**Report of the Agenda Item1.5 Coordinator during WRC-19**

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1. Agenda Item

**Agenda Item 1.5:** *to consider the use of the frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) by earth stations in motion communicating with geostationary space stations in the fixed-satellite service and take appropriate action, in accordance with Resolution* ***158 (WRC-15)***

Resolution **158 (WRC-15)**: *Use of the frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) by earth stations in motion communicating with geostationary space stations in the fixed-satellite service*

1. APT Common Proposals and APT Views for WRC-19 (which has been submitted to WRC-19)



APT Members support the ACP as shown here based on the input contributions and discussions during APG19-5.

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

Contributions to WRC19 are as follows,

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| Doc No. | Author | Contents |
| 11A5 | CITEL | Common Proposal based on CPM Report |
| 12A5 | RCC | Common Proposal based on CPM Report |
| 16A5 | CEPT | Common Proposal based on CPM Report |
| 24A5 | APT | Common Proposal based on CPM Report |
| 28A5 | CHN | Proposal based on CPM Report |
| 29A5 | ASMG | Common Proposal based on CPM Report |
| 17 | IMO | Description to support the establishment of appropriate conditions for ESIM |
| 46A5 | ATU | Common Proposal based on CPM Report |
| 47A5 | AUS | Proposal based on ACP |
| 61A5 | KOR | Complement to 65 |
| 65 | J, KOR, SNG | Proposal based on CPM Report |
| 75 | SMO | Analysis against 61A5 |
| 89A5 | SADC | Common Proposal based on CPM Report |
| 92A5 | IND | Proposal based on CPM Report |
| 95 | SMO, VUT | Proposal based on CPM Report |

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

* SWG5A2 met 16 times except 5 informal meetings and finished on 12 Nov. However, the issues to be resolved had remained. After offline discussions were held mainly by CITEL and CEPT, SWG5A2 chairman’s report were sent to WP5A.
* Although some issues were raised in WP5A on this item, all of them were resolved except 1.1.6 and Annex 1 bis, which were about the protection of non-GSO MSS feeder links operating in the frequency band 29.1‑29.5. WP5A chairman’s report were sent to COM5 with square brackets on the issue.
* Before COM5 on Nov. 14, the remaining issue were settled by an offline discussion between CITEL and CEPT. Accordingly, the WP5A chairman’s report(C/354) were approved in the COM5.
* In the discussion two outstanding issues were resolved.
  + For the protection of non-GSO MSS feederlink ESIM should consider Annex 1bis (CITEL proposed).
  + For the protection of terrestrial services from A-ESIM, the pfd mask it shall comply with is CEPT proposed mask(CPM Option 1) when its altitude is above 3km and CITEL proposed mask when below 3km.
* Major deviation from ACP were as follows.

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| ACP # | ACP | Approved Report |
| 1.1.3 | The Bureau shall accept the information at the coordination stage from the notifying administration to examine if the ESIM is within the envelopes. | The stage the Bureau shall accept the information (Appendix 4) was determined to be from the notification stage. |
| 1.2.4 | The Bureau shall examine the conformity of pfd limit for A-ESIM. | The description is in line with ACP. In addition, it was described that the methodology would be resolved by ITU-R, and during the absence of the methodology the commitment shall be sent by the notifying administration instead. |
| 2.1 | Operation of ESIM shall be limited to provide civil application only. | No such limitation (The limitation could not be accepted in the meeting) |

* More detail comparison was as follows. The resolves whose sentences are the same between ACP and approved report or positions in ACP are none, are omitted.

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| ACP # | ACP | Approved Report |
| Footnote of Frequency Allocation table | The operation of earth stations in motion communicating with geostationary FSS space stations in the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz shall be subject to draft new Resolution **[ACP-A15] (WRC-19)** | The operation of earth stations in motion communicating with geostationary FSS space stations within the frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) shall be subject to the application of Resolution **[A15] (WRC‑19)**. |
| considering | *c)* that the frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) are also allocated to terrestrial and space services used by a variety of different systems and these existing services and their future development need to be protected from the operation of ESIM, | *c)* that the frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) are also allocated to terrestrial and space services used by a variety of different systems and these existing services and their future development need to be protected, without the imposition of undue constraints, from the operation of ESIM;  *d)* that ITU-R studied whether aeronautical ESIM are capable of protecting non-GSO mobile-satellite service feeder link satellite receivers in the band 29.1-29.5 GHz |
| recognizing | *d)* that the successful compliance of this Resolution does not oblige any administration to authorize/licence any ESIM to operate within the territory under its jurisdiction unless such an operation it fully complies with its national jurisdiction;  *e)* that the operation of any type of ESIM (land, maritime and aeronautical) within the territory(-ies), territorial waters and airspace under the jurisdiction of an administration, shall be carried out only if authorized by that administration, | *d)* that the successful compliance with this Resolution does not oblige any administration to authorize/licence any ESIM to operate within the territory under its jurisdiction,  *recognizing e) of ACP is transferred to*  *resolves 3 as follows*  3 that the operation of ESIM within the territory, including territorial waters and territorial airspace, of an administration shall be carried out only if authorized by that administration; |
| resolves 1 | 1 that for any ESIM communicating with a GSO FSS space station in the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz, or portions thereof, the following conditions shall apply: | 1 that for any ESIM communicating with a GSO FSS space station within the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz, or parts thereof, the following conditions shall apply: |
| resolves 1.1 | 1.1.1 with respect to satellite networks or systems of other administrations, the ESIM characteristics shall remain within the envelope characteristics and coordination envelope of the satellite network with which the ESIM communicate;  1.1.2 that the notifying administration of the GSO FSS network, with which ESIM communicate, shall ensure that ESIM operation complies with coordination agreements for the frequency assignments of this GSO FSS network under the relevant provisions of the Radio Regulations;  1.1*.*3 for the implementation of *resolves*1.1.1 above, the notifying administration of the GSO FSS network with which ESIM communicate shall send to the Bureau under this Resolutionthe relevant Appendix **4** information related to the characteristics of the ESIM intended to communicate with the space station of that GSO FSS network, together with the commitment that the ESIM operation shall be in conformity with the Radio Regulations and this Resolution;  1.1.3.1 (Examination of ESIM in relation to a GSO satellite network recorded in the MIFR) upon receipt of the information provided in accordance with *resolves*1.1.3 above, the Bureau shall examine it in relation to the requirements referred to in *resolves*1.1.1 based on the information recorded in the MIFR and any other reliable information available to it . If following this examination, the Bureau concludes that the ESIM characteristics are within the envelope of the satellite network, the Bureau shall publish the results for information in the BR IFIC, otherwise the information shall be returned to the notifying administration;  1.1.3.2 (Examination of ESIM in relation to a GSO satellite at coordination stage which could subsequently be recorded in the MIFR) upon receipt of the information provided in accordance with *resolves*1.1.3 above, the Bureau shall examine it in relation to the requirements referred to in *resolves*1.1.1 based on the complete information submitted. If, following this examination, the Bureau concludes that the ESIM characteristics are within the envelope of the satellite network under coordination, the Bureau shall publish the results for information in the BR IFIC indicating the provisional nature of the coordination process with the remarks that once the coordination is successfully completed and recorded in the MIFR the finding would be reviewed and, if necessary, revised, otherwise the information shall be returned to the notifying administration;  1.1.4 for the protection of non-GSO FSS systems operating in the frequency band 27.5-28.6/29.1 GHz, ESIM communicating with GSO FSS networks shall comply with the provisions contained in Annex 1 to this Resolution;  1.1.7 ESIM shall not claim protection from BSS feeder link earth stations operating in the frequency band 17.7-18.4 GHz in accordance with the Radio Regulations and shall not affect their future development; | 1.1.1 with respect to satellite networks or systems of other administrations, the ESIM characteristics shall remain within the envelope characteristics of typical earth stations associated with the satellite network with which these ESIM communicate;  1.1.3 that the notifying administration of the GSO FSS network with which ESIM communicate shall ensure that the operation of ESIM complies with the coordination agreements for the frequency assignments of the typical earth station of this GSO FSS network obtained under the relevant provisions of the Radio Regulations, taking into account *recognizing b)* above;  1.1*.*4 for the implementation of *resolves*1.1.1 above, the notifying administration for the GSO FSS network with which ESIM communicate shall, in accordance with this Resolution, send to the Bureau the relevant Appendix **4** notification information related to the characteristics of the ESIM intended to communicate with that GSO FSS network, together with the commitment that the ESIM operation shall be in conformity with the Radio Regulations including this Resolution;  1.1.4*bis* upon receipt of the notification information referred to in *resolves* 1.1.4 above, the Bureau shall examine it with respect to the provisions referred to in *resolves* 1.1.1 above and publish the result of such examination in the BR IFIC;  1.1.5 for the protection of non-GSO FSS systems operating in the frequency band 27.5‑28.6 GHz, ESIM communicating with GSO FSS networks shall comply with the provisions contained in Annex 1 to this Resolution;  1.1.8 ESIM shall not claim protection from BSS feeder link earth stations operating in the frequency band 17.7-18.4 GHz in accordance with the Radio Regulations; |
| resolves 1.2 | 1.2 with respect to terrestrial services in the 17.7-19.7 GHz and 27.5-29.5 GHz frequency bands ESIM shall comply with the following conditions:  1.2.1 the receiving ESIM in the 17.7-19.7 GHz frequency band shall not claim protection from terrestrial services in the above-mentioned frequency band operating in accordance with the Radio Regulations and shall not affect the future development of these services;  1.2.2 the transmitting aeronautical and maritime ESIM in the 27.5-29.5 GHz frequency band shall not cause unacceptable interference to terrestrial services in the above-mentioned frequency band operating in accordance with the Radio Regulations and shall not affect the future development of these services and Annex 2 applies;  1.2.3 for the implementation of resolves 1.2.2 above, the notifying administration of the GSO FSS network with which aeronautical ESIM communicate shall send the Bureau the relevant Appendix **4** information related to the characteristics of the aeronautical ESIM. The Bureau shall examine the information with respect to its conformity with the pfd limits specified in Part 2 of Annex 2 on the Earth’s surface. Should the result of examination is unfavourable the BR shall return submission to the notifying administration of ESIM;  1.2.4 the transmitting land ESIM in the 27.5-29.5 GHz frequency band shall not cause unacceptable interference to terrestrial services in the above-mentioned frequency band operating in accordance with the Radio Regulations and shall not affect the future development of these services;  1.2.5 for the implementation of *resolves* 1.2.2 and 1.2.3 above, the notifying administration responsible for the GSO FSS satellite network with which ESIM communicate shall submit to the Bureau together with the Appendix **4** data referred to in *resolves* 1.1.3 a commitment undertaking that in case of unacceptable interference, upon receipt of a report of interference, take necessary action to immediately eliminate this interference or reduce interference to an acceptable level; | 1.2 with respect to the protection of terrestrial services to which the frequency bands 17.7‑19.7 GHz and 27.5-29.5 GHz are allocated and operating in accordance with the Radio Regulations, ESIM shall comply with the following conditions:  1.2.1 the receiving ESIM in the 17.7-19.7 GHz frequency band shall not claim protection from terrestrial services to which the frequency band is allocated and operating in accordance with the Radio Regulations;  1.2.2 the transmitting aeronautical and maritime ESIM in the 27.5-29.5 GHz frequency band shall not cause unacceptable interference to terrestrial services to which the frequency band is allocated and operating in accordance with the Radio Regulations and Annex 2 shall apply;  1.2.5 for the application of Part II of Annex 2 as referred to in *resolves* 1.2.2 and 1.2.4 above, the Bureau shall examine the characteristics of aeronautical ESIM with respect to the conformity with the pfd limits on the Earth’s surface specified in Part II of Annex 2 and publish the results of such examination in the BR IFIC;  1.2.3 the transmitting land ESIM in the 27.5-29.5 GHz frequency band shall not cause unacceptable interference to terrestrial services in neighbouring countries to which the frequency band is allocated and operating in accordance with the Radio Regulations (see *resolves* 3);  1.2.6 the notifying administration for the GSO FSS network with which the ESIM communicate shall send to the Bureau a commitment that, upon receiving a report of unacceptable interference, the notifying administration for the GSO FSS network with which the ESIM communicate shall follow the procedures in *resolves* 4;  7 that, if the Bureau is unable to examine, in accordance with *resolves* 1.2.5 above, aeronautical ESIM with respect to the conformity with the pfd limits on the Earth’s surface specified in Part II of Annex 2, the notifying administration shall send to the Bureau a commitment that the aeronautical ESIM comply with those limits;  8 that the Bureau shall formulate a qualified favourable finding under No. **11.31** with respect to the limits contained in Part II of Annex 2 of this Resolution, if *resolves* 7 is applied successfully, otherwise it shall formulate an unfavourable finding, |
| resolves 2 | 2.1 that the operation of ESIM shall be strictly limited to provide civil application only thus any such operation for non-civil application purposes is prohibited; |  |
| resolves 3 | 3 that the notifying administration for the satellite network within which ESIM communicate with in collaboration with the administration authorizing operation of ESIM in its territory shall ensure that the ESIM have the capability to limit the operation to the territory or territories of administrations having authorized those earth stations and to comply with Article **18**; | 5.3 measures, when required, are taken to limit the operation of ESIM in the territory, including territorial waters and territorial airspace, under the jurisdiction of the administrations authorizing ESIM; |
| Resolves 4 | 4 that the administration responsible for the GSO FSS satellite network with which the ESIM communicate shall ensure that:  4.1 techniques to maintain pointing accuracy with the associated GSO FSS satellite without inadvertently tracking adjacent GSO satellites; are employed for the operation of ESIM;  4.2 all necessary measures are to be taken so that ESIM are subject to permanent monitoring and control by a Network Control and Monitoring Centre (NCMC) or equivalent facility and are capable of receiving and acting upon at least “enable transmission” and “disable transmission” commands from the NCMC or equivalent facility Such network control capability/facilities relating to operation of ESIM need to be made available to the administrations authorizing ESIM in their territories;  4.3 measures, are taken to limit the operation of ESIM to the territory or territories under the jurisdiction of the administrations authorizing ESIM;  4.4 a point of contact shall be provided for the purpose of tracing any suspected cases of unacceptable interference from ESIM; | 5 that the administration responsible for the GSO FSS satellite network with which the ESIM communicate shall ensure that:  5.1 for the operation of ESIM, techniques to maintain pointing accuracy with the associated GSO FSS satellite, without inadvertently tracking adjacent GSO satellites, are employed;  5.2 all necessary measures are taken so that ESIM are subject to permanent monitoring and control by a Network Control and Monitoring Centre (NCMC) or equivalent facility in order to comply with provisions in this Resolution, and are capable of receiving and acting upon at least “enable transmission” and “disable transmission” commands from the NCMC or equivalent facility;  5.3 measures, when required, are taken to limit the operation of ESIM in the territory, including territorial waters and territorial airspace, under the jurisdiction of the administrations authorizing ESIM;  5.4 a permanent point of contact is provided for the purpose of tracing any suspected cases of unacceptable interference from ESIM and to immediately respond to requests from the focal point of the authorizing administration; |
| Resolves 5 | 5 that in case of unacceptable interference caused by any type of ESIM:  5.1 the administration of the country in which the ESIM is authorized shall cooperate with an investigation into the matter and provide, where possible, any required information on the operation of ESIM and a point of contact to provide such information;  5.2 the administration of the country in which the ESIM is authorized and the notifying administration of the satellite network with which the ESIM communicate shall, upon receipt of a report of unacceptable interference, identify the suspected ESIM with the information of this identification/the location of the ESIM and take required action jointly or individually, as the case may be, to eliminate or reduce interference to an acceptable level; | 4 that in case of unacceptable interference caused by any type of ESIM:  4.1 the administration of the country in which the ESIM is authorized shall cooperate with an investigation on the matter and provide, to the extent of its ability, any required information on the operation of ESIM and a point of contact to provide such information;  4.2 the administration of the country in which the ESIM is authorized and the notifying administration of the GSO FSS network with which the ESIM communicate shall, jointly or individually, as the case may be, upon receipt of a report of unacceptable interference take required action to eliminate or reduce interference to an acceptable level; |
| Instruct BR | 1 to take any necessary actions for the implementation of this Resolution;  2 to take any necessary actions to facilitate the implementation of this Resolution, including assisting in resolving interference, if any;  3 to report to future WRCs any difficulties or inconsistencies encountered in the implementation of this Resolution, | 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 WRCs any difficulties or inconsistencies encountered in the implementation of this Resolution including whether or not the responsibilities relating to the operation of ESIM have been properly addressed;  , |
| invite administrations | to collaborate, to the maximum extent practicable, for the implementation of this Resolution, in particular for resolving interference, if any; | to collaborate, for the implementation of this Resolution, in particular for resolving interference, if any, |
| Annex 1 | 1 In order to protect those non-GSO FSS systems referred to in *resolves*1.1.4 of this Resolution, ESIM shall comply with the following provisions: | 1 In order to protect those non-GSO FSS systems referred to in *resolves*1.1.5 of this Resolution in the frequency band 27.5-28.6 GHz, ESIM shall comply with the following provisions: |
| Annnex 2 | Part 1: MARITIME ESIM  1 The notifying administration of the GSO FSS satellite network with which a maritime ESIM communicates shall ensure compliance of the maritime ESIM with the following conditions:  1.1 the minimum distances from the low-water mark as officially recognized by the coastal State beyond which maritime ESIM can operate without the prior agreement of any administration is 70 km in the 27.5‑29.5 GHz frequency band. Any transmissions from maritime ESIM within the minimum distance shall be subject to the prior agreement of the concerned coastal State;  1.2 the maximum maritime ESIM e.i.r.p. spectral density towards the horizon shall not exceed 12.98 dB(W/1 MHz). Transmissions from maritime ESIM with higher e.i.r.p. spectral density levels towards the territory of any coastal state shall be subject to the prior agreement of the concerned coastal State together with the mechanism by which this level is to be maintained. | Part I: Maritime ESIM  2 The notifying administration of the GSO FSS network with which a maritime ESIM communicates shall ensure compliance of the maritime ESIM operating within the 27.5-29.5 GHz band, or parts thereof, with both of the following conditions for the protection of terrestrial services to which the frequency band is allocated within a coastal State:  2.1 The minimum distance from the low-water mark as officially recognized by the coastal State beyond which maritime ESIM can operate without the prior agreement of any administration is 70 km in the 27.5-29.5 GHz frequency band. Any transmissions from maritime ESIM within the minimum distance shall be subject to the prior agreement of the concerned coastal State;  2.2 the maximum maritime ESIM e.i.r.p. spectral density towards the horizon shall be limited to 24.44 dB(W/14 MHz). Transmissions from maritime ESIM with higher e.i.r.p. spectral density levels towards the territory of any coastal state shall be subject to the prior agreement of the concerned coastal State. |

* The complete comparison of ACP and approved report with MS word function is embedded below.



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

None

*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.*