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|  | ASIA-PACIFIC TELECOMMUNITY | Document No: |
| **The 2nd Meeting of the APT Conference Preparatory Group for WRC-23 (APG23-2)** | **APG23-2/INF-21** |
| 19 – 23 April 2021, Virtual/Online Meeting | 29 March 2021 |

Chairman, DG on AI 1.19

**brief on wrc-23 agenda item 1.19**

(Note: *This brief was developed for information purpose only. It does not necessarily express the view of APG-23*)

**Agenda Item 1.19:**

*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)****.*

**Relevant Resolutions and Responsible/Contributing ITU-R Groups**

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| **Resolution 174 (WRC-19)**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 | The World Radiocommunication Conference (Sharm el-Sheikh, 2019),*considering* *a)* the need to encourage the development and implementation of new technologies in the fixed-satellite service (FSS) for broadband applications; *b)* that FSS systems based on the use of new technologies associated with geostationary-satellite systems are capable of providing high-capacity and low-cost means of broadband communication even to the most isolated regions of the world; *c)* that the Radio Regulations should enable the introduction of new applications of radiocommunication technology to ensure the operation of as many systems as possible in order to ensure efficient use of the spectrum; *d)* that the frequency band 17.3-17.7 GHz is allocated in Region 2 on a primary basis to the broadcasting-satellite service (BSS) (space-to-Earth) and to the FSS (Earth-to-space), subject to the application of No. 5.516, *recognizing*the need to preserve and protect frequencies subject to the application of Appendix 30A, *noting**a)* that technology has been developed to provide more efficient use of the spectrum;*b)* that sharing of FSS (Earth-to-space) and FSS (space-to-Earth) is already considered in Region 1 for the frequency band 17.3-17.7 GHz;*c)* that there is no other primary service in the frequency band 17.3-17.7 GHz apart from the FSS and the BSS,*resolves* that the studies referred in *invites the ITU Radiocommunication Sector* below shall protect radiocommunication services to which the frequency band is allocated on primary basis, in particular assignments contained in Appendix 30A, *invites the ITU Radiocommunication Sector*to conduct, and complete in time for WRC-23, sharing and compatibility studies between the FSS (space-to-Earth) and the BSS (space-to-Earth) and between the FSS (space-to-Earth) and the FSS (Earth-to-space), in order to consider a possible new primary allocation to the FSS (space-to-Earth) in the frequency band 17.3-17.7 GHz for Region 2, while ensuring the protection of existing primary allocations in the same and adjacent frequency bands, as appropriate, and without imposing any additional constraints on existing allocations to the BSS (space-to-Earth) and the FSS (Earth-to-space),*invites the 2023 World Radiocommunication Conference*to consider the results of the above studies and take necessary actions, as appropriate, *invites administrations*to participate actively in the studies and provide the technical and operational characteristics of the systems involved by submitting contributions to the ITU Radiocommunication Sector. |

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| ***Responsible Group*** | ***Contributing Group*** |
| *WP4A* | *-* |

**1. Background Information**

* CITEL proposed this agenda item at WRC-19.
* WRC-23 agenda item 1.19, in accordance with Resolution **174 (WRC-19)**, invites ITU-R Sector to conduct, and complete in time for WRC-23, sharing and compatibility studies between the FSS (space-to-Earth) and the BSS (space-to-Earth) and between the FSS (space-to-Earth) and the FSS (Earth-to-space), in order to consider a possible new primary allocation to the FSS (space-to-Earth) in the frequency band 17.3-17.7 GHz for Region 2, while ensuring the protection of existing primary allocations in the same and adjacent frequency bands, as appropriate, and without imposing any additional constraints on existing allocations to the BSS (space-to-Earth) and the FSS (Earth-to-space).
* The frequency band 17.3-17.7 GHz is allocated in Region 2 on a primary basis to the broadcasting-satellite service (BSS) (space-to-Earth) and to the FSS (Earth-to-space), subject to the application of No. 5.516. Meanwhile, the frequency band 17.3-17.7 GHz in Region 1 is already allocated to the FSS (Earth-to-space) and FSS (space-to-Earth) on a primary basis.
* This new allocation would benefit the international community and progress the principle of Regional harmonization. In addition, it allows the spectrum to be used in a more efficient and optimized way because BSS or FSS service demand could be satisfied by using the same frequency band indistinctly. With respect to end users, there would be more capacity available for FSS, with the consequent benefits in prices or quality of service.
* A new primary allocation needs to preserve and protect frequencies subject to the application of Appendix 30A.

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

* The ITU WP4A Study Group is preparing a *“Working Document towards a Preliminary Draft CPM Text for WRC-23 Agenda Item 1.19”* and proposing an “*Elements for a* *Working Document Relating to WRC-23 Agenda Item 1.19”* as a compilation of all the input contributions related to this agenda item. However, its content was reviewed during the meeting but yet to be agreed upon by WP 4A at this stage. The document is being carried forward for consideration by the next WP 4A meeting, as appropriate.
* In accordance with Resolution **174 (WRC-19)**, the sharing and studies of WRC-23 Agenda Item 1.19 have to be done with the existing services in the frequency band 17.3-17.7 GHz; Fixed Satellite Service (Earth-to-space) and Broadcasting Satellite Service (space-to-Earth) and the existing services in adjacent frequency bands; Earth Exploration Satellite Service, Space Research Service, Radio Location Service, Fixed Service, and Mobile Service.
* The allocation information for the 17.3-17.7 GHz and adjacent bands is provided at Table 1.

**Table 1 Allocation Information for 17.3-17.7 GHz and Adjacent Bands**

| **Allocation to services** |
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| **Region 1** | **Region 2** | **Region 3** |
| 17.2-17.3 EARTH EXPLORATION-SATELLITE (active)  RADIOLOCATION  SPACE RESEARCH (active)  5.512 5.513 5.513A |
| **17.3-17.7**FIXED-SATELLITE(Earth-to-space) 5.516 (space-to-Earth) 5.516A 5.516BRadiolocation5.514 | **17.3-17.7**FIXED-SATELLITE(Earth-to-space) 5.516BROADCASTING-SATELLITERadiolocation5.514 5.515 | **17.3-17.7**FIXED-SATELLITE(Earth-to-space) 5.516Radiolocation5.514 |
| 17.7-18.1 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.517A (Earth-to-space) 5.516 MOBILE | 17.7-17.8 FIXED FIXED-SATELLITE (space-to-Earth) 5.517 5.517A (Earth-to-space) 5.516 BROADCASTING-SATELLITEMobile 5.515 | 17.7-18.1 FIXED FIXED-SATELLITE  (space-to-Earth) 5.484A 5.517A (Earth-to-space) 5.516 MOBILE |
| 17.8-18.1 FIXED FIXED-SATELLITE(space-to-Earth) 5.484A 5.517A(Earth-to-space) 5.516 MOBILE 5.519 |

* To ensure the protection of existing operation in the primary allocations in the same and adjacent frequency bands, the technical characteristics of BSS Feeder Link, BSS reverse direction, and non-GSO and GSO FSS are provided in the *“Elements for a Working Document Relating to WRC-23 Agenda Item 1.19”*.
* Table 2 indicates differences in band sharing scenarios of the fixed-satellite service (space-to-Earth) with the existing services in the frequency band 17.3-17.7 GHz.

**Table 2 Sharing Scenarios for the Frequency Range 17.3-17.7 GHz (space-to-Earth)**

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| Scenario # | Proposed new allocation in the frequency band 17.3-17.7 GHz in region 2 (Interferer) | Existing allocations in the frequency band 17.3-17.7 GHz (Victim) |
| 1 | NGSO FSS (Space-earth) in the 17.3-17.7 GHz | GSO BSS feeder-link operating in accordance with App30A in the 17.3-17.7 GHz |
| 2 | GSO FSS (Space-earth) in the 17.3-17.7 GHz | GSO BSS feeder-link operating in accordance with App30A in the 17.3-17.7 GHz |
| 3 | GSO FSS (Space-earth) in the 17.3-17.7 GHz | NGSO FSS (Earth-space) in the 17.3-17.7 GHz |
| 4 | NGSO FSS (Space-earth) in the 17.3-17.7 GHz | NGSO FSS (Earth-space) in the 17.3-17.7 GHz |
| 5 | GSO FSS (Space-earth) in the 17.3-17.7 GHz | GSO BSS (Space-earth) in the 17.3-17.7 GHz |
| 6 | NGSO FSS (Space-earth) in the 17.3-17.7 GHz | GSO BSS (Space-earth) in the 17.3-17.7 GHz |

* Table 3 indicates different adjacent band sharing scenarios of the fixed-satellite service (*space-to-Earth*) with the existing services in the adjacent frequency bands.

**Table 3 Sharing Scenarios for the Adjacent Frequency Bands**

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| Scenario # | Proposed new allocation in the frequency band 17.3-17.7 GHz in region 2 (Interferer) | Existing allocations in the adjacent frequency bands (Victim) |
| 7 | GSO FSS (Space-earth) in the 17.3-17.7 GHz | Earth Exploration satellite service in the frequency band 17.2-17.3 GHz |
| 8 | NGSO FSS (Space-earth) in the 17.3-17.7 GHz | Earth Exploration satellite service in the frequency band 17.2-17.3 GHz |
| 9 | GSO FSS (Space-earth) in the 17.3-17.7 GHz | Space research service in the frequency band 17.2-17.3 GHz |
| 10 | NGSO FSS (Space-earth) in the 17.3-17.7 GHz | Space research service in the frequency band 17.2-17.3 GHz |
| 11 | NGSO FSS (Space-earth) in the 17.3-17.7 GHz | Radio location service in the frequency band 17.2-17.3 GHz  |
| 12 | GSO FSS (Space-earth) in the 17.3-17.7 GHz | Radio location service in the frequency band 17.2-17.3 GHz  |
| 13 | GSO FSS (Space-earth) in the 17.3-17.7 GHz | Fixed service in the frequency band 17.7-17.8 GHz  |
| 14 | NGSO FSS (Space-earth) in the 17.3-17.7 GHz | Fixed service in the frequency band 17.7-17.8 GHz  |
| 15 | GSO FSS (Space-earth) in the 17.3-17.7 GHz | Mobile service in the frequency band 17.7-17.8 GHz  |
| 16 | NGSO FSS (Space-earth) in the 17.3-17.7 GHz | Mobile service in the frequency band 17.7-17.8 GHz  |
| 17 | GSO FSS (Space-earth) in the 17.3-17.7 GHz | Fixed service in the frequency band 15.7-17.3 GHz |
| 18 | NGSO FSS (Space-earth) in the 17.3-17.7 GHz | Fixed service in the frequency band 15.7-17.3 GHz |
| 19 | GSO FSS (Space-earth) in the 17.3-17.7 GHz | Mobile service in the frequency band 15.7-17.3 GHz |
| 20 | NGSO FSS (Space-earth) in the 17.3-17.7 GHz | Mobile service in the frequency band 15.7-17.3 GHz |

* WRC-23 agenda item 1.19 proposes some modifications to the ITU Radio Regulations:
	1. New primary FSS (space-to-Earth) allocation in Region 2 in the frequency allocation table in the 17.3-17.7 GHz band. For the inclusion of this service.
	2. Modification to RR footnote No. 5.515: Introduce the FSS (space-to-Earth) to protect the existing FSS AP30A (Earth-to-space) in the same way that BSS protects FSS (Earth-to-space) today.
	3. Extend the use of RR footnote No. 5.516A to Region 2 to not limit the deployment of FSS AP30A, earth stations in Region 2.
	4. Extend the Article 22 framework to include Limits to the epfd↓ and epfd is radiated by non-geostationary-satellite systems in the fixed-satellite service for the frequency range 17.3-17.8 GHz for protection of GSO FSS/BSS and FSS limited to BSS Feeder link satellite systems, respectively.
* The next scheduled virtual meeting of WP 4A in July 2021 will focus on continuing study and compilation of the draft technical and operational characteristics of the systems in the frequency band 17.3-17.7 GHz and in adjacent frequency bands to 17.3-17.7 GHz, involved in this agenda item. Another work will be to update the draft CPM text.
* Hyperlink related to Agenda Item 1.19 WRC 23:
	1. CITEL Proposal at WRC-19, DRAFT NEW RESOLUTION [IAP/10(L)-17.3-17.7S-E] (WRC-19)] Primary allocation to the fixed satellite service in the space-to-Earth direction in the 17.3-17.7 GHz band in Region 2 (13 September 2019):

<https://www.itu.int/net4/proposals/WRC19/Detail/Index?idProposal=50467>

* 1. Resolution 174 (WRC-19):

<https://www.itu.int/dms_pub/itu-r/oth/0C/0A/R0C0A00000F0061PDFE.pdf>

* 1. Report of activities of the Correspondence Group on WRC-23 agenda item 1.19 to Working Party 4A (Source: Chairman, CG on WRC-23 a.i. 1.19; 2 February 2021):

<https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R19-WP4A-C-0176>

* 1. Characteristics of space and terrestrial frequency assignments which may be used in sharing and compatibility studies under WRC-23 agenda items 1.16, 1.17 and 1.19 (Source: Director,BR; 2 February 2021):

<https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R19-WP4A-C-0175>

* 1. Proposed working document for sharing and compatibility studies of FSS systems in response to WRC-23 agenda item 1.19 (Source: China; 21 October 2020):

<https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R19-WP4A-C-0133>

* 1. Working document towards a preliminary draft new Report ITU-R S.[FSS 17.3-17.7 GHZ] for compatibility studies in the frequency bands 17.3-17.7 GHz (space-to-Earth) to consider a primary allocation, while ensuring protection of incumbent services (Source: USA; 21 October 2020):

<https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R19-WP4A-C-0113>

* 1. Reply liaison statement to Working Party 4A (copy to Working Parties 3M, 5A, 5B, and 5C for information) - WRC-23 agenda item 1.19 (Source: WP7B; 28 September 2020):

<https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R19-WP4A-C-0072>

* 1. Reply liaison statement to Working Party 4A (copy to Working Parties 3M, 5A, 5B, and 7B for information) - WRC-23 agenda item 1.19 (Source: WP5C; 6 August 2020):

<https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R19-WP4A-C-0044>

* 1. Reply liaison statement to Working Party 4A - WRC-23 agenda item 1.19 - Characteristics of radiodetermination systems operation in frequency bands adjacent to frequency band 17.3-17.7 GHz (Source: WP5B; 5 August 2020):

<https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R19-WP4A-C-0039>

**3. Position of the Regional Group**

* **CEPT** **(European Conference of Postal and Telecommunications Administrations):**

Given that frequency band 17.3‐17.7 GHz is allocated to FSS (space to Earth) in Region 1, CEPT would support a similar allocation in Region 2 which facilitates the use of spectrum available to networks and systems in the FSS in different Regions, if the studies show that the new allocation is feasible.

Source: Status of CEPT Preparation For WRC-23 / RA-23, December 2020:

[https://cept.org/files/4200/2021-01-14%20Status%20of%20CEPT%20prepararation%20for%20WRC-23%20(December%202020).pdf](https://cept.org/files/4200/2021-01-14%20Status%20of%20CEPT%20prepararation%20for%20WRC-23%20%28December%202020%29.pdf)

* **CITEL (Inter-American Telecommunication Commission):**

Some administrations support the proposal to study a new FSS allocation in the space-to-Earth direction in the frequency band 17.3-17.7 GHz for Region 2 while ensuring the protection of existing primary services in this band and the adjacent bands.

An Administration supports studies, in accordance with Resolution 174 (WRC-19), to develop appropriate regulatory provisions and coordination mechanisms to protect Appendix 30A BSS feeder links, BSS downlinks while also ensuring the protection of existing primary services in this band and the adjacent bands, as appropriate, to facilitate a new FSS downlink allocation in the frequency range 17.3-17.7 GHz in Region 2.

Source: 36 Meeting of PCC.II, 30 November to 4 December, 2020:

<https://cept.org/Documents/cpg/61939/cpg-20-info-26_citels-preparation-for-world-radiocommunication-conferences>

* **RCC (Regional Commonwealth in the Field of Communications):**

The RCC Administrations consider it reasonable to study sharing possibilities between FSS in Region 2 and existing services in Region 1 in the frequency band 17.3-17.7 GHz and in the adjacent bands.

Source: Preliminary Position of the RCC Administrations on Agenda Items of the World Radiocommunication Conference 2023, 4 September 2020:

<https://www.itu.int/oth/R0A0200000B/en>

* **ASMG (Arab Spectrum Management Group):**

Follow-up studies and make sure that any new allocation in Region 2 will ensure the protection of existing services in the frequency band and adjacent bands in Region 1.

Source: 26th ASMG Meeting, 9-11 February 2020:

<https://www.cept.org/Documents/cpg/59739/cpg-20-info-10_asmg-structure-and-preliminary-positions-for-wrc-23>

**4. Position of International Organizations**

There is no available information regarding the position of International Organizations towards WRC-23 Agenda Item 1.19 at the time this document is created.