.

**Reason**: Just like the reasons indicated in the above Section 2.8,explicit agreements of either to be included in the service area or agreement to authorize the operation of Appendix **30B** ESIM shall be required from those administrations whose territories are included in the service area for the use of Appendix **30B** ESIM pursuant to 2 *d)* of Section A in PART I of Annex 1 to Draft New Resolution [A115] (WRC-23). Therefore, the list of authorizing administrations shall be contained accordingly in the notification information pursuant to paragraph 6.2 of Section B in PART I of Annex 1 to Draft New Resolution [A115] (WRC-23).

* 1. **ANNEX 2 TO DRAFT NEW RESOLUTION [A115] (WRC-23)**

…

**PART I**

**Earth stations on vessels**

…

*2.1 The minimum distance from the low-water mark as officially recognized by the coastal State beyond which an M‑ESIM can operate without the prior agreement of any administration is 133/150 km in the frequency band 12.75-13.25 GHz. Any transmissions from an M‑ESIM within the minimum distance shall be subject to the prior agreement of the coastal State concerned.*

**Views and Proposals**: We accept 133km as the minimum distance.

**Reason**: It is indicated in Recommendation ITU-R SF.1650-1 that *(quotes in* *italics)* “*10° discrimination only occurs in the improbable case for which the FSR and ESV azimuths are aligned, and the ESV operates at the minimum elevation angle*”, and “*the occurrence of antenna discrimination lower than 36° is small, for lower latitudes in particular.*” When considering 20 degrees as a critical elevation angle, based on Rec. ITU-R SF.1650-1, an elevation angle lower than 20 degrees represents 2.3% cases at 45-degree latitude, and about 5.5% cases at 60-degree latitude.

* 1. **PFD MASK**

*ANNEX 2 TO DRAFT NEW RESOLUTION [A115] (WRC-23)*

*PART II*

…

*PFD MASK*

***Option 1***

*1 When within line-of-sight of the territory of an administration, and above an altitude of 3 km, the maximum pfd produced at the surface of the Earth on the territory of an administration by emissions from a single A‑ESIM shall not exceed:*

*pfd(θ) = −112 (dB(W/(m2 · 14 MHz))) for θ ≤ 5°*

*pfd(θ) = −117 + θ (dB(W/(m2 · 14 MHz))) for 5° < θ ≤ 40°*

*pfd(θ) = −77 (dB(W/(m2 · 14 MHz))) for 40° < θ ≤ 90°*

*where θ is the angle of arrival of the radio-frequency wave (degrees above the horizon).*

*2 When within line-of-sight of the territory of an administration, maximum pfd produced at the surface of the Earth on the territory of an administration by emissions from a single aeronautical ESIM shall not exceed:*

*pfd(θ) = −123.5 dB(W/(m2 · MHz)) for θ ≤ 5°*

*pfd(θ) = −128.5 + θ dB(W/(m2 · MHz)) for 5° < θ ≤ 40°*

*pfd(θ) = −88.5 dB(W/(m2 · MHz)) for 40° < θ ≤ 90°*

*where θ is the angle of arrival of the radio-frequency wave (degrees above the horizon).*

***Option 2***

*1 When within line-of-sight of the territory of an administration, the maximum pfd produced at the surface of the Earth on the territory of an administration by emissions from a single aeronautical ESIM shall not exceed:*

*pfd(θ) = −123.5 dB(W/(m2 · MHz)) for θ ≤ 5°*

*pfd(θ) = −128.5 + θ dB(W/(m2 · MHz)) for 5° < θ ≤ 40°*

*pfd(θ) = −88.5 dB(W/(m2 · MHz)) for 40° < θ ≤ 90°*

*where θ is the angle of arrival of the radio-frequency wave (degrees above the horizon).*

*2 The maximum power in the out-of-band domain should be attenuated below the maximum output power of the aeronautical ESIM transmitter as described in Recommendation ITU‑R SM.1541.*

**Views and Proposals**: We agree to Option 1.

**Reason**: We agree to Option 1 because of the following reasons:

1. Based on parameters provided by WP 5C, the smallest bandwidth of 14 MHz is contained in two provided modulation methods which theoretically should be included in the pfd mask of the methodology.
2. The receiver bandwidth in actual terrestrial systems currently brought into use in the frequency band 12.75-13.25 GHz is usually 28 MHz, and wider bandwidth is also used or planned to be used. So, the bandwidth of 28 MHz, or at least 14 MHz, should be used when calculating the pfd mask in this frequency band.
3. Recommendation ITU-R SF.1650-1 proposes 14 MHz receiver bandwidth in Ku band.
4. Wider bandwidth in the pfd mask may provide some flexibility for A-ESIM. But that does not necessarily mean more interference will be introduced accordingly.
   1. **ANNEX 4 TO DRAFT NEW RESOLUTION [A115] (WRC 23)**

**Methodology with respect to the examination of compliance of A ESIM**

**with pfd limits in Part II of Annex 2**

**Views and Proposals**: We propose to update the Methodology based on the SG4 adopted Recommendation ITU-R S.[METHOD]. Some editorial modifications to Section 3 of the Annex in this Recommendation are proposed and indicated in the attached document. The modification to paragraph 1.2.4 of the Draft New Resolution [A115] is also included.

**Reason**: Study Group 4 adopted the Recommendation ITU-R S.[METHOD] which is seeking approval pursuant to PSAA procedure.

* 1. **ANNEX 5 TO DRAFT NEW RESOLUTION [A115] (WRC-23)**

Annex 5 TO draft new RESOLUTION [A115] (WRC‑23)

***Option 1:***

Required ESIM software and hardware capabilities

…

***Option 2:***

*Annex 5 is not needed and these elements can be captured in the ITU‑R Reports and/or Recommendations.*

**Views and Proposals**: We modified the text, but do not have a strong position on this issue.

**Reason**: With respect to *resolves further 7 and 8,* explicit agreements shall be required from those administrations whose territories are included in the service area for the use of Appendix **30B** ESIM pursuant to 2 *d)* of Section A in PART I of Annex 1 to Draft New Resolution [A115] (WRC-23). Therefore, the list of authorizing administrations shall be contained in the notification information pursuant to paragraph 6.2 of Section B in PART I of Annex 1 to Draft New Resolution [A115] (WRC-23). The elements in Annex 5 of Draft New Resolution [A115] (WRC-23) may be a way on ESIM management. But the notifying administration has its own regulatory rules to meet the Radio Regulations. This kind of specific details on software and hardwareconfiguration of ESIM network could be dealt with by operators in their actual operation. When necessary these elements can be captured in the ITU-R Reports and/or Recommendations.

Based on the above views and proposals, this administration modified the Draft New Resolution [A115] (WRC-23) accordingly. We expect a consensus reached by APT Members, and then these proposals will be treated as Preliminary APT Common Proposals (PACP). On this basis, the descriptive paragraph on the unresolved issues at the beginning of the Draft New Resolution [A115] (WRC-23) can be suppressed accordingly.



**3.1.12 Malaysia** - **Document APG23-6/INP-112**

Malaysia supports the development of regulatory framework and technical requirements for the operation of earth stations in motion on board aircraft and vessels communicating with GSO FSS space stations in the 12.75‐13.25 GHz frequency band (Earth‐to‐space) under **Method B**, taking into account the following:

* ensuring protection of services currently allocated in the same and adjacent frequency bands;
* the provisions of Radio Regulations Appendix **30B**; and
* ensuring no changes or restrictions to the allotment in the Plan, assignments in the List of RR Appendix **30B**, and those recorded in the Master International Frequency Register (MIFR) including the assignments arising from the implementation of Resolution **170 (WRC-19)**.

This method should be carefully examined, verified, and validated to ensure all shortcomings, deficiencies, and incomplete operational and regulatory obstacles identified are addressed.

**3.1.13 Vietnam** - **Document APG23-6/INP-120**

* Vietnam supports method B to satisfy agenda item 1.15 which refers to the development of a new WRC Resolution with technical, operational, and regulatory conditions for the operation of A-ESIM and M-ESIM communicating with GSO space stations in the fixed-satellite service in the frequency band 12.75 – 13.25 GHz (Earth-to space) while ensuring protection of existing services in those frequency bands and in adjacent bandsin accordance with Resolution **172 (WRC-19).**
* In particular, Vietnam supports the outcome of APG23-5 on this agenda item.

*Reasons:There were several areas in which no consensus was reached in the CPM Report on agenda item 1.15 that needs to be resolved.*

**3.2 Summary of issues raised during the meeting**

* None.

**4. APT View(s)**

In view of all problems, difficulties, inconsistencies, limitation of service area that according to the review by the BR of the service areas of the RR 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 AP**30B** including but not limited to Reference situations for all Plan allotments and assignments in the List.

APT members are considering to support Method A.

APT members could consider to support Method B provided that the remaining elements and part of that method as referred to in attachment of Resolution relating to agenda item 1.15 need to be successfully resolved and agreed including but not limited to the following:

* 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;
* Lack of contiguous service area on regional and/ or worldwide, except merely one satellite network having regional service area;
* Submission of the a firm objective, enforceable and measurable with actionable commitment at the time of submission of 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. In case that there are more than one satellite use for operation of ESIM and responsibility should be assigned or attributed to only notifying administration of these satellite;
* Avoiding to impose any mandatory action(s) to the administration(s) authorizing the operation of ESIM in the territory under its jurisdiction to resolve the interferences occur;
* Methodology to enable BR to verify compliance with PFD limit as contained in Annex 4.

APT Members also have views as follows:

* 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 scenario.
* The implementation of ESIM shall ensure the protection of and shall not adversely affect the existing services and their future development, taking in to 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 **AP30B**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 Article 6 and 7 of **AP30B** 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 **AP30B** 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:
* located within the service area of the space station;
* explicit agreement to that effect was obtained and;
* 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 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.
* There are still several issues on the operation of ESIMs to be clarified and specified in the Draft New Resolution, 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.

\* X: The minimum distance ranges from 86 – 190 km as the current result of ITU-R WP4A studies.

**5. Preliminary APT Common Proposal**



**6. Issues for Consideration at APG Coordination Meeting at WRC-23 (if any)**

* None.

**7. Views from Other Organisations** (as provided in the information documents to

APG23-6)

**7.1 Regional Groups**

**7.1.1 ASMG** - **Document APG23-4/ INF-21**

* Follow-up studies related to the regulatory and technical aspects of earth stations in motion on aircraft and vessels which communicate with GSO space stations in the fixed-satellite service operating in the frequency band 12.75-13.25 GHz (Earth-to-space) with a view to establish clear and simple procedures so that administrations can ensure the protection of their existing services, while ensuring no limitation would be applied on the allotments and assignments in the Plan (Appendix 30B). Thus, that it does not limit administrations' access to their national resources in Appendix 30B in accordance with Resolution 170 (WRC-19).
* Develop a methodology to assist the Radiocommunication Bureau in examination the conformity of earth stations on aircraft and vessels in case an appropriate flux-density value is agreed to protect terrestrial services from earth stations in motion. The methodology should be developed and agreed prior to the conference.
* Define the role of the Network Control and Monitoring Center (NCMC), while emphasizing that the notifying administration of the satellite network holds the responsibility for operating the mobile earth stations on board aircraft and vessel to resolve any interference incident. In that regard, the administrations issue operating licenses for these stations to provide services in their territories should not be responsible for resolving interference incidents.
* The administrations responsible for the use of the Appendix 30B assignment in the List to operate earth stations on aircraft and vessels in the frequency band 12.75-13.25 GHz shall obtain the explicit agreement from all administrations affected as a result of such use.
* Strict minimum separation distance and EIRP values for earth stations on vessels shall be chosen. As well as strict pfd masks for earth stations on board aircraft to ensure protection of existing terrestrial services.
* Emphasis that the downlink of mobile earth stations in the frequency bands 10.7-10.95 GHz and 11.2 - 11.45 GHz shall not claim protection from terrestrial services that have allocations in those frequency bands and operate in accordance with the Radio Regulations. Moreover, the allotments and assignments in Plan (Appendix 30B) shall not adversely affected.
* The frequency assignments of mobile earth stations shall be notified by the administration responsible of the satellite network to the Radiocommunication Bureau.

**7.1.2 ATU** - **Document APG23-4/INF-02**

*Part 1: Common position:*

* **Support** the studies on the regulatory and technical aspects for ESIMs on aircraft and vessels communicating with GSO space stations in the FSS operating in the frequency band 12.75-13.25 GHz (Earth-to-space), while ensuring protection to the existing services and those in the adjacent bands within the frequency band 13.25−13.75 GHz, taking into account the need to protect Appendix 30B.
* **Decide** that studies under this agenda item need to equally consider the effect of aggregated interference from ESIMs to ensure long term protection of Fixed and Mobile Service.
* **Decide** that the operation of such earth stations on aircraft and vessels should not impact the usability of the allotments in the Plan and assignments in the List under Appendix 30B of the Radio Regulations and not limit the access of other administrations to their national resources in Appendix 30B as well as implementation of Resolution 170 (WRC 19).
* **Develop** a methodology for the BR to examine the conformity of earth stations on aircraft and vessels in case of usage of an appropriate pfd to protect terrestrial services from ESIM with such methodology needs to be established and agreed upon.
* **Decide** that Aeronautical or maritime earth stations in the 12.75 - 13.25 GHz band need to have the capability to restrict operations in territories of those administrations where agreement under No. 6.6 has been obtained and authorization for such operations has been granted.
* **Decide** that, there is need to establish regulatory, technical and recording procedures for the usage of these type of Earth Stations in Motion (ESIMs) that may differ than the current FSS Appendix 30B Plan and list recording procedures. Any cost arising from potential implementation of Resolution 172 as well as its updates at WRC-23 need to be carefully examined and decided upon.
* **Seek** to ensure that the use of ESIMs with satellite networks that have a global coverage in Appendix 30B do not create an obstacle for deployment of national or sub-regional satellite networks of other countries in RR Appendix 30B in accordance with Topic F under AI 7 which are initiated from Multi-African administration proposal.
* **Support** that any AI under consideration of WRC-23 shall ensure that the protection of RR Appendix**30B** is guaranteed.
* **Support** that the administrations responsible for notice to use an Appendix 30B assignment in the List in support of the operation of earth stations on aircraft and vessels in the frequency band 12.75-13.25 GHz, to seek the explicit agreement of all the affected administrations from such use.

*Part 2: Way forward*

***Request ATU administrations to:***

* **Follow-up** the studies between earth stations on aircraft and vessels communicating with GSO space stations in the FSS and current and planned stations of existing as well as services in adjacent frequency bands, to ensure protection of, and in no way adversely affect these services and their future development, considering the provisions of Appendix 30B in accordance with Resolution 172 (WRC-19).
* **Follow-up** the regulatory and technical aspects of operations of earth stations on aircraft and vessels communicating with GSO space stations in service area under the jurisdiction of any country Member State of the ITU.
* **Assess** the spectrum utilization in the frequency band 12.75 – 13.25 GHz within their country.
* **Contribute** to and actively participate in work of ITU-R WP4A, in order to have ATU views addressed in the Agenda item.

**7.1.3 CEPT** - **Document APG23-6/INF-46**

* CEPT supports establishing a regulatory framework and technical requirements for operation of earth stations on aircraft and vessels in the frequency band 12.75-13.25 GHz (Earth-to-space) with conditions that protect the services currently allocated in this frequency band and bands adjacent to it, taking into account ECC Decision (19)04.  
  CEPT considers that earth stations on aircraft and vessels in the frequency band 12.75-13.25 GHz shall operate consistent with the Appendix **30B** procedures, protect the Appendix **30B** allotments in the Plan, assignments in the List and in the new proposed Appendix **30B** ESIM List (if adopted at WRC-23) and respect Resolution **170 (WRC-19)**.  
  CEPT supports the operation of these earth stations in the territories (air space and territorial waters) of administrations which have given agreement under No. **6.6** of Article 6 of Appendix **30B** and have authorised such operation within their territories. The characteristics of these earth stations should remain in the envelope of notified earth station characteristics.
* CEPT supports the application of on-axis (depending on the maximum antenna gain) and off-axis e.i.r.p. density limits for the purpose of the protection of non-GSO FSS systems.
* CEPT supports the use of power flux density (PFD) limits on the earth surface for earth stations on aircraft to ensure the protection of Mobile and Fixed Services, and also supports the development of a methodology to verify compliance with PFD limits by GSO earth stations on aircraft or of adequate transitional measures in case WRC-23 could not finalise the methodology.
* CEPT is of the view that the notifying administration of the GSO network with which the earth stations on aircraft and vessels communicate should be identifiable to address the potential cases of harmful interference caused by any earth station on aircraft and vessels to fixed and mobile services. This identification could be done thanks to: i) the license issued by / authorization of the administration for the operation of the earth station on aircraft and vessels on its territory; ii) the assistance of the flag nation of aircraft/vessel; iii) the on-board radio license of the aircraft or vessel equipped with an earth station.
* CEPT is of the view that, unless specified otherwise in the Radio Regulations, the receiving part of these earth stations in the associated frequency bands shall not claim protection from terrestrial services having allocations in the same frequency bands and operating in accordance with the Radio Regulations.

**7.1.4 CITEL** - **Document APG23-5/INF-43**

* Some Administrations propose to add a new footnote, 5.A115, in RR Article 5, frequency band 12.75-13.25 GHz (Earth-to-space), pointing to a new Resolution that provides the conditions for the operation of earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service in these bands. With regards the protection of nongeostationary systems in the FSS, these administrations propose to employ the operational limits defined in Annex 3 to Draft New Resolution for Method B of draft CPM text for WRC-23 Agenda Item 1.15.

**7.1.5 RCC** - **Document APG23-6/INF-45**

Support development of regulatory provisions and technical requirements for ESIMs on aircraft and vessels in GSO FSS in the frequency band 12.75 – 13.25 GHz (E-to-s). Еarth stations on aircraft and vessels communicating with a GSO FSS space station could be used only if the following conditions are met:

* ESIMs on aircraft and vessels in the frequency band 12.75-13.25 GHz (E-to-s) shall operate within the envelope of the ES’s characteristics notified in the base satellite network (supporting assignment) as well as comply with agreements reached under **§§ 6.5, 6.6** and **6.16** of **Article 6** RR **Appendix 30B**.
* Use of ESIM on aircraft and vessels in the frequency band 12.75-13.25 GHz (E-to-s) shall be within the frequency assignments to base satellite networks, recorded in the List in accordance with Article 6 and recorded in the MIFR with favorable finding under § **8.11** of **Article 8** of RR **Appendix 30B**.
* Administrations planning to use ESIMs on aircraft and vessels in the frequency band 12.75-13.25 GHz (E-to-s) in international waters or international airspace, regardless of the inclusion of international space in contour of agreed service area of supporting assignment, shall send to the Bureau information on such ESIMs together with re-submission information of supporting assignment. Such filings are considered as new submissions of frequency assignments with a new date of receipt and subject of examination by the BR for the interference protection of frequency allotments/assignments of the RR **Appendix 30B** Plan and List, taking into consideration the worst-location of ESIMs outside the land and space above it.
* **RCC administrations tend to Method B from the CPM Report**

**7.2 International Organisations**

**7.2.1 IARU** - **Document APG23-6/INF-ZZ**

* None.

**7.2.2 ICAO** - **Document APG23-6/INF-25**

* To ensure that any radio regulatory action, taken as a result of this agenda item, does not adversely affect the provision of aeronautical safety-of-life services.
  + 1. **WMO** - **Document APG23-6/INF-02**
* WMO supports the protection of EESS (active) in the band 13.25–13.75 GHz and concurs with the ITU-R conclusion that interference from Earth stations on aircraft and vessels in the band 12.75–13.25 GHz is not an issue and that no additional regulatory provisions are required. Any of the CPM Methods are acceptable to the WMO.

**7.2.4 GSOA** - **Document APG23-6/INF-28**

Supports Method B:

* Technical, operational and regulatory measures to protect existing services in the band as contained in the draft newResolution [A115] (WRC-23) and its Annexes.
* Supports resolving the remaining Open issues and finalizing the Draft New Resolution [A115] in WRC-23

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