Before the
National Telecommunications and Information Administration
Washington, D.C. 20230

In the Matter of	)	
	)	
Development of a	)	Docket No. 230308–0068
National Spectrum Strategy	)	NTIA–2023–0003
	)	

COMMENTS OF THE
mmWave COALITION

SUMMARY

These comments of the mmWave Coalition focus on 3 issues dealing its focus - US spectrum policy above 100 GHz:

1) A request for review of a single passive band in the 100-200 GHz region that could be reviewed for possible sharing potential under WRC-2000 Res. 731with terrestrial communications and testing to confirm whether such use if possible without causing harmful interference to critical passive services that have coprimary allocations in such bands.
2) Clarification of present US position on Res. 731 and ITU Radio Regulation 4.4 in the case of bands with only passive allocations.
3) Clarification on US policy on consideration of FCC Experimental License Service applications in bands with only passive allocations.

mmWAVE COALITION BACKGROUND

The mmWave Coalition, mmWC, was formed in 2017 as a group of innovative companies and universities united in the objective of removing regulatory barriers to technologies and using

frequencies ranging from 100 GHz to 450 GHz. The Coalition does not limit itself to supporting any particular use or technology, but rather it is working to create a regulatory structure for these frequencies that would encompass all technologies and all possible uses, limited only by the constraints of physics, innovation, and spectrum sharing – including protecting allocated passive services. It now has 15 corporate members, as shown in Attachment 1, including both large and small companies, and 5 universities. It actively participates in related FCC proceedings and has met with NTIA staff several times.

PILLAR #1/ISSUES 1 & 2: PROJECTED FUTURE SPECTRUM REQUIREMENTS

mmWC is limiting its comments to issues above 100 GHz, which is its area of expertise and focus. In this area, we have two specific spectrum requirements for services, and an issue regarding experimental licensing in 100+ GHz:

• One specific spectrum requirement is for access to spectrum to allow sharing of a single passive bands in the 100-200 GHz range in order to concatenate that band with one or more directly adjacent bands with allocations for active services so that a contiguous band of 20-40 GHz is possible for Fixed Service use. NOT SURE HOW WE WORD

• A second specific spectrum requirement is for access to spectrum on a secondary basis for all spectrum in the 100-275 GHz region, on a strictly regulated basis for an indoor low power Radiodetermination Service application called “Terahertz Spectroscopy” in the technical literature and in FCC deliberations and “Radiodetermination systems for industry automation in shielded environments (RDI-S)” in CEPT deliberations.

• Our issue regarding experimental licenses is that Nongovernment (NG) researchers be allowed to use spectrum above 100 GHz on any frequency where it can be shown that the experiment will not cause harmful interference with authorized spectrum users at the authorized

time of transmissions, location of transmissions, and power and antenna pattern limits as has been the general policy for FCC experimental licenses for decades and as FCC reconfirmed for passive bands in a 2015 decision, *infra.*

Carefully Restricted Fixed Service Sharing with Passive Services in a Single Band: The Need

There will be a long-term need for large contiguous bands for 1) high data rate Fixed service links for both cellular back haul/front haul as well as for terrestrial telecom networks and 2) for mobile uplinks and downlinks. The necessary rates for these services will be impractical with today's contiguous allocations for Fixed and Mobile.[1] The discussion below focuses now on the need for Fixed bands with large contiguous bandwidth for 2 reasons: 1) it is easier to predict the need for such service in light of rapidly growing backhaul and terrestrial network data rates and 2) the sharing technology necessary to share passive bands without causing harmful interference to passive spectrum usage is much simpler in the fixed case than in the case when the geometry between transmitters is constantly changing. In addition, it is much easier to use complex antenna technology in a fixed transmitter site than in a size limited mobile unit. Such antennas are necessary for very high speed uplinks and provide better control over radiation sidelobes. Thus, the Fixed case is more immediate and the technical options are clearer than for the mobile case. As technology is developed and refined for the fixed case, opportunities for mobile use that do not cause harmful interfere with passive uses may become clearer.

Today most cellular backhaul/fronthaul and high-speed telecom interconnectivity is provided by fiber optic technology. This technology has low hardware cost and high data rates,

[1] All present US allocations for Fixed *or* Mobile above 46.9 GHz are actually coprimary for Fixed and Mobile, but at lower frequencies there are allocations for one without a coprimary allocation for the other, e.g. 45.5-46.9 GHz has a primary Mobile allocation but no Fixed allocation

but it also can be slow to install or have very costly installation depending on local circumstances. Fiber is problematical for timely restoration of damaged networks especially in a disaster situation. Fixed Service radio communications also provides high speed communications. It can be installed much faster than fiber optics and only requires physical access to the ends of the connection if line of sight visibility is available between these points. While the equipment for Fixed Service radio can be much more expensive than for a fiber optics link, it can be relocated and reused at other location when no longer needed at a site. Fiber and fixed wireless above 100 GHz should be viewed as complementary solutions for a robust, future communications network.

The largest US allocation for Fixed service below 200 GHz is the contiguous 12.5 GHz bandwidth allocation at 151.5-164 GHz. The largest Fixed service bands with present FCC service rules that allow nonexperimental licensing are 5 GHz wide: the 71-76 GHz and 81-86 GHz bands.[2] Various allocations are seen in Fig. 1 The green bars are existing ITU and US Fixed/Mobile allocations and the grey bars are passive bands without any active service allocations.

[2] 47 CFR § 101.101

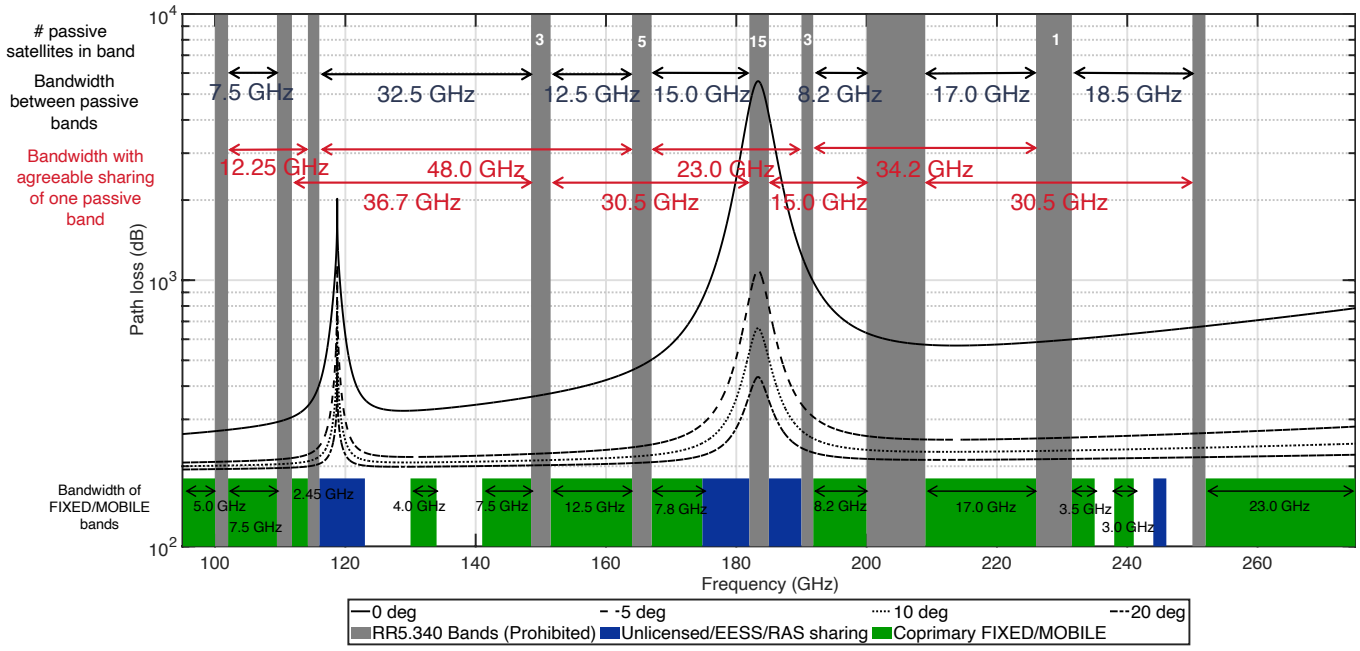

Figure 1: 95-275 GHz allocations and propagation[3]

Typical fiber optic cables used for telecom have capacities in excess of 1 Tb/s. Figure 1 shows how much spectrum is needed for 1 Tb/s under various technical assumptions:

[3] https://mmwavecoalition.org/

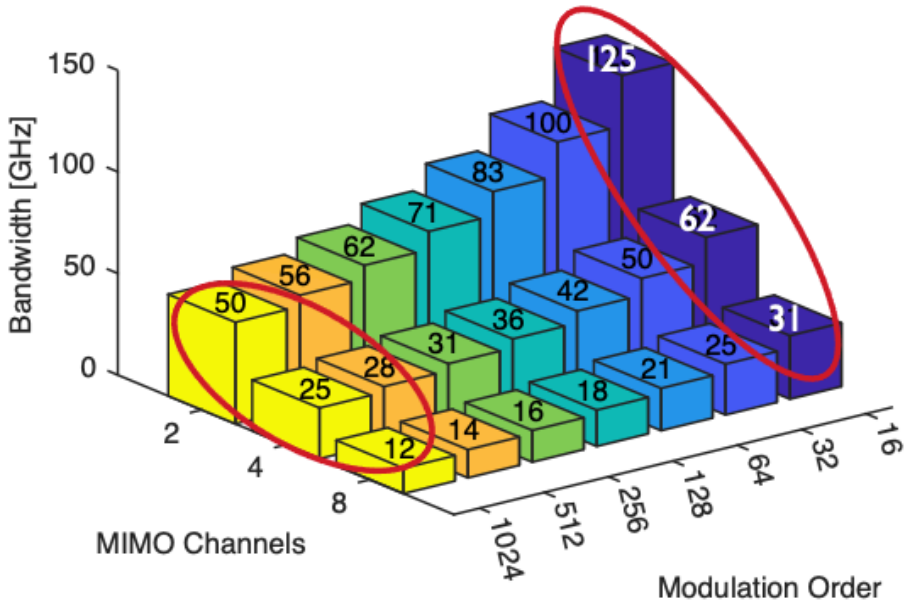

Figure 1: Radio bandwidth needs for 1 Tb/s

While 1 Tb/s can be implemented in the 12.5 GHz wide allocation, which has no present service rules, it can only be done with very complex technology with 8 MIMO channels and 1024th order modulation that is not likely to be practical at such high frequencies for a long time. A wider channel in the 30-40 GHz range significantly lowers the technical requirements to the point of promising practicality.

Possible Additional Fixed Service Spectrum/Spectrum Sharing Above 100 GHz

The grey vertical bars in Fig. 1 show the passive bands where "all emissions are prohibited" under ITU Radio Regulation 5.340 and where US Allocation Table footnote US246 states "No station shall be authorized to transmit".[4] The bands are allocated to passive services such as the Earth Explorations Satellite Service (passive)/EESS(p), the Radio Astronomy

[4] 47 CFR § 2.106

Service/RAS, and the Space Research Service/SRS and the restrictions were intended to protect very sensitive receivers from interference from other radio services' transmitters.[5]

While the largest Fixed/Mobile allocation below 200 GHz is now 12.5 GHz, the sharing of a single Radio Regulation 5.340 band would allow much larger contiguous transmissions. For example, careful sharing of the 148.5-151.5 GHz would result in a contiguous band that is 48 GHz wide. Alternatively, careful sharing of the 114.25-116 GHz would allow contiguous transmissions of 36.7 GHz. mmWC requests NTIA support in a real dialogue between advocates of EESS(p) spectrum and the terrestrial telecom community on which passive bands are most practical for such sharing and how sharing criteria could be determined, tested and implemented.

PILLAR #3/ISSUE 2: POLICIES TO ENABLE DEVELOPMENT OF NEW AND INNOVATIVE USES OF SPECTRUM

Clarify US Interpretation of WRC-2000 Res. 731

Most of the allocations above 100 GHz were made at WRC-2000 as a result of parallel conference inputs of the US and CEPT. The US proposals for WRC-2000 are contained in Attachment 2.

Table 1 is an excerpt from the US proposals showing that most of the passive allocations above 100 GHz were as a result of the US proposals[6] and similar CEPT proposals.

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[5] In practice the sharing controversy above 100 GHz primarily involves EESS(p) uses. Radio regulation 1.55 defines SRS as "A radiocommunication service in which spacecraft or other objects in space are used for scientific or technological research purposes." This service involves satellites with antennas pointing away from earth while EESS(p) involves satellites with antennas pointing towards earth or its upper atmosphere. In practice RAS facilities are not sited in populated areas because atmospheric attenuation can have a large impact on its observations. Thus high arid site are preferred. In the US, only a single RAS site 100 km away from Tucson AZ is within line of sight of an urban area.

[6] USA, Proposals for the Work of the Conference, WRC-2000, 12 January 2000 https://www.itu.int/itudoc/itu-r/archives/wrc/wrc-2000/docs/1-99/index.html

Table 1: USA proposed passive allocations from Inputs to WPC-2000 in "track changes" format

MOD	USA/12/104	
S5.340	All emissions are prohibited in the following bands:	
	1 400-1 427 MHz,	
	2 690-2 700 MHz,	except those provided for by Nos. **S5.421** and **S5.422**,
	10.68-10.7 GHz,	except those provided for by No. **S5.483**,
	15.35-15.4 GHz,	except those provided for by No. **S5.511**,
	23.6-24 GHz,	
	31.3-31.5 GHz,	
	31.5-31.8 GHz,	in Region 2,
	48.94-49.04 GHz,	from airborne stations,
	50.2-50.4 GHz[2],	except those provided for by No. **S5.555A**,
	52.6-54.25 GHz,	
	86-92 GHz,	
	~~105-116 GHz,~~	
	109.5-111.8 GHz,	
	114.25-116 GHz,	
	~~140.69-140.98 GHz,~~	~~from airborne stations and from space stations in the space-to-Earth direction,~~
	148.5-151.5 GHz,	
	164-167 GHz,	
	182-185 GHz,	except those provided for by No. **S5.563**,
	190-191.8 GHz,	
	200-202 GHz,	
	202-209 GHz,	
	~~217-231 GHz.~~	
	226-231.5 GHz,	
	250-252 GHz.	

Reasons: The changes to this footnote are consequential to the changes made to the related allocations.

These inputs **both** asked for 10 bands in 100-275 GHz, a much higher density than in any part of the spectrum as can be seen from the NTIA allocation chart – where this is the right half of the bottom row. Both the US and the CEPT inputs also raised uncertainty whether sharing between terrestrial active services and passive services *might* be possible above 100 GHz and both proposed an invitation to ITU-R to study this issue. Both US and CEPT proposed to address this uncertainty in draft resolutions requesting ITU-R to study the feasibility of sharing without

harmful interference in the passive bands above 71 GHz. The US draft resolution contained in its WRC-2000 Inputs at p. 64-65. Today's Resolution 731 directly evolved from the US and CEPT inputs to WRC-2000.[7]

The US WRC-2000 Input contained these provisions:

> *considering*
>
> *a)* that the changes made to the Table of Frequency Allocations by WRC-2000 in bands above 71 GHz were based on the requirements known at the time of the Conference;
>
> *d)* that currently there is only limited knowledge of requirements and implementation plans for the active services to operate in bands above 71 GHz;
>
> *e)* that in the past, technological developments have led to viable communication systems operating at increasingly higher frequencies and this can be expected to continue so as to make communication technology available in the future for the frequency bands above 71 GHz;
>
> *f)* that in the future, there should be accommodation of alternative spectrum needs of the active and passive services when the new technologies become available;
>
> *g)* that, following the revisions to the Table of Frequency Allocations by WRC-2000, sharing studies may be required for services in some bands above 71 GHz;
>
> *recognizing*
>
> that to the extent practicable, the burden of sharing among active and passive services should be equitably distributed amongst the allocated services.

The US is not bound in perpetuity by its inputs to an international conference 23 years ago but a major problem now for those planning R&D in 100+ GHz is whether the present US policy is consistent with its proposals to WRC-2000 in what became Res. 731 which is similar in many ways to the US proposal. Indeed, the *recognizing* treatment of "burden of sharing" in Res. 731 today is verbatim from the US Inputs. mmWC requests NTIA to clarify in the National Spectrum Strategy the US strategy today with respect to possible sharing of the many passive bands in 100-275 GHz and how it interprets the provisions Of Res. 731 at present.

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[7] https://www.itu.int/net/ITU-R/conferences/docs/ties/res-731-en.pdf
(This resolution was amended at WRC-19 to include new provisions for above 275 GHz but the original provisions for 71-275 GHz remain unchanged - https://www.itu.int/dms_pub/itu-r/oth/0C/0A/R0C0A00000F00149PDFE.pdf)

A related question is the current US view on ITU Radio Regulation 4.4[8] on assigning a station/license on any frequency if it does "not cause harmful interference to … a station operating in accordance with the provisions of the Constitution, the Convention and these Regulations." mmWC has previously asked FCC to address this issue in a Petition for Rulemaking[9] but there has been no action in that proceeding. CORF, a federal contractor, has stated in comments on the mmWC petition that the ITU Rules of Procedure forbid this interpretation of Radio Regulation 4.4.[10] mmWC requests that the National Spectrum Strategy review this possible restrictive interpretation of the long held view of Radio Regulation 4.4 and state what the US position is.

Experimental License Issues

On several occasions in the past few years FCC has rejected experimental license applications from NG academic researchers seeking licenses for academic experiments – not operational use - in spectrum above 100 GHz and indicated that such rejection were based on input from "NTIA and NASA". An example is in Attachment 3.

FCC explicitly considered the issue of whether experimental licenses should be forbidden in all passive bands in a reconsideration petition in Docket 10-236, presumably coordinating this

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[8] ITU, Radio Regulation 4.4 "Administrations of the Member States shall not assign to a station any frequency in derogation of either the Table of Frequency Allocations in this Chapter or the other provisions of these Regulations, except on the express condition that such a station, when using such a frequency assignment, shall not cause harmful interference to, and shall not claim protection from harmful interference caused by, a station operating in accordance with the provisions of the Constitution, the Convention and these Regulations."

[9] Petition of mmWave Coalition, August 9, 2019, RM-11847
https://www.fcc.gov/ecfs/document/1081249437593/1

[10] *Opposition of CORF to Petition for Rulemaking*, RM-11847, November 21, 2019
https://www.fcc.gov/ecfs/document/11211264330174/1
mmWC *ex parte* filing on CORF *Opposition,* RM-11847, March 8, 2020
https://www.fcc.gov/ecfs/document/10503313126363/1

decision with NTIA.[11] In the decision on this petition FCC decided against prohibiting all experiments in passive bands stating:

> We observe that a number of conventional experiments have operated in passive service bands without causing harmful interference to passive services, and we concur with (commenters) that such conventional experimental use should be permitted to continue under some circumstances. We observe that in those instances in which an experimental applicant had requested use of a passive band, OET staff in coordination with NTIA undertook a case-by-case review of the application and imposed specific conditions on the applicant, as warranted, to minimize the potential that the experiment would cause harmful interference to passive service(s) that use that band. We therefore find generally appropriate (petitioner's) recommended new language for Section 5.85(a) that would continue to permit conventional ERS use of the passive bands under limited circumstances, and further modify the language to also permit compliance testing licensees to use those bands.[12]

mmWC asks that the National Spectrum Strategy clarify what the criteria are for permitting experimental licenses in bands with passive allocations and develop a process where researchers developing new technology, including spectrum sharing technology, can have an effective dialogue with NTIA or Government spectrum users of the safeguards that are acceptable to protect cochannel or adjacent band authorized operations.

We note that 47 USC § 303(g) provides

> the Commission from time to time, as public convenience, interest, or necessity requires, shall … Study new uses for radio, provide for experimental uses of frequencies, and generally encourage the larger and more effective use of radio in the public interest;

Thus, experimental licenses are a key part of spectrum policy going back to the 1934 Act.

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[11] Pet*ition for Reconsideration* of Marcus Spectrum Solutions, Docket 10-236, May 22, 2013 https://www.fcc.gov/ecfs/document/6017442787/1

[12] *MO&O/FNPRM*, Docket 10-236, July 6, 2015 at para. 7 https://docs.fcc.gov/public/attachments/FCC-15-76A1.pdf

CONCLUSIONS

mmWC appreciates NTIA's request for comments in this proceeding and is interested in cooperating with NTIA and federal spectrum users in whatever way is most practical. mmWC identified several issues above that it urges NTIA to address in the National Spectrum Strategy:

1. Identify 1 or 2 passive bands in 100-200 GHz subject to ITU Radio Regulation 5.340 that could be considered to possible sharing subject to experimental confirmation that sharing is able to protect all vital passive uses. Identified passive band(s) together with nonpassive bands on either side of it should contain a contiguous bandwidth greater than 30 GHz in order to implement radio links with fiber optic-like capacity for limited situations where fiber is not viable and for temporary emergency network restoration.
2. Clarify present US interpretation of WRC-2000 Res. 731 and applicability of ITU Radio Regulation 4.4 to experimental licensing and any other spectrum use in allocated passive bands
3. Clarify conditions for NTIA coordination on experimental licenses in passive bands under new FCC/NTIA MOU and whether FCC's 2015 statements on experimental licenses in passive bands in Docket 10-236 MO&O/FNPRM are still applicable

/s/

Mark Cudak
Chair of Steering Group
mmWave Coalition
mark.cudak@nokia-bell-labs.com

ATTACHMENT 1
MEMBERS OF THE mmWAVE COALITION

2π-LABS GmbH

American Certification Body, Inc.

Azbil North America Research and Development, Inc.

Brown University

Keysight Technologies

National Instruments

Nokia Corporation

Northeastern University

NSI-MI Technologies

Nuvotronics, Inc.

NYU WIRELESS

Oklahoma State University

Qualcomm

RaySecur

TCB Council

The University of Arizona

VEGA Americas

Virginia Diodes, Inc.

VUBIQ Networks

ATTACHMENT 2
US INPUT TO WRC-2000 ON ALLOCATIONS ABOVE 71 GHZ
(Source: https://www.itu.int/itudoc/itu-r/archives/wrc/wrc-2000/docs/1-99/index.html)

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 12-E
12 January 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

United States of America

PROPOSALS FOR THE WORK OF THE CONFERENCE

CONTENTS

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Page

Introduction

In this document the United States makes proposals under a number of WRC-2000 agenda topics. It is anticipated that the United States will submit at a later date some additional proposals including proposals for future conferences. The United States also supports many of the common proposals of the Inter-American Telecommunications Commission ("CITEL"). The United States will consider adoption of additional CITEL proposals as they are completed.

Summary of the United States proposals

Agenda item 1.2

The United States supports the CITEL proposal that modifies Appendix **S3**.

The United States submits a proposal for the modification of Recommendation **66 (Rev.WRC-97)**.

Agenda item 1.3

The United States submits two proposals for this agenda item:

– a proposal to modify Appendix **S7** and consequential modifications to Appendix **S5**;

– a proposal for the suppression of Resolution **60**.

Agenda item 1.4

The United States supports the CITEL proposal for confirmation of the fixed service allocation in the 31.8-33.4 GHz (Resolutions **126** and **726**).

The United States submits a proposal concerning high-density applications in the fixed service at 55.78-56.26 GHz.

Agenda item 1.6.2

The United States supports the CITEL proposal not to identify a global control channel for IMT-2000.

Agenda item 1.7

The United States supports the CITEL proposal for protecting operational, distress and safety communications in HF bands used by the aeronautical mobile (R) and maritime mobile services.

Agenda item 1.8

The United States submits a proposal for communications by earth stations on board vessels using frequencies allocated to the fixed-satellite service and used by existing space segment in the fixed-satellite service.

Agenda item 1.9

The United States supports the CITEL proposal for no allocation for the mobile-satellite service (space-to-Earth) in any portion of the 1 559-1 567 MHz under agenda item 1.9. We also support the suppression of Resolution **220**.

Agenda item 1.11

The United States submits a proposal for the Tables of Criteria applicable to MSS allocations for the non-GSO systems below 1 GHz.

Agenda item 1.12

The United States supports the CITEL proposal for the modification of footnote **S5.541A** and the suppression of Resolution **121**.

Agenda item 1.14

The United States supports the CITEL proposal for Resolution **123** (Implementing feeder links of non-geostationary satellite networks in the mobile-satellite service in the band 15.43-15.63 GHz (space-to-Earth)).

Agenda item 1.15.1

The United States submits two proposals for this agenda item:

– a proposal for additional radionavigation-satellite service (RNSS) signals near 1 GHz;

– a NOC proposal regarding additional radionavigation-satellite service (RNSS) signals near 5 GHz.

Agenda item 1.15.2

The United States submits a proposal for an allocation for space-to-space use for RNSS.

Agenda item 1.16

The United States submits a proposal to modify the allocations above 71 GHz.

Agenda item 1.17

The United States support the CITEL proposal for Earth exploration-satellite (passive) and the space research (passive) services in the band 18.6-18.8 GHz on a primary basis in Regions 1 and 3.

Agenda item 1.18

The United States supports the CITEL proposal for the modification of Appendix **S18** and Resolution **342**.

Agenda item 1.19*bis*

The United States submits a proposal, which reflects the view that there is no need to repeat the work and discussion of WRC-95 and WRC-97.

Agenda item 1.20

The United States submits a modification of Appendix **S30** for the relaxation in the pfd limits for Alaska.

Agenda item 2

The United States submits a proposal for the modification of Resolution **27** and Resolution **28**.

Agenda item 4

The United States submits a proposal for the suppression of Resolution **63**.

Plenipotentiary resolutions

The United States submits a NOC proposal for Resolution **87** (Minneapolis, 1998).

Proposals for agenda item 1.16

"to consider allocations of frequency bands above 71 GHz to the Earth-exploration satellite (passive) and radio astronomy services, taking into account Resolution **723 (WRC-97)**"

A proposal to modify the allocations above 71 GHz

Background information

The following proposals modify many of the Table of Frequency Allocations above 71 GHz to accommodate the requirements of the radio astronomy and Earth-exploration satellite (passive) services, while giving consideration to the needs of other services. The modifications to the Table of Frequency Allocations maintain the aggregate amount of spectrum allocated to the displaced services (including the fixed-satellite service), provide frequency blocks 5-9 GHz wide to accommodate future wideband multimedia systems while taking into account differences in atmospheric attenuation, and provide appropriate separation between services.

Resolutions XXX and YYY address the need for future study between co-allocated active services and between active and passive services at such a time when the technical characteristics of the active services become known. Also, the United States may submit at a later date a corrigendum to this proposal addressing allocations to active services within the bands 71-86 GHz.

MOD USA/12/37

66-86 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
71-74	FIXED FIXED-SATELLITE ~~(Earth-to-space)~~(space-to-Earth) MOBILE MOBILE-SATELLITE ~~(Earth-to-space)~~(space-to-Earth) ~~S5.149 S5.556~~	

Reasons: MSS and FSS uplinks and downlinks in 71-74 GHz and 81-84 GHz bands have been interchanged to avoid satellite downlinks in bands needed by RAS. Atmospheric absorption is only slightly higher in 71-74 GHz band than in 81-84 GHz band. The RAS footnotes S5.149 and S5.556 have been deleted in favour of allocations above 76 GHz. The reference to the 72.77-72.91 GHz band in footnotes S5.149 and S5.556 has been deleted.

MOD USA/12/38

66-86 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
74-75.5	BROADCASTING-SATELLITE FIXED FIXED-SATELLITE ~~(Earth-to-space)~~(space-to-Earth) MOBILE Space research (space-to-Earth) MOD S5.561	

MOD USA/12/104

S5.340 All emissions are prohibited in the following bands:

1 400-1 427 MHz,	
2 690-2 700 MHz,	except those provided for by Nos. **S5.421** and **S5.422**,
10.68-10.7 GHz,	except those provided for by No. **S5.483**,
15.35-15.4 GHz,	except those provided for by No. **S5.511**,
23.6-24 GHz,	

31.3-31.5 GHz,	
31.5-31.8 GHz,	in Region 2,
48.94-49.04 GHz,	from airborne stations,
50.2-50.4 GHz[2],	except those provided for by No. **S5.555A**,
52.6-54.25 GHz,	
86-92 GHz,	
~~105-116 GHz~~,	
109.5-111.8 GHz,	
114.25-116 GHz,	
~~140.69-140.98 GHz,~~	~~from airborne stations and from space stations in the space-to-Earth direction,~~
148.5-151.5 GHz,	
164-167 GHz,	
182-185 GHz,	except those provided for by No. **S5.563**,
190-191.8 GHz,	
200-202 GHz,	
202-209 GHz,	
~~217-231 GHz.~~	
226-231.5 GHz,	
250-252 GHz.	

Reasons: The changes to this footnote are consequential to the changes made to the related allocations.

ADD USA/12/127

DRAFT RESOLUTION XXX (WRC-2000)

Consideration by a future world radiocommunication conference of issues dealing with sharing between passive and active services 71 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the changes made to the Table of Frequency Allocations by WRC-2000 in bands above 71 GHz were based on the requirements known at the time of the Conference;

b) that the passive service spectrum requirements above 71 GHz are based on physical phenomenon and therefore are well known. These requirements are reflected in the changes made to the Table of Frequency Allocations by WRC-2000;

c) that several bands above 71 GHz are already used by EESS (passive) and SR (passive) because they are unique bands to measure specific atmospheric parameters;

d) that currently there is only limited knowledge of requirements and implementation plans for the active services to operate in bands above 71 GHz;

e) that in the past, technological developments have led to viable communication systems operating at increasingly higher frequencies and this can be expected to continue so as to make communication technology available in the future for the frequency bands above 71 GHz;

f) that in the future, there should be accommodation of alternative spectrum needs of the active and passive services when the new technologies become available;

g) that, following the revisions to the Table of Frequency Allocations by WRC-2000, sharing studies may be required for services in some bands above 71 GHz;

h) that interference criteria for passive sensors have been developed and are given in ITU-R SA.1029-1;

i) that sharing criteria for active and passive services in bands above 71 GHz have not yet fully developed within the ITU-R;

j) that, in order to ensure the protection of passive services above 71 GHz, WRC-2000 avoided co-allocations of active and passive services to prevent potential sharing problems,

recognizing

that to the extent practicable, the burden of sharing among active and passive services should be equitably distributed amongst the allocated services,

invites ITU-R

1 to continue its studies to determine if sharing is possible between active and passive services in the bands above 71 GHz;

2 to take into account the principles of burden sharing to the extent practicable in their studies;

3 complete the necessary studies, as soon as the technical characteristics of the active services in these bands are known;

4 develop recommendations specifying sharing criteria for those bands where sharing is feasible,

resolves

that a future competent conference should consider the results of ITU-R studies with a view to revising as appropriate the Radio Regulations in order to accommodate the emerging requirements of the active services taking into account the requirements of the passive services, in bands above 71 GHz,

instructs the Secretary-General

to bring this Resolution to the attention of the international and regional organizations concerned.

ATTACHMENT 3:
AN EXAMPLE OF AN EXPERIMENT LICENSE REJECTION BY FCC BECAUSE "NTIA AND NASA OBJECTED"

FEDERAL COMMUNICATIONS COMMISSION
Experimental Licensing Branch
445 12th Street, S.W., Room 7A-321
Washington, D.C. 20554

October 13, 2021

Attn: Daniel Mittleman
Brown University
P.O. Box: D
Providence, RI 02912-1885

DISMISSED-WITHOUT PREJUDICE

Dear Daniel Mittleman,

This refers to application, File No. 0859-EX-CN-2021, for an experimental authorization.

You are advised that the Commission is unable to grant your application for the facilities requested. The application is dismissed because NTIA and NASA objected to authorize Brown University the use of equipment for long term operation regard to the frequency band 97.5-103 GHz with emission designator 2G00K10. It is recommended Brown University should ensure that the operational use of the equipment be conducted in appropriately allocated frequency bands that are authorized to transmit.

Responses to this correspondence must contain the Reference number : 65149

Sincerely,

Anthony Serafini
Chief
Experimental Licensing Branch