**Meeting Minutes**

Meeting: IWG-3 (Meeting 20)

Date/Time: Tuesday, February 5, 2019 13:00-15:00 PM EDT

Location: Conference call

Committee Members & Observers Present: See attached Appendix A.

FCC Employees Present:

Michael Mullinix, Designated Federal Official (DFO) for WAC-19 (see also Appendix A)

Meeting Summary:

1. Opening Remarks, Introductions, Identification of DFO, volunteer to take minutes

Jack Wengryniuk, Chair of IWG-3, opened the meeting by welcoming all to the 20th meeting of the group and stating the objectives for the meeting. All participants introduced themselves and attendance of a DFO was confirmed. Zach Rosenbaum volunteered to take minutes.

1. Approval of Agenda

The agenda in DocumentIWG-3/069r1 was approved as presented.

1. Approval of minutes from nineteenth IWG-3 meeting:

The minutes of the previous meeting as contained in IWG-3/068r1 were approved without comment.

1. Other meetings of interest since last meeting of IWG-3

There were no other meetings of interest noted.

1. Current status of WRC-19 AIs under IWG-3 and discussion of draft proposals
2. Agenda Item 1.2: Mr. George John, Spire, briefly reintroduced document IWG-3/061, version 2, that aligns the IWG-3 text with the US contribution to the upcoming CPM meeting for this agenda item. Larry Reed observed that footnote 5.D102 stated a possible date issue of “on” vs. “by” that should be addressed. Mr. John agreed this should be corrected. This document was tabled for further consideration.
3. Agenda Item 1.3: Mr. Charles Rush, GSA, provided a detailed introduction of document IWG-3/066 and noted that Mr. Jack Wengryniuk provided substantial revisions to streamline the revisions being proposed against the NTIA proposal contained in Document IWG-3/059.   
   Mr. John Prendergrast from CSAA noted concerns about the *resolves* 3 and the possibility of systems not meeting the pfd limits of *resolves* 1. He also expressed concerns about *resolves* 6 and the “other agreements” that could be obtained under No. **9.21**. The Chair, Mr. Rush and Mr. Mullinix addressed these concerns in a satisfactory way for CSAA. Mr. Mullinix further stated that there will be a public notice period after the upcoming WAC meeting where interested parties may submit comments related to WAC documents to the FCC. Mr. Mullinix further stated that he would provide editorial clean ups to this text.   
   The Chair then sought and received the meetings approval to submit this document to upcoming WAC meeting.
4. Agenda item 9.1 (Issue 9.1.9): The meeting had previously received a no-change proposal from NTIA in document IWG-3/059. This meeting received document IWG-3/070 from SES which alternatively proposed to make changes to the 51.4-52.4 GHz band to allocate FSS (Earth-to-space) in this band. It was explained that the new footnote **5.B919** was to address protection through a form of orbital separation and coordination between these new FSS (Earth-to-space) frequency assignment and possible GSO EESS (passive) stations. It was also explained that the Resolution **750** modification differs from the current CPM text in that it proposes specific values and amends the active band frequency range to which the unwanted emission limit applies.   
   Ms. Jayne Stancavage sought clarification regarding the modification of the new proposed footnote **5.A919** where “gateway” was revised to “earth station”. It was clarified that the term “gateway” is not defined in the Radio Regulations and so “earth station” was used. Mr. Chris Hofer expressed concern with the antenna diameter of 4.5m suggesting that, given this high frequency band, smaller antennas may be appropriate. Mr. Steve Baruch sought clarification about the active band where the unwanted emission limit applies. SES explained that this table appeared to not track the changes properly but the active band should be 52.1-52.4 GHz in contrast to the 51.9-52.4 GHz shown in the text such that the total spectrum where unwanted emissions applies is 500 MHz.   
   The Chair tabled this document and urged interested WAC members to work with the authors before the next IWG-3 meeting.
5. Agenda item 10: Five AI 10 proposals were considered by the meeting (documents IWG-3/062r1, 063, 067r1, 071 and 072).   
   Document IWG-3/062r1: EchoStar presented their modifications to the applicable frequency bands to include 47.2-50.2 GHz and 50.4-51.4 GHz in addition to 27.5-30 GHz. It was noted that there were related discussions in IWG-4 ongoing with respect to the Director’s Report and the BR’s remarks about satellite-to-satellite links being submitted by administrations under No**. 4.4**. SES proposed edits that removed the frequency ranges on the basis of this item being a regulatory study about the definition of FSS. Mr. Zach Rosenbaum noted that WAC members had expressed concerns with these edits offline and agreed that by removing the frequency bands, this issue could become unmanageable. Mr. Damon Ladson expressed a view that satellite-to-satellite links, regardless of frequency, is a much broader issue. Mr. Don Jansky explained that these satellite-to-satellite matters should be handled on a case-by-case basis since each frequency band is unique, and he noted that this issue is also included in the Director’s Report under Agenda item 9.2. Ms. Jayne Stancavage expressed concerns that satellite-to-satellite links have consequences to other services sharing frequencies with FSS (as experienced at TG 5/1) and therefore Agenda item 9.2 is not sufficient to address this topic. Mr. Chris Hofer stated he was working on edits and would share them once completed. Ms. Brandy Sykes sought clarification about the definition and what specific cases can be accommodated. EchoStar explained the FSS definition does allow, in some cases, satellite-to-satellite links and that this item was to define those cases and any necessary conditions to support the satellite-to-satellite links in the FSS.  
   The Chair tabled this document and urged interested WAC members to work with the authors before the next IWG-3 meeting.  
     
   Document IWG-3/063: EchoStar reintroduced this document noting there were no changes proposed since the last IWG-3 meeting. Ms. Veena Rawat stated concerns about the use of this band in the Earth-to-space direction and said this item should have language to fully protect existing services. Ms. Jayne Stancavage stated that since WRC-15, the use of this frequency band has changed and it is important to address these changes in Resolution **161**. Mr. Mike Mullinix sought clarification about the proposed revisions to Resolution **750** while this frequency range was not in No. **5.340** and also sought clarification on the rationale for this frequency range specifically for this item. Mr. Brennan Price appreciated the feedback and was not opposed to capturing appropriate recognition of incumbent services in this band but requested that interested WAC members propose revisions to the draft new Resolution.   
   The Chair tabled this document and urged interested WAC members to work with the authors before the next IWG-3 meeting.  
     
   Document IWG-3/067r1: Mr. Oscar De Guzman presented the document proposing to study earth stations on aircraft communication with FSS satellite networks in 12.75-13.25 GHz explaining that formatting modifications were made to make this a Draft New Resolution for a future agenda item as well as substantive changes to the proposal. Mr. Zach Rosenbaum sought clarification on the possibility to include maritime terminals in this item. Intelsat stated they were not opposed to considering this possibility but requested offline discussions with SES.   
   The Chair tabled this document and urged interested WAC members to work with the authors before the next IWG-3 meeting.  
     
   Document IWG-3/071: Mr. Zach Rosenbaum presented this document proposing to study the regulatory and technical conditions necessary to allow non-GSO FSS satellite systems to use the 18.6-18.8 GHz band below 20,000 km. It was noted that there were possible issues with the IWG-3 list serve that may not have allowed WAC members much time to review this document.  
   The Chair tabled this document and urged interested WAC members to work with the authors before the next IWG-3 meeting.  
     
   Document IWG-3/072: Mr. Zach Rosenbaum presented this document which proposed to study the regulatory and technical conditions for the operation of ESIMs communicating with non-GSO FSS systems in 17.7-20.2 GHz (space-to-Earth), 27.5-30 GHz (Earth-to-space), 37.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space). The Chair had provided revisions to SES before the start of the meeting. Mr. Wayne Whyte observed that for the Earth-to-space transmissions around the passive frequencies 50.2-50.4 GHz, it may be appropriate to include protection of EESS (passive) stations. Ms. Jayne Stancavage stated concerns with the broad range of frequencies in this proposed study and would have further comments to provide to the authors. Mr. Mike Mullinix commented that the responsible Study Group may needto be revised and that the proposal appears to be inconsistent with previously stated goals of the United States in certain frequency bands contained in the proposal.   
   The Chair tabled this document and urged interested WAC members to work with the authors before the next IWG-3 meeting.

6. Future Meetings

The Chair suggested the next meeting be held in time to finalize as many IWG-3 documents as practicable to be submitted to the March 11th WAC meeting. It was proposed and agreed to have the next IWG-3 meeting on March 4, 2019 at 11:30 EST.

Documents Distributed:

IWG-3/068r1 Minutes of the 19th meeting of IWG-3

IWG-3/069r1 Proposed Agenda for 20th meeting of IWG-3

IWG-3/061v2 AI 1.2 draft proposal from Spire

IWG-3/066\_Feb2\_jw Proposed revisions to NTIA proposal on AI 1.3

IWG-3/062r1 AI 10 draft proposal from EchoStar/HNS: Ka satellite-to-satellite links

IWG-3/067r1 AI 10 draft proposal from Intelsat on FSS AES in 12.75-13.25 GHz

IWG-3/071 AI 10 draft proposal from SES on NGSO in 18.6-18.8 GHz

IWG-3/072 AI 10 draft proposal from SES on NGSO ESIMs

Public Participation Statement:

Meeting IWG-3/20 (5 February 2019) was open to the public ([DA 18-1292](https://docs.fcc.gov/public/attachments/DA-18-1292A1.pdf)) and had 23 members, 24 observers, and 3 FCC representatives participating.

Author: Zach Rosenbaum, Vice Chair IWG-3, graciously volunteered to prepare these minutes.

**Appendix A: Attendees at February 5, 2019** **meeting of IWG-3**

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| Members | |
| Name | Company |
| Don Jansky | SpaceBelt |
| Stephen Baruch | GPS Innovation Alliance |
| Brennan Price | Echostar |
| Oscar DeGuzman | Intelsat |
| Alex Epshteyn | Boeing |
| Veena Rawat | GSMA |
| Damon Ladson | Iridium |
| George John | Spire |
| Dave Weinreich | Globalstar |
| Scott Kotler | Lockheed Martin |
| Charles Rush | GSA |
| Stephen Blust | AT&T |
| Chris Hofer | Viasat |
| Pat Amodio | Thales |
| Zach Rosenbaum | SES |
| Gerry Shewan | One Web |
| Jayne Stancavage | INTEL |
| Humberto Henriques | Telecomm Strategies |
| Brandy Sykes | Apple |
| Gregory Baker | ASR |
| Jen Oberhausen | CTIA |
| Kyle Entz | Sprint |
| John Prendergast | CSAA |
| Observers | |
| Name | Company |
| Lauren Crean | TMG |
| Larry Reed | ARTS for NASA |
| Scott Billquist | World Radiocommunication Week |
| Alex Guerin | Thales |
| Chuck Wende | ASRC for NASA |
| Cathy Sham | NASA |
| Mike Biggs | FAA |
| Dave Pattillo | SpaceX |
| Kellen Gibson | NTIA |
| Donna Wang | SES |
| Giadira Leon | S3 for Air Force |
| Shelli Rose Haskins | USCG |
| Hastyar Barvar | Intelsat |
| Vishnu Sahay | ASRC |
| Clifford Gonsalves | Thales |
| Amy Sanders | NTIA |
| Robert Denny | NTIA |
| James Higgins | ASRC |
| Pascale Dumit | T-Mobile |
| Colin Alberts | DoD |
| Tom Hayden | TLH Consulting |
| Fernando Carrillo | EchoStar |
| Ken Keane | Duane Morris |
| Wayne Whyte | Teltrium |
| FCC Representatives | |
| Michael Mullinix | |
| Clay DeCell | |
| Dante Ibarra | |