**Report of the Agenda Item Coordinator during WRC-19**

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12 November 2019

1. Agenda Item 1.6 *- to consider the development of a regulatory framework for non-GSO FSS satellite systems that may operate in the frequency bands 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space), in accordance with Resolution* ***159 (WRC-15)***
2. APT Common Proposals and APT Views for WRC-19 (which has been submitted to WRC-19)

APT Members support the establishment of regulatory and procedural conditions for non-GSO FSS satellite systems in the frequency bands 37.5-39.5 GHz (space-to-Earth), 39.5 42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) while ensuring protection to GSO satellite networks in FSS, MSS and BSS, and other existing primary services in the same bands as well as protection of the EESS (passive) in the frequency bands 36 37 GHz and 50.2-50.4 GHz and the radio astronomy in the frequency bands 42.5-43.5 GHz, 48.94-49.04 GHz and 51.4-54.25 GHz.

APT Members support Method A of Issue 1 in the CPM Report.

In the absence of suitable ITU-R Recommendations to be incorporated by reference, APT Members support consideration of WRC Resolutions, addressing:

* generic GSO Reference Links and calculation procedures, that may be used to verify the compliance of non-GSO systems; and
* regulatory provisions to protect GSO satellite networks based on appropriate sharing methodology and reference characteristics of GSO satellite networks.

APT Members support ensuring the protection of EESS (passive) from unwanted emissions in adjacent bands. In relation to Issue 2 relating to possible modifications to Resolution **750 (Rev.WRC-15)**, preference towards Option A has been expressed, and Option B is still under consideration.

1. Topics proposed by other regional Groups or ITU Members which are not included in no. 2 above

The contributions on this agenda item are complex. Attached below for APT Member’s reference, is a matrix outlining the positions of the different regional groups and administrations.



1. Progress of discussion during WRC-19 on the Agenda Item

Presentation of the documents has been completed.

There has also been general discussion about grouping of subject matters and development of compilation material for consideration by the meeting.

The meeting on Friday, 1 November 2019 commenced discussion on Issue 1 relating to possible new regulatory and procedural conditions for non-GSO FSS satellite systems in the frequency bands of interest. Four informal groups were established to address the following issues:

* Reference Links
* Single entry limits for NGSO FSS systems
* Aggregate interference from multiple NGSO FSS systems
* Footnotes and Appendix 22

4 November

A meeting on issue 2 (Res 750) took place on 4 November. There was general discussion on issues including appropriate limits for GSO system to ensure protection of EESS. Further meetings of the informal group will be held to discuss the protection limits.

The fourth informal group commenced its work on 4 November and resolved issues relating to the footnotes quickly. Considerable discussion then took place in relation to potential modifications to Appendix 22. This discussion related primarily to the potential interference from the NGSO systems into the GSO systems and whether the aggregated interference from multiple NGSO systems could provide up to 10% total degradation. This discussion has not concluded and will be continued in later meetings.

5 & 6 November

Informal meeting on single entry limits (Zac Rosenbaum) – continued discussion on the calculation of potential interference. Drafting of the Resolution is progressing.

Informal meeting on possible changes to GSO limits in Res.750 (Brandon Mitchel) – No movement in views as some Administrations do not believe the issue should be discussed as it is out of scope of the agenda.

Informal meeting on Agg Res (Maxim Strelets) – Progressing work on the draft Resolution.

Informal meetings on Reference links (Alex Epshteyn) – Continued populating the table describing the technical characteristics of the reference links to be used in the coordination process. There is disagreement by ASMG on some formulas to be applied for the calculation of the reference links. This is yet to be resolved. The calculation methodology is largely agreed.

7 & 8 November

Reports from informal groups

* Issue 2 – Res 750 (Brandon Mitchell). One meeting held. Views on changes to GSO. Poss different dates. Views expressed. Need clear ToR for group as could not agree… didn’t discuss possible GSO limits. No further meetings scheduled and need clear ToR to move forward if to meet again.

Have not yet talked about possible NGSO limits.

Meeting to discuss Option B limits and then NGSO limits. Not ToR do not provide for discussion on whether GSO is part of the agenda item.

* Issue 1 - Reference Links (Alex Epshteyn) CEPT proposing a way forward. Work following the process proposed.
* Issue 1 - Footnotes – Work complete
* Single Entry Resolution (Zac Rosenbaum) – Been through once except supplemental links. Some issues to revisit in the resolution. Reference Links and Single Entry Resolution need to be brought together into one document.
* Issue 1 - Aggregate Resolution – Did not meet yesterday. One more session required.

Discussion among interested APT countries following the APT meeting on 7 November agreed that we should not support consideration of NGSO MSS as part of issue 1 of the agenda item as it is out of scope and studies have not been undertaken.

A small informal group discussed the possibility of including supplementary links with 3 test points in the RR. Consideration of updates to these links would need to be undertaken at each future WRC. There is some concern that this would over-protect GSO systems and inhibit establishment of NGSO systems. An APT view has been expressed that we want to ensure there is a balance approach, protecting the GSO systems, while also enabling NGSO systems.

9 November 2019

Issue 2 – Res 750 met today. For GSO, 3 options, 2 maintain positions and one compromise. For NGSO one option.

Ref Links – Complete

Footnotes – Complete

Single Entry Resolution – Have gone through all the work and no more sessions are proposed. Some discussions are underway off-line however. Still need to merge documents.

Aggregate Resolution – The document is complete although it still has some square brackets and issues. These will need to be addressed at SWG level.

The proposals for work going forward is simply to address the issues. In addition a small editorial group is to go through the documents to ensure all the issues are covered and nothing has been omitted. The meeting on Monday (11 November) is to review the documents and main issues:

* Resolution 750
* Supplemental links
* Application of Percentages
* How to determine when the aggregate values have been exceeded.
* Inclusion of MSS (currently under offline discussion)

12 November 2019

A late-notice meeting was called to address the main outstanding issues:

* Res 750 – GSO and NGSO limits. Discussion revolved around movement of one region from its NOC position on Res 750 for GSO. There was considerable movement on the limits finishing up with most regions considering -30 dB for GSO and -42 dB for NGSO; and one region moved to -25 for GSO and -42 for NGSO.  The gap is now 5dB for GSO and while ASMG will look to move, they may ask for further movement from the larger group of regions. There is still no agreement on whether GSO should be included in possible modifications to Res.750.
* Application of percentages – This relates to the total interference that may be created by the incoming NGSO systems. Discussion is ongoing on appears to be settling on either 2.5% or 3% for single system interference and a value of 10% for multiple systems interference.
* Supplemental Links – Discussion considered the use of supplemental links only for assessment of aggregate interference issues.
* The proposed resolution on aggregate interference will be requesting further studies with a report back to WRC-23 vis Resolution 86.

Discussion on inclusion of regulatory changes for MSS for consideration by the group. No agreement at this point.

1. Issues which require discussion at APT Coordination Meetings and seek guidance thereafter

The APT position on this agenda item is very broad and generally agrees to support the work on this agenda item. Would simply ask whether there is any objection to:

* the limits of -30 dB for GSO and -42 dB for NGSO to address Issue 2 of a.i. 1.6. Some further movement of the proposed limits (worst case of up to 5 dB) for GSO may be required.
* the use of supplemental links only for assessment of aggregate interference issues is appropriate.
* values of total interference that may be created by the incoming NGSO systems of either: 2.5% or 3% for single system interference; and a value of 10% for multiple systems interference.

*Note: Coordinators are encouraged to conduct informal consultation with interested APT Members on the issues/topics under no. 3 and inform the outcomes of consultation to the Coordination Meeting*. *Coordinators can also organize coordination meetings on the respective agenda items whenever necessary.*