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| **EACO** |
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| **EACO 1st WRC-23 Online Preparatory Meeting**12th November 2020 |

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**Chapter 4A - South Sudan**

**(Agenda Items 1.15, 1.16, 1.17, 1.18 and 1.19)**

CPM-23-1 Working Party 4A as the responsible group for agenda items 1.15, 1.16, 1.17, 1.18 and 1.19. In the first 4A E-meeting on WRC-23 agenda items held in May, the general working program and schedule was established. Correspondent groups were also formed with chairpersons to handle the specific agenda items under this chapter.

The draft schedule and action plan for working party 4A meetings is as shown below.

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| **Working Party 4A meetings** |
| **2020** |
| **Meeting** | **Activities** |
|  1st WP 4A MeetingE-meeting#1 28 and 29 May 2020 + CG activity until October/November 2020 meeting | * Send liaison statements to Working Parties 5A, 5B, 5C and 7B so that they can provide relevant information for the studies, including technical and operational characteristics and protection criteria for their respective existing primary services allocated in the same and adjacent frequency bands being studied under in 4A to be used in sharing and compatibility studies.
* Establish Correspondence Groups to progress the work between May and October 2020.
* Approve schedule for Correspondence Group activities.
* Correspondence Groups to operate in accordance with defined schedule to develop draft documents for further consideration at the October/November 2020 meeting of WP 4A.
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| 2nd WP 4A Meeting28 October to 5 November 2020 Meeting #2 2020 | * Begin Compilation of parameters/criteria received in response to liaison statements/contributions to WP 4A.
* Establish technical characteristics for the various services under studies to be used in compatibility studies.
* Initiate sharing and compatibility studies between these services and other primary services in adjacent frequency bands.
* Liaise with relevant Working Parties, as and if needed.
* Initiate work on draft CPM text.
* Agree work plan.
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| **2021** |
| 3nd WP 4A Meeting24 February to 3 March 2021 Meeting #1 2021 | * Continue sharing and compatibility studies between the services under studies at 4A and other incumbent primary services and those in adjacent frequency bands.
* Liaise with relevant Working Parties, as and if needed.
* Update draft CPM text.
* Revise the work plan, if necessary.
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| 4th WP 4A MeetingMeeting #2 2021 | * Continue sharing and compatibility studies between the services under studies at 4A and other incumbent primary services and those in adjacent frequency bands.
* Liaise preliminary study results, potential mitigation measures to relevant Working Parties.
* Update draft CPM text.
* Revise work plan, if necessary.
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| 5th WP 4A MeetingMeeting #3 2021(If scheduled) | * Continue sharing and compatibility studies between the services under studies at 4A and other incumbent primary services and those in adjacent frequency bands.
* Liaise preliminary study results, potential mitigation measures to relevant Working Parties. Update draft CPM text.Revise work plan, if necessary.
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| **2022** |
| 6th WP 4A MeetingMeeting #1 2022 | * Continue sharing and compatibility studies between the services under studies at 4A and other incumbent primary services and those in adjacent frequency bands.
* Update draft CPM text.
* Revise work plan, if necessary.
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| 7th WP 4A MeetingMeeting #2 2022 | * Finalize sharing and compatibility studies been the services under studies at 4A and other incumbent primary services and those in adjacent frequency bands.
* Liaise final study results, potential mitigation measures to relevant Working Parties.
* Finalize the work on draft CPM text.
* Revise work plan, if necessary.
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| **2023** |
| 8th WP 4A MeetingMeeting #1 2023 | * Finalize any studies and adopt relevant ITU-R Reports/Recommendations.
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| **Agenda Item 1.15 (In-Flight Connectivity - IFC)** |
| ***Part A: Description*** |
| *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)****;* |
| ***Part B: Key Elements – the notables*** |
| A correspondent group was established for this agenda item at WP 4A.AI 1.15 comes as a result of the increasing need for connectivity to in-motion devices via satellite networks. The demand for in-flight connectivity (IFC) services provided by earth stations on aircrafts continue to grow rapidly as the importance of internet connectivity for the airline industry and their passengers increase. Availing the 12.75-13.25 GHz band which is currently allocated to the FSS (Earth-to-space) for use by earth stations on aircraft is expected to allow satellite networks to respond to the growing demand for onboard connectivity with sufficient capacity.Resolution 172 calls for study of the technical and operational characteristics and user requirements of earth stations on aircrafts and vessels for this purpose including sharing and compatibility studies with incumbent and adjacent band services as well as the evaluation of the responsibility of entities involved in the operation of these stations.The resolution also states that these stations shall not be used or relied upon for safety-of-life applications and their use of the band shall not result in changes or restrictions to the existing Plan allotments and List assignments made under Appendix **30B**, and their future development.It is very key to approach the harmonization for the operation of earth stations on aircraft communicating with GSO space stations in the FSS in the 12.75-13.25 GHz frequency band while ensuring that present and future services in the band and adjacent bands are protected without imposing additional constraints. The technical characteristics of earth stations on aircraft should also comply with the envelope defined in Appendix **30B** and with the coordination agreements between administrations. The ITU has addressed aeronautical and maritime earth stations operating with GSO FSS satellites in SG4 and at several WRCs that adopted technical and regulatory regimes to allow such operations. ITU-R reports include Report ITU-R [S.2223-1](https://www.itu.int/dms_pub/itu-r/opb/rep/R-REP-S.2223-1-2016-PDF-E.pdf) and ITU-R M.1643-0. In the Radio Regulations Resolution **902 (WRC-03)**, Resolution **156 (WRC-15)** and Resolution **169 (WRC-19)** define technical and regulatory rules to allow GSO FSS networks to communicate with earth stations on aircraft or vessels to provide broadband communications. These Resolutions include key aspects that would also apply to aeronautical and maritime earth stations operating with GSO FSS networks in the 12.75-13.25 GHz band such as:* Need to employ an algorithm that is resistant to capturing and tracking adjacent satellite signals;
* Capability to immediately inhibit transmission when mispointing is detected;
* Self-monitoring capability to ensure compliance with applicable rules and, should a fault be detected to automatically mute any transmissions.
* Requirement for earth station to be subject to the monitoring and control of a Network Control and Monitoring Center (NCMC) or equivalent facility.
* Technical rules to protect other allocated services, including terrestrial services.

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| ***Part C: Status of the Bands under consideration*** |
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| 12.75-13.25 GHz | FIXEDFIXED-SATELLITE (Earth-to-space) 5.441MOBILE |

The band is currently allocated on a global basis to services as shown above. |
| ***Part D: Proposed EACO Preliminary View and way forward*** |
| The aviation industry and Marine transportation within the EACO sub-region is growing steadily and have greater potential to even get much bigger. It is of key interest to EACO to follow and contribute to the ongoing studies on this agenda item for a final informed decision in this regard.These studies need to equally consider the effect of aggregated interference from IFC stations to ensure long term protection of Fixed and Mobile Service stations. |

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| **Agenda Item 1.16 (N-GSO ESIMs)** |
| ***Part A: Description*** |
| *to study and develop technical, operational and regulatory measures, as appropriate, to facilitate the use of the frequency bands 17.7-18.6 GHz and 18.8-19.3 GHz and 19.7-20.2 GHz (space-to-Earth) and 27.5-29.1 GHz and 29.5-30 GHz (Earth-to-space) by non-GSO FSS earth stations in motion, while ensuring due protection of existing services in those frequency bands, in accordance with Resolution* ***173 (WRC‑19)****;* |
| ***Part B: Key Elements – the notables*** |
| Resolution 173 calls for study of the technical and operational characteristics and user requirements of the different ESIMs that plan to operate in the N-GSO FSS systems in the mentioned frequency bands which will include sharing and compatibility studies.A correspondence group was created at 4A in May to initiate studies and compile the draft technical and operational characteristics and user requirements of the different types of ESIMs that intend to operate within non-GSO FSS systems.There has been increased demand for broadband services across the globe especially for bandwidth-hungry services such as live streaming of TV shows, Movies, Music Video conferencing, VoIP among others. Like rural/remote areas, aeronautical and maritime crew and passengers can only access this broadband connectivity through satellites.This need has been traditionally served by systems operating in the mobile satellite service utilising the L and S bands. Due to limited capacity in this bands, there is need to carry out studies on bands which can provide much higher capacity for delivering ubiquitous broadband services on ESIMs such as the K band.Operations of ESIMs communicating with GSO space stations in the fixed-satellite service was already addressed in Resolution **156 (WRC-15)** for operations with GSO space stations in the 19.7-20.2 GHz and 29.5-30.0 GHz frequency bands and in Resolution **169 (WRC-19)** for operations with GSO space stations in the 17.7-19.7 GHz and 27.5-29.5 GHz frequency bands.  |
| ***Part C: Status of the Bands under consideration*** |
| 17.7-18.6 GHz (MOBILE, FIXED, FIXED-SATLLITE (Earth-to-space))18.8-19.3 GHz (EARTH EXPLORATION SATELLITE, FIXED, FIXED-SATLLITE, MOBILE)19.7-20.2 GHz (FIXED-SATELLITE, MOBILE-SATELLITE (Earth-to-space) )27.5-29.1 GHz (FIXED, FIXED-SATLLITE(Earth-to-space), MOBILE)29.5-30 GHz (FIXED-SATELLITE, MOBILE\_SATELLITE (Earth-to-space)) |
| ***Part D: Proposed EACO Preliminary View and way forward*** |
| EACO is encouraged to actively participate and contribute to studies on this agenda item to ensure all the pertinent aspects that are critical for EACO member states are taken into consideration and a satisfactory final position is achieved on this agenda item |

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| **Agenda Item 1.17 (Inter-Satellite Links)** |
| ***Part A: Description*** |
| *to determine and carry out, on the basis of the ITU‑R studies in accordance with Resolution* ***773 (WRC‑19)****, on the appropriate regulatory actions for the provision of inter-satellite links in specific frequency bands or portions thereof, by adding an inter-satellite service allocation where appropriate;* |
| ***Part B: Key Elements – the notables*** |
| Resolution**773 (WRC‑19)**Study of technical and operational issues, and regulatory provisions for satellite-to-satellite links in the frequency bands 11.7-12.7 GHz, 18.1-18.6 GHz, 18.8‑20.2 GHz and 27.5-30 GHz.A correspondence group was created with associated ToR at 4A to initiate studies and draft preliminary technical and operational characteristics of satellite-to-satellite transmissions in those frequency bands including consideration of spectrum requirements, off-axis EIRP values and out-of-band emission limits as stated in Resolution 773 WRC-19.This agenda item is intended to serve the demand for a fast and cost effective means of downloading data from satellites to earth. This if achieved will create an efficient means for relaying payload data especially in low capacity or small satellites with limited downlink capacity which equally limits the data collection due to storage challenges resulting from limited payload space. Satellite to satellite transmissions is hence considered to be a faster way of relaying such generated data.The satellite links in consideration under the agenda item include NGSO-GSO and GSO-NGSO (MEO-GEO or LEO-GEO), NGSO-NGSO (LEO-MEO). This should be done while maintaining the same envelope of operation with need to keep transmission within the specified cone of coverage. |
| ***Part C: Status of the Bands under consideration*** |
| 11.7-12.7 GHz FIXED, MOBILE, BROADCASTING SATELLITE, FIXED SATELLITE.18.1-18.6 GHz FIXED, FIXED SATELLITE, MOBILE18.8‑20.2 GHz MOBILE, FIXED, FIXED SATELLITE, MOBILE SATELLITE 27.5-30 GHz FIXED, FIXED SATELLITE, MOBILE, MOBILE SATELLITE  |
| ***Part D: Proposed EACO Preliminary View and way forward*** |
| It is important to ensure that adjacent GSOs and NGSOs stations are protected as well as protection of terrestrial stations from off-axis emissions.EACO member states are encouraged to actively participate and contribute to the studies on this agenda item to ensure a favourable and justifiable position is attained at the end of the study period. |

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| **AI 1.18 (Narrowband MSS)** |
| ***Part A: Description*** |
| *to consider studies relating to spectrum needs and potential new allocations to the mobile-satellite service for future development of narrowband mobile-satellite systems, in accordance with Resolution* ***248******(WRC‑19)****;* |
| ***Part B: Key Elements – the notables*** |
| Resolution**248 (WRC‑19)**Studies relating to spectrum needs and potential new allocations to the mobile-satellite service in the frequency bands 1 695-1 710 MHz, 2 010-2 025 MHz, 3 300‑3 315 MHz and 3 385-3 400 MHz for future development of narrowband mobile-satellite systems.The agenda item seeks to conduct studies on spectrum needs and operational requirements including system characteristics of low data rate systems for the collection and management of terrestrial and MSS devices. This will involve conducting sharing and compatibility studies to determine the suitability of new allocations to the narrowband MSS while protecting existing services. The bands under studies are as follows: 1 695-1 710 MHz in Region 2, 2 010-2 025 MHz in Region 1, 3 300-3 315 MHz, 3 385-3 400 MHz in Region 2;Report ITU-R SA.2312 suggests that MSS frequency bands already allocated above 5 GHz are not suited to the inherent size, weight and power restrictions of small satellites (usually having a mass of less than 100 kg).The number of mobile-satellite systems using small satellites for low data rate transmissions is growing and the spectrum demand is equally increasing. Such systems may include a combination of low power and intermittent transmissions intended to facilitate spectrum sharing. The examples, technical characteristics and benefits of such satellites given in Report ITU-R SA.2312; |
| ***Part C: Status of the Bands under consideration*** |
| 1 695-1 710 MHz METEOROLOGICAL AIDS, METEOROLOGICAL-SATELLITE, FIXED, MOBILE2 010-2 025 MHz FIXED, MOBILE3 300‑3 400 MHz RADIOLOCATION |
| ***Part D: Proposed EACO Preliminary View and way forward*** |
| It is important to note that the band under consideration for region 1 (2 010-2 025 MHz) was Identified for IMT at WRC-15 in accordance with Resolution 212 (Rev.WRC-15). Also key to note is the importance of and already strong interest among EACO administrations to venture into small satellite technologies. As such, it will be key for EACO to take part and closely follow the studies on this agenda item to ensure consistent results are attained which will yield favorable results for the region. |

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| **AI 1.19 (New Primary Allocation to FSS in Region 2)** |
| ***Part A: Description*** |
| *to consider a new primary allocation to the fixed-satellite service in the space-to-Earth direction in the frequency band 17.3-17.7 GHz in Region 2, while protecting existing primary services in the band, in accordance with Resolution* ***174******(WRC‑19)****;* |
| ***Part B: Key Elements – the notables*** |
| Resolution**174 (WRC‑19)**Primary allocation to the fixed-satellite service in the space-to-Earth direction in the frequency 17.3-17.7 GHz in Region 2In Region 1, the band in consideration is allocated to FSS which is the only primary service allocation in that band while in Region 2 the band is allocated for BSS (space-to-Earth). The possibility of an FSS (space-to-Earth) allocation in Region 2 is intended to provide satellite operators, the flexibility to satisfy BSS or FSS service demand in the same frequency band indistinctly and in many cases without the necessity to use exclusive payloads depending on the service. It is important to note that nowadays, many satellite operators already provide both kinds of services as satellite manufacturers are developing many flexible payload designs which allows for operators to target markets in this very dynamic spectrum environment.  |
| ***Part C: Status of the Bands under consideration*** |
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| ***Part D: Proposed EACO Preliminary View and way forward*** |
| EACO administration already have the FSS allocation in the band. It is however important to follow the studies to determine how a related allocation in Region 2 could impact existing similar allocations in Region 1. |