



PLENARY MEETING

**Addendum 19 to
Document 6221-E
9 October 2023
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African Common Proposals

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda item 1.19

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)**;

Introduction

ATU proposes Method B Alternative 2 which entails modification to footnotes in RR Article **5** that refer to the allocation of the frequency band 17.3-17.7 GHz in Region 2 to the FSS in the space-to-Earth direction and the suppression of Resolution **174 (WRC 19)**, whereas, the selection of Alternative 2 for all items results in more conservative conditions with the objective to provide further protection of the BSS feeder link AP30A receiving space station and GSO FSS system.

With emphasizing for the following conditions:

1. Confirm that, any new allocation in Region 2 in the frequency band 17.3-17.7 GHz, shall not claim protection from the broadcasting-satellite service feeder-link earth stations operating under Appendix **30A**, nor put any limitations or restrictions on the locations of the broadcasting-satellite service feeder-link earth stations anywhere within the service area of the feeder link.
2. Setting the necessary technical, operational and regulatory measures in order to ensure the protection of existing services in the frequency band and adjacent bands in Region 1.

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations

(See No. 2.1)

MOD AFCP/6221A19/1

15.4-18.4 GHz

Allocation to services		
Region 1	Region 2	Region 3
17.3-17.7 FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) MOD 5.516A 5.516B Radiolocation 5.514	17.3-17.7 FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) MOD 5.484A MOD 5.516A MOD 5.517 BROADCASTING-SATELLITE Radiolocation 5.514 5.515	17.3-17.7 FIXED-SATELLITE (Earth-to-space) 5.516 Radiolocation 5.514

MOD AFCP/6221A19/2

5.516A In the band 17.3-17.7 GHz, earth stations of the fixed-satellite service (space-to-Earth) in Regions [1](#) and [2](#) shall not claim protection from the broadcasting-satellite service feeder-link earth stations operating under Appendix [30A](#), nor put any limitations or restrictions on the locations of the broadcasting-satellite service feeder-link earth stations anywhere within the service area of the feeder link. [In Region 2, the use of the fixed-satellite service in the band 17.3-17.7 GHz shall not cause unacceptable interference to the space station receivers of the broadcasting-satellite service feeder link in Regions 1 and 3 operating and those to be operated in the future under Appendix 30A; upon receipt of a report of unacceptable interference, the notifying administration of the fixed-satellite service shall immediately eliminate or reduce interference to an acceptable level. In order to implement the commitment with regard to fixed-satellite service allocation in Region 2, the notifying administration of the fixed-satellite service at the time of notification under Article 11 of the Radio Regulations, submitting Appendix 4 information to ITU shall also provide a firm commitment that in the case of unacceptable interference undertake to immediately cease emission or reduce the interference to an acceptable level and that the fixed-satellite service system is capable to make this commitment immediately.](#) (WRC-~~03~~23)

MOD AFCP/6221A19/3

5.484A The use of the bands 10.95-11.2 GHz (space-to-Earth), 11.45-11.7 GHz (space-to-Earth), 11.7-12.2 GHz (space-to-Earth) in Region 2, 12.2-12.75 GHz (space-to-Earth) in Region 3, 12.5-12.75 GHz (space-to-Earth) in Region 1, 13.75-14.5 GHz (Earth-to-space), [17.3-17.7 GHz \(space-to-Earth\) in Region 2](#), 17.8-18.6 GHz (space-to-Earth), 19.7-20.2 GHz (space-to-Earth), 27.5-28.6 GHz (Earth-to-space), 29.5-30 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. [9.12](#) for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-

geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. 5.43A does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-~~2000~~23)

MOD AFCP/6221A19/4

5.517 In Region 2, use of the fixed-satellite (space-to-Earth) service in the band ~~17.7~~17.3-17.8 GHz shall not cause harmful interference to nor claim protection from assignments in the broadcasting-satellite service operating in conformity with the Radio Regulations. (WRC-~~07~~23)

ARTICLE 22

Space services¹

Section II – Control of interference to geostationary-satellite systems

MOD AFCP/6221A19/5

TABLE 22-1B (WRC-~~03~~23)

Limits to the $epfd_{\downarrow}$ radiated by non-geostationary-satellite systems in the fixed-satellite service in certain frequency bands^{3, 6, 8, ~~X~~}

Frequency band (GHz)	$epfd_{\downarrow}$ (dB(W/m ²))	Percentage of time during which $epfd_{\downarrow}$ may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter and reference radiation pattern ⁷			
17.8-18.6; <u>17.3-17.7</u> in Region 2	-175.4	0	40	1 m Recommendation ITU-R S.1428-1			
	-175.4	90					
	-172.5	99					
	-167	99.714					
	-164	99.971					
	-164	100					
	-161.4	0	1 000				
	-161.4	90					
	-158.5	99					
	-153	99.714					
	-150	99.971					
	-150	100					
		-178.4			0	40	2 m Recommendation ITU-R S.1428-1
		-178.4			99.4		
-171.4		99.9					
-170.5		99.913					
-166		99.971					
-164		99.977					
-164		100					
-164.4		0	1 000				
-164.4		99.4					

Frequency band (GHz)	epfd _↓ (dB(W/m ²))	Percentage of time during which epfd _↓ may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter and reference radiation pattern ⁷
	-157.4	99.9		
	-156.5	99.913		
	-152	99.971		
	-150	99.977		
	-150	100		
	-185.4	0	40	5 m Recommendation ITU-R S.1428-1
	-185.4	99.8		
	-180	99.8		
	-180	99.943		
	-172	99.943		
	-164	99.998		
	-164	100		
	-171.4	0	1 000	
	-171.4	99.8		
	-166	99.8		
	-166	99.943		
	-158	99.943		
	-150	99.998		
	-150	100		

ADD AFCP/6221A19/6

^X **22.5C.X** In Region 2, a non-geostationary-satellite system in the fixed-satellite service shall meet the limits of this table for the 17.3-17.7 GHz band with respect to geostationary-satellite systems in the broadcasting-satellite service and shall utilize the reference patterns of Recommendation ITU-R BO.1443-3. (WRC-23)

MOD AFCP/6221A19/7

TABLE 22-3 (WRC-~~2000~~23)

Limits to the epfd_{is} radiated by non-geostationary-satellite systems in the fixed-satellite service in certain frequency bands^{19, Y}

Frequency band (GHz)	epfd _{is} (dB(W/m ²))	Percentage of time during which epfd _{is} level may not be exceeded	Reference bandwidth (kHz)	Reference antenna beamwidth and reference radiation pattern ²⁰
10.7-11.7 (Region 1)	-160	100	40	4° Recommendation ITU-R S.672-4, <i>L_s</i> = -20
12.5-12.75 (Region 1)				
12.7-12.75 (Region 2)				
17.8-18.4	-160	100	40	4° Recommendation ITU-R S.672-4, <i>L_s</i> = -20

ADD AFCP/6221A19/8

Y 22.5F.Y A non-geostationary-satellite system operating in Region 2, at any position in the orbit, shall meet the limits of this table for the 17.3-17.7 GHz band with respect to a receiving space station in the broadcasting-satellite feeder link of Appendix **30A**, in all three Regions. (WRC-23)

MOD AFCP/6221A19/9

TABLE 22-4B (WRC-~~2000~~23)

Operational limits to the $epfd_{\downarrow}$ radiated by non-geostationary-satellite systems in the fixed-satellite service in certain frequency bands^{21, 25}

Frequency band (GHz)	$epfd_{\downarrow}$ (dB(W/m ²))	Percentage of time during which $epfd_{\downarrow}$ may not be exceeded	Reference bandwidth (kHz)	Geostationary-satellite system receive earth station antenna gain (dBi)	Orbital inclination of geostationary satellite (degrees)
19.7-20.2	-157	100	40	≥ 49	≤ 2.5
	-157	100	40	≥ 43 ²⁵	≤ 2.5
	-155	100	40	≥ 49	> 2.5 and ≤ 4.5
19.7-20.2	-143	100	1 000	≥ 49	≤ 2.5
	-143	100	1 000	≥ 43 ²⁵	≤ 2.5
	-141	100	1 000	≥ 49	> 2.5 and ≤ 4.5
17.8-18.6; <u>17.3-17.7</u> <u>in Region 2</u>	-164	100	40	≥ 49	≤ 2.5
	-162	100	40	≥ 49	> 2.5 and ≤ 4.5
17.8-18.6; <u>17.3-17.7</u> <u>in Region 2</u>	-150	100	1 000	≥ 49	≤ 2.5
	-148	100	1 000	≥ 49	> 2.5 and ≤ 4.5

APPENDIX 30A (REV.WRC-19)*

Provisions and associated Plans and List¹ for feeder links for the broadcasting-satellite service (11.7-12.5 GHz in Region 1, 12.2-12.7 GHz in Region 2 and 11.7-12.2 GHz in Region 3) in the frequency bands 14.5-14.8 GHz² and 17.3-18.1 GHz in Regions 1 and 3, and 17.3-17.8 GHz in Region 2 (WRC-03)

MOD AFCP/6221A19/10

ARTICLE 7 (REV.WRC-1923)

Coordination, notification and recording in the Master International Frequency Register of frequency assignments to stations in the fixed-satellite service (space-to-Earth) in Regions 1 and 2 in the frequency band 17.3-18.1 GHz and in Regions ~~2 and 3~~ in the frequency band 17.7-18.1 GHz, to stations in the fixed-satellite service (Earth-to-space) in Region 2 in the frequency bands 14.5-14.8 GHz and 17.8-18.1 GHz, to stations in the fixed-satellite service (Earth-to-space) in countries listed in Resolution 163 (WRC-15) in the frequency band 14.5-14.75 GHz and in countries listed in Resolution 164 (WRC-15) in the frequency band 14.5-14.8 GHz where those stations are not for feeder links for the broadcasting-satellite service, and to stations in the broadcasting-satellite service in Region 2 in the frequency band 17.3-17.8 GHz when frequency assignments to feeder links for broadcasting-satellite stations in the frequency bands 14.5-14.8 GHz and 17.3-18.1 GHz in Regions 1 and 3 or in the frequency band 17.3-17.8 GHz in Region 2 are involved²⁸ (Rev.WRC-1923)

Section I – Coordination of transmitting space or earth stations in the fixed-satellite service or transmitting space stations in the broadcasting-satellite service with assignments to broadcasting-satellite service feeder links

* The expression “frequency assignment to a space station”, wherever it appears in this Appendix, shall be understood to refer to a frequency assignment associated with a given orbital position. (WRC-03)

¹ The Regions 1 and 3 feeder-link List of additional uses is annexed to the Master International Frequency Register (see Resolution **542 (WRC-2000)**^{**}). (WRC-03)

^{**} *Note by the Secretariat:* This Resolution was abrogated by WRC-03.

² This use of the band 14.5-14.8 GHz is reserved for countries outside Europe.

Note by the Secretariat: Reference to an Article with the number in roman is referring to an Article in this Appendix.

MOD AFCP/6221A19/11

7.1 The provisions of No. **9.7** and the associated provisions under Articles **9** and **11** are applicable to transmitting space stations in the fixed-satellite service in Regions **1 and 2** in the frequency band 17.3-18.1 GHz, to transmitting space stations in the fixed-satellite service in Regions **2 and 3** in the frequency band 17.7-18.1 GHz, to transmitting earth stations in the fixed-satellite service in Region 2 in the frequency bands 14.5-14.8 GHz and 17.8-18.1 GHz, to transmitting earth stations in the fixed-satellite service in countries listed in Resolution **163 (WRC-15)** in the frequency band 14.5-14.75 GHz and in countries listed in Resolution **164 (WRC-15)** in the frequency band 14.5-14.8 GHz where those stations are not for feeder links for the broadcasting-satellite service, and to transmitting space stations in the broadcasting-satellite service in Region 2 in the frequency band 17.3-17.8 GHz. (WRC-1923)

ADD AFCP/6221A19/12

7.2.3 For the fixed-satellite service (space-to-Earth) in the bands 17.3-17.7 GHz (in Region 2), the course of action described in Nos. **9.60** to **9.62** and the provision No. **11.41** do not apply with respect to feeder links of an assignment in the Plan, List or proposed new or modified assignments in the List or an assignment intended to enter in the Regions 1 and 3 Plan. (WRC-23)

ANNEX 4 (REV.WRC-19)

Criteria for sharing between services

MOD AFCP/6221A19/13

1 Threshold values for determining when coordination is required between, on one hand, transmitting space stations in the fixed-satellite service or the broadcasting-satellite service and, on the other hand, a receiving space station in the feeder-link Plan or List or a proposed new or modified receiving space station in the List, in the frequency bands 17.3-18.1 GHz (Regions 1 and 3) and in the feeder-link Plan or a proposed modification to the Plan in the frequency band 17.3-17.8 GHz (Region 2) (WRC-0323)

In addition to the need to comply with the following coordination criteria, under assumed free-space propagation conditions, the power flux-density of an assignment in the fixed-satellite service (space-to-Earth) in the frequency band 17.3-17.7 GHz in Region 2 shall not exceed the value of $-147 \text{ dB(W)/(m}^2 \cdot 27 \text{ MHz)}$ at the edge of Earth's surface. (WRC-23)

With respect to § 7.1, Article 7, coordination of a transmitting space station in the fixed-satellite service or in the broadcasting-satellite service with a receiving space station in a broadcasting-satellite service feeder link in the Regions 1 and 3 feeder-link Plan or List, or a proposed new or modified receiving space station in the List, or in the Region 2 feeder-link Plan or proposed modification to the Plan is required when the power flux-density arriving at the receiving space station of a broadcasting-satellite service feeder link of another administration would cause an increase in the noise temperature of the feeder-link space station which exceeds a threshold value of

²⁹ (SUP – WRC-19)

$\Delta T_s/T_s$ corresponding to 6%. $\Delta T_s/T_s$ is calculated in accordance with Case II of the method given in Appendix 8. (WRC-03)

APPENDIX 5 (REV.WRC-19)

Identification of administrations with which coordination is to be effected or agreement sought under the provisions of Article 9

MOD AFCP/6221A19/14

TABLE 5-1 (Rev.WRC-1923)
Technical conditions for coordination
(see Article 9)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. 9.7 GSO/GSO (cont.)		<p>2bis) 13.4-13.65 GHz (Region 1)</p> <p>3) 17.7-19.7 GHz, (Regions 2 and 3), 17.3-19.7 GHz (Regions <u>1</u> and <u>2</u>) and 27.5-29.5 GHz</p> <p>3bis) 19.7-20.2 GHz and 29.5-30 GHz</p>	<p>i) Bandwidth overlap, and ii) any network in the space research service (SRS) or any network in the FSS and any associated space operation functions (see No. 1.23) with a space station within an orbital arc of $\pm 6^\circ$ of the nominal orbital position of a proposed network in the FSS or SRS</p> <p>i) Bandwidth overlap, and ii) any network in the FSS and any associated space operation functions (see No. 1.23) with a space station within an orbital arc of $\pm 8^\circ$ of the nominal orbital position of a proposed network in the FSS</p> <p>i) Bandwidth overlap, and ii) any network in the FSS or in the mobile-satellite service (MSS) and any associated space operation functions (see No. 1.23) with a space station within an orbital arc of $\pm 8^\circ$ of the nominal orbital position of a proposed network in the FSS or in the MSS.</p>		

SUP AFCP/6221A19/15

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**