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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-50** |
| 14 – 19 August 2023, Brisbane, Australia | 19 August 2023 |

Working Party 4

**APT VIEW and Preliminary APT Common Proposal**

**on WRC-23 agenda item 7 (TOPIC J)**

**Agenda Item 7:**

*to consider possible changes, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, on advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution* ***86 (Rev.WRC-07)****, in order to facilitate the rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit.*

# Topic J: MODs to Res. 76 (Rev.WRC-15)

1. Background Information

* Resolution **76 (Rev.WRC-15)** calls for the development of Recommendations on procedures ensuring that the aggregate epfd limits are not exceeded and calls for collaboration among administrations to jointly ensure those levels are not exceeded. While the aggregate epfd limits are specified in Tables 1A to 1D of the Resolution, there is no clear methodology nor procedures outlined in Resolution **76 (Rev.WRC-15)** for the involved administrations to collaboratively determine whether these aggregate levels are exceeded.
* This Topic J aims to address a part of this deficiency by developing or calling for the development of a consultation process to be applied to non-GSO fixed-satellite service (FSS) systems operators to avoid and potentially remedy any exceedance of the aggregate interference levels in Tables 1A to 1D of the Resolution based on accurate modelling of non-GSO systems.

**Information on on-going ITU-R Study**

* The CPM23-2 meeting (27 March – 6 April 2023) considered nine input contributions towards the finalization of the draft CPM text as Annex 35 to Chairman’s Report (Document 4A/856 [Annex 35](https://www.itu.int/dms_ties/itu-r/md/19/wp4a/c/R19-WP4A-C-0856!N35!MSW-E.docx)).
* In-depth discussions were carried out in attempts to reduce the number of proposed methods to address this topic. However, the meeting revised the elements in the methods to satisfy Topic J, but number of methods remained as five as contained in the [final CPM Report](https://www.itu.int/dms_pub/itu-r/md/19/cpm23.2/r/R19-CPM23.2-R-0001!!MSW-E.docx), as follows:

**Method** **J1** No changes to Resolution **76 (Rev.WRC-15)**

**Method J2** Modify Resolution **76 (Rev.WRC‑15)** to introduce the concept of “consultation process/meetings” among administrations of non-GSO systems so that they can agree cooperatively to reduce their aggregate epfd if there is an exceedance.

**Method** **J3** Modify Resolution **76 (Rev.WRC-15)** to comply with the aggregate epfd levels included in the same Resolution through a consultation process/meetings taking into account only non-GSO operational systems.

**Method J4** Modify Resolution **76 (Rev.WRC‑15)** to comply with the aggregate epfd levels included in the same Resolution through a consultation process/meetings taking into account both non-GSO operational and planned systems.

**Method** **J5** Modify Resolution **76 (Rev.WRC‑15)** to call for further study on accurate modelling of non-GSO systems and a regulatory procedure for assuring compliance with the aggregate emission limits.

* There are several key issues which are required to be discussed, include but not limited to the following:
* Consideration of planned non-GSO satellites *(considered in Method J2 Option 2 and Method J4).*
* When the consultation process / meetings are carried out (a) once Recommendation of both methodologies are approved *(considered in Method J2 (Option 1 or 2), Method J3 Option 1 and Method J4)* or (b) once Recommendation of one methodology is approved *(being considered in Method J3 Option 2).*
* Methodologies to ensure compliance *(considered in Method J5 through the call for further studies).*
* Addresses technical aspect *(considered in Method J3 and Method J4).*

2. Documents

* **Input Document(s):** [INP-20](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-20_India_WP4_PACP_WRC-23_Agenda_Items.docx) **(**IND),[INP-39](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-39_Japan_WP4_Views_WRC-23_Agenda_Item_7.docx) (J), [INP-56](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-56_Singapore_WP4_PACP_WRC-23_Agenda_Items_0.docx) (SNG), [INP-61](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-61_Thailand_WP4_PACP_WRC-23_Agenda_Items.docx) (THA), [INP-68](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-68_Iran_WP4_Preliminary_Views_on_WRC-23_Agenda_Items.docx) (IRN), [INP-83](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-83_Australia_WP4_PACP_WRC-23_Agenda_Items.docx) (AUS), [INP-90 Rev.1](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-90R1_KOR_WP4_PACP_WRC-23_Agenda_Items.docx) (KOR), [INP-106](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-106_China_WP4_PACP_WRC-23_Agenda_Items.docx) (CHN), [INP-112](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-112_Malaysia_WP4_PACP_WRC-23_Agenda_Items.docx) (MLA), [INP-131](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-131_Tonga-WP4-Views_and_PACP_on_WRC-23_Agenda_Item_7A_7J.docx) (TON)
* **Information Document(s):** [INF-35](https://www.apt.int/sites/default/files/2023/08/APG23-6-INF-35_Brief_on_AI_7.docx) (DG 7 Chairs), [INP-45](https://www.apt.int/sites/default/files/2023/08/APG23-6-INF-45_Status_of_RCC_preparation_to_WRC-23.pdf) (RCC), [INF-46](https://www.apt.int/sites/default/files/2023/08/APG23-6-INF-46_Status_of_CEPT_preparation_for_WRC-23_and_RA-23.pdf) (CEPT), [INF-52](https://www.apt.int/sites/default/files/2023/08/APG23-6-INF-52_CITEL_preparation_for_WRC-23.pdf) (CITEL)

3. Summary of discussions

3.1 Summary of APT Members’ views

3.1.1 India (Republic of) - Document APG23-6/[INP-20](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-20_India_WP4_PACP_WRC-23_Agenda_Items.docx)

* India supports Method J5 to Modify Resolution 76 (Rev.WRC-15) to call for further study on accurate modelling of non-GSO systems and a regulatory procedure for assuring compliance with the aggregate emission limits.
* Critically, prior to conducting any consultation meetings, an accurate aggregate calculation methodology is needed to determine the EPFD statistics resulting from multiple NGSO FSS systems operating together. Otherwise, there will be no meaningful information on the situation vis-à-vis the aggregate EPFD limits and the meetings may not be productive.

3.1.2 Japan - Document APG23-6/[INP-39](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-39_Japan_WP4_Views_WRC-23_Agenda_Item_7.docx)

* Japan is of the view that an accurate aggregate calculation method is needed and supports the possible modification of Resolution **76 (Rev.WRC-15)** in order to introduce the concept of consultation process/meetings. Japan is considering Method J3 or Method J4 in the CPM Report as preferable at this moment.

3.1.3 Singapore (Republic of) - Document APG23-6/[INP-56](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-56_Singapore_WP4_PACP_WRC-23_Agenda_Items_0.docx)

Singapore believes there are several critical aspects when considering the consultation process:

* An accurate aggregate calculation method is needed before requiring changes to the operations of NGSO systems. It is recognised that there is no existing methodology which can be used for the calculation of the aggregate. This methodology should be developed with supported studies and careful thought to ensure the protection of GSO systems and avoid any chance of dispute. Until this methodology is created, the consultation meeting will not be efficient, as participating administrations will not have a clear objective as to how to calculate in order to comply with Tables 1A to 1D to Resolution **76 (Rev.WRC-15)**.
* Only operational NGSO systems should be included in the consultation meetings, with a minimum number of operational satellites identified as milestone 1 under Resolution 35.Non-operational satellites will not contribute to the aggregate interference, and might slow the process down due to limitation on the number of technical parameters they can provide before operation.
* NGSO systems submitted under multiple ITU filings should be treated as a single system for purposes of Resolution 76, for ease of discussion and calculation of the aggregate EPFD calculations.
* There is also no agreed methodology that would define the actions required by non-GSO systems should the EPFD limits in Resolution 76 be exceeded. This methodology and consequential actions should be the subject of further study and agreed before use within the consultation meetings.
* For the reason listed above, the administration of Singapore supports method **J5.**
* The proposal to modify Resolution **76 (Rev.WRC-15)** as embedded below.



3.1.4 Thailand (Kingdom of) - Document APG23-6/[INP-61](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-61_Thailand_WP4_PACP_WRC-23_Agenda_Items.docx)

* Thailand is of the view that there is a need to modify Resolution **76 (Rev.WRC-15)** in order to introduce the concept of consultation process/meetings to provide a means for administrations to evaluate aggregate epfd of non-GSO FSS systems and ensure the compliance with the aggregate epfd limits in Tables 1A to 1D of Annex 1 to the Resolution.
* Therefore, Thailand supports Method J2 Option 2 in the CPM Report.



3.1.5 Iran (Islamic Republic of) - Document APG23-6/[INP-68](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-68_Iran_WP4_Preliminary_Views_on_WRC-23_Agenda_Items.docx)

* Islamic Republic of Iran supports the Method J2/Option 1, as contained in the draft CPM 23-2 Report.
* Islamic Republic of Iran proposes a Preliminary APT Common Proposal for Method J2/Option 1 in the CPM Report along with some modifications which are highlighted in yellow colour, as follows:



3.1.6 Australia - Document APG23-6/[INP-83](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-83_Australia_WP4_PACP_WRC-23_Agenda_Items.docx)

* Australia supports development of a consultation process with clearly defined output of the process leading to compliance with aggregate EPFD limits. Australia supports the development of methodologies to calculate aggregate epfd limits and methodology to correct the exceedance of epfd and is of the view that consultation meetings will commence only once such methodologies are agreed at SG4. In particular, it is important that methodology to correct the exceedance is readily available. Australia supports consideration of operational satellite systems in aggregate epfd calculations and hence those relevant administrations are invited to the consultation meetings. Australia is of the view that provisions of RR No.22.5K applies in the interim and non-GSO administrations should take all necessary measures to reduce aggregate epfd levels to protect GSO networks.
* Australia does not propose a Preliminary APT Common Proposal for this topic.

3.1.7 Korea (Republic of) - Document APG23-6/[INP-90 Rev.1](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-90R1_KOR_WP4_PACP_WRC-23_Agenda_Items.docx)

* As the Republic of Korea supports the possible modifications to Resolution **76 (Rev.WRC-15)** to introduce the concept of “consultation process/meetings” in order to ensure protection of GSO FSS and BSS networks, among the methods presented in the CPM Report, Methods J2 or J4 can be supported.

3.1.8 China (People’s Republic of) - Document APG23-6/[INP-106](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-106_China_WP4_PACP_WRC-23_Agenda_Items.docx)

* China supports the introduction of the concept of a “consultation/meeting process” with regards to evaluate the aggregate epfd produced by the non-GSO satellite systems in relation to the status of Resolution 76.
* China is also of the view that some aspects, such as methodologies to be used to evaluate aggregate EPFD limit compliance, as well as the process and procedures for the consultation meeting, needs to be addressed. Consultation meeting can be organized after the evaluation process for the aggregated EPFD level has been clarified. In order to improve work efficiency, an equitable, rational and shared responsibility solution might be considered in the consultation meeting if the aggregate EPFD exceeds the limit.
* China supports that both the satellites in orbit and those with deployment plans in the future should be included in the consulting meeting because the satellite systems with deployment plans in the near future are already in the stage of satellite design and manufacturing , and the system parameters are relatively confirmed, therefore it is eligible for these satellite systems to be included in the consultation meeting and take joint measures to reduce aggregate epfd, And the limited capabilities of developing countries to launch satellites into orbit should also be considered. In that case, China supports method J2 option 2.
* China proposes views mentioned above as APT common proposals.

3.1.9 Malaysia - Document APG23-6/[INP-112](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-112_Malaysia_WP4_PACP_WRC-23_Agenda_Items.docx)

* Malaysia supports the development of methodology for calculating the aggregate epfd produced by non-GSO FSS systems to operate co-frequency in the frequency bands referred to in Resolution **76 (Rev. WRC-15)**, and thereafter, a methodology to correct any exceedance of the aggregate epfd limits by all those operational non-GSO FSS systems that would meet the criteria in potential revision of Resolution **76 (Rev. WRC-15)** or one or more ITU-R Recommendations, as appropriate.
* Until the relevant methodologies are available, in case the aggregate epfd limits in Tables 1A to 1D are exceeded, Malaysia believes that the protection of GSO shall continue to be ensured by the provisions of RR No. **22.5K** and non-GSO FSS administrations to take all necessary measures to reduce the aggregate epfd levels.

3.1.10 Tonga (Kingdom of) - Document APG23-6/[INP-131](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-131_Tonga-WP4-Views_and_PACP_on_WRC-23_Agenda_Item_7A_7J.docx)

* Tonga supports method J3 of the CPM report and includes some modifications in his proposal.
* For Tonga, it is important that:
* The methodology for calculating aggregate interference being developed at WP4A level should model NGSO operations as accurately as possible, in order to maximize spectrum use efficiency and not impose unnecessary constraints on NGSO systems
* Consultation meetings cannot be convened until WP4A has developed Recommendation/Recommendations containing a methodology/methodologies for calculating aggregated epfd from multiple NGSO systems and actions to be taken in case aggregated limits are exceeded. It is logical and inevitable not to meet until this work is completed and agreed at WP4A level.
* The current regulatory provisions in the Radio Regulations, i.e., Article **22.5K** and Resolves 2 of Resolution **76 (Rev. WRC-15)**, are adequate for the interim period until the relevant methodologies necessary for the consultation meeting are approved.
* Aggregate interference calculations should only take into account the operational satellites of the NGSO systems considered at the time of the meeting plus the satellites that will be operational within one year from the date of the meeting (regulators may provide evidence of the scheduled rocket launches showing how many satellites will be launched). This approach ensures that the calculations performed best reflect the actual aggregate interference environment.

3.2 Summary of issues raised during the meeting

***Views relating to preferred Method***

* Some APT Members are considering Method J2, J3, J4 and J5 in the CPM Report to address this topic.

***Views relating to operational & planned satellites***

* Some APT Members are of the view that operational non-GSO satellites as well as those satellites planned to be operational within a period of time to be determined after a consultation meeting should be included in the consultation meeting, with a minimum number of operational satellites identified under Resolution **35 (WRC-19)**. This is because the satellite systems with deployment plans “within a period of time to be determined" are already in the stage of satellite design and manufacturing, and the system parameters are relatively confirmed, therefore it is eligible for these satellite systems to be included in the consultation meeting and take joint measures to reduce aggregate epfd,
* Some APT Members are of the view that non-operational satellites do not contribute to the aggregate interference calculation as they do not emit interference signal.

***Views relating to methodologies / calculation methods***

* Some APT Members are of the view that an accurate aggregate calculation method is needed before requiring changes to the operations of NGSO systems.
* Some APT Members recognized that there is no existing methodology which can be used for the calculation of the aggregate. This methodology should be developed with supported studies and careful thought to ensure the protection of GSO systems and avoid any chance of dispute. Until this methodology is created, the consultation meeting will not be efficient, as participating administrations will not have a clear objective as to how to calculate in order to comply with Tables 1A to 1D to Resolution **76 (Rev.WRC-15)**.
* Some APT Members are of the view that until these methodologies are agreed, consultation meetings cannot take place.
* Some other APT Members are of the view that without the methodologies, consultation meetings can take place.

***Views relating to compliance method***

* Some APT Members are of the view that, in case the aggregate epfd of non-GSO FSS systems are exceeded, there should a suitable methodology for administrations to follow the compliance.
* Some APT Members are of the view that there is no agreed methodology that would define the actions required by non-GSO systems should the EPFD limits in Resolution **76 (Rev.WRC-15)** be exceeded. This methodology and consequential actions should be the subject of further study and agreed before use within the consultation meetings.
* Some APT Members are of the view that until these methodologies are agreed, consultation meetings cannot take place.
* Some other APT Members are of the view that without the methodologies, consultation meetings can take place.
* Some APT Members are of the view that, until the relevant methodologies are available, in case the aggregate epfd limits in Tables 1A to 1D are exceeded, the protection of GSO shall continue to be ensured by the provisions of RR No. **22.5K** and non-GSO FSS administrations to take all necessary measures to reduce the aggregate epfd levels.
* Some APT Members are of the view that an equitable, rational and shared responsibility solution might be considered in the consultation meeting if the aggregate EPFD exceeds the limit.

***Views relating to filings***

* Some APT Members are also of the view that, for discussion and calculation of the aggregate EPFD calculations, non-GSO systems submitted under multiple ITU filings should be treated as a single system for the purposes of Resolution **76 (Rev.WRC-15)**.

4. APT View(s)

* The APT has considered Agenda Item 7 Topic J but has not developed a Preliminary APT Common Proposal on the matter. The APT has however agreed on the following view(s) on the Agenda Item 7 Topic J.
* APT Members do not support Method J1.

5. Preliminary APT Common Proposal

* None.

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

* None.

7. Views from Other Organisations

7.1 Regional Groups

7.1.1 ASMG – Document WRC-23-IRW-22/[5](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R19-2WSHWRC23-C-0005) (as of December 2022)

* Support the introduction of the concept of a “consultation/meeting process” with regards to evaluating the aggregate epfd produced by all non-GSO satellite systems to reduce them.

7.1.2 ATU – Document WRC-23-I IRW-22/[2](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R19-2WSHWRC23-C-0002) (as of December 2022)

* Support the contents of Document 691 in modification of Resolution **76 (Rev. WRC-15).**

7.1.3 CEPT – Document APG23-6/[INF-46](https://www.apt.int/sites/default/files/2023/08/APG23-6-INF-46_Status_of_CEPT_preparation_for_WRC-23_and_RA-23.pdf)

* CEPT supports the modification of Resolution **76 (Rev.WRC-15)** to introduce the concept of “consultation meetings”. CEPT supports that only the operational satellites of non-GSO systems should be considered to evaluate the aggregate epfd levels.
* CEPT supports that all administrations are given full visibility of the process.
* CEPT supports that the technical work, such as the methodology to be used to evaluate aggregate epfd limit compliance, as well as the methodology to adapt the operation of all non-GSO FSS systems operating co-frequency in frequency bands covered in Tables 1A to Table 1D that are taken into account to evaluate the aggregate epfd levels, should be developed by the ITU-R as a matter of urgency.
* CEPT supports that any amendment to the relevant non-GSO FSS systems mentioned above shall not affect the regulatory status of the affected non-GSO systems, including following any modifications to their published characteristics.
* CEPT supports that consultation meetings held under the amended Resolution **76 (WRC-15)** shall not occur before the methodologies above are developed by the ITU-R and made available to the membership or by a TBD-date, whichever comes first.
* CEPT supports that the current regulatory provisions in RR (Article **22.5K** and resolves 2 of Resolution **76 (WRC-15)**) combined with existing ITU-R Recommendations could be used for the interim period until the relevant methodologies needed for the consultation meeting are approved. However, CEPT notes that, in absence of a methodology to calculate the aggregate epfd produced by non-GSO FSS systems, the certainty of possible exceedance of the aggregate epfd produced by non-GSO FSS systems should be ensured.

7.1.4 CITEL – Document APG23-6/[INF-52](https://www.apt.int/sites/default/files/2023/08/APG23-6-INF-52_CITEL_preparation_for_WRC-23.pdf)

**Draft Inter-American Proposal (DIAP)**

Some administration supports modifying Resolution **76 (WRC-15)** to call for:

* Further studies on a consultation process for non-GSO FSS systems operating in the portions of the of the Ku and Ka-bands subject to single entry EPFD limits in Article **22** as well as aggregate EPFD limits in Table 1A to 1D of Resolution **76 (WRC-15)**;
* Appropriate action by WRC-27;
* Based on Method J5 of the CPM report on Topic J.

**Preliminary Proposals (PP)**

* One administration supports NOC to Resolution **76** **(WRC-15)** (Method J1)
* Another administration supports the modification of Resolution **76 (WRC-15)** to introduce the concept of consultation process/meetings between administrations operating or planning to operate non-GSO systems in bands subjects to the aggregate EPFD limits specified in Table 1A to 1D based on Method J2.

7.1.5 RCC – Document APG23-6/[INF-45](https://www.apt.int/sites/default/files/2023/08/APG23-6-INF-45_Status_of_RCC_preparation_to_WRC-23.pdf)

* Support the inclusion to Resolution **76 (WRC-15)** of the regulatory mechanism to ensure compliance with the aggregate epfd limits to protect GSO FSS and GSO BSS from non-GSO FSS.
* Consultations meetings should take into account both operating and planned nonGSO systems. Criteria of participation should be established: when calculating the total epfd both satellites of each non-GSO system that have been brought into service by the time of the consultation meeting, as well as the satellites of non-GSO systems that are expected to be brought into use within [TBD] year from the date of the meeting should be taken into account.

7.2. Position of International Organizations (if available)

7.2.1 IARU R3 (as of August 2023)

* None.

7.2.2 ICAO – Document WRC-23-IRW-22/[8](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R19-2WSHWRC23-C-0008)

* None.

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