

FINAL MINUTES

Minutes of the Eighth Meeting of the FCC Advisory Committee for the 2015 World Radiocommunication Conference (WRC-15)

Date/Time: May 20, 2015, at 11:00 a.m.

Location: Federal Communications Commission
Commission Meeting Room (TW-C305)
445 12th Street, S.W., Washington, D.C.

Committee Members Attending: See Appendix 1

Other Persons Attending: See Appendix 2

Meeting Summary:

1. Opening Remarks

Ms. Manner welcomed everyone to the meeting and recognized the excellent progress of the Committee's Informal Working Groups (IWGs) since the Committee last met six months ago, and she thanked everyone for their hard work. She introduced Ms. De La Torre.

Ms. De La Torre shared some statistics with the meeting: the Committee has over 45 registered members, the IWGs have met 71 times and the Committee has produced 85 recommendations to the FCC on WRC-15 Agenda Items. She thanked everyone for their hard work and expert input, particularly Ms. Allison, Mr. Rush, Mr. Wengryniuk, Mr. Baruch, Ms. Manner and Mr. Harris. Ms. De La Torre reminded everyone that there are still outstanding issues to continue to work on as part of the U.S. delegation and encouraged people to become delegation members.

Ms. Manner thanked Ms. De La Torre for attending the meeting.

2. Approval of the Agenda

The agenda, Document **WAC/107(20.05.15)**, was approved without change.

3. Minutes of the Seventh Meeting

The minutes of the seventh meeting, Document **WAC/104(20.05.15)**, were approved.

4. NTIA Draft Preliminary Views and Proposals

Ms. Manner stated that the Federal Agencies had also made excellent progress in its work in preparation for WRC-15. Ms. Manner recognized Ms. Sung from NTIA and invited her to update the Committee on NTIA's work.

Ms. Sung reported that there were several NTIA proposals for consideration at the meeting and that NTIA appreciates the comments the Committee provides and will reconcile the proposals with the FCC. The Radio Conference Subcommittee (RCS) is continuing its work and will review the proposals approved by the Committee at its meeting. RCS is still developing new proposals including proposals for Global Flight Tracking. She thanked the Committee for its review of NTIA proposals and the comments it provides.

5. IWG Status reports and Consideration of Preliminary Views and Draft Proposals

IWG-1: Maritime, Aeronautical and Radar Services

Ms. Manner called upon Mr. Hutchison to report on the work of IWG-1.

Mr. Hutchison, Vice Chair of IWG-1, reported that IWG-1 had met once since the last Committee meeting and had two draft proposals for consideration by the Committee.

Agenda Item 1.17: to consider possible spectrum requirements and regulatory actions, including appropriate aeronautical allocations, to support wireless avionics intra-communications (WAIC), in accordance with Resolution **423 (WRC-12)** — Mr. Hutchison reported that this document is a full replacement of an earlier proposal and that it has been updated to reflect consensus reached at the Conference Preparatory Meeting (CPM), Draft Proposal, Document **WAC/110(20.05.15)**, was approved.

Agenda Item 10: to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention — Draft Proposal, Document **WAC/111(20.05.15)**, was approved.

Mr. Hutchison advised the Committee that IWG-1 supports the NTIA proposal on space-borne radar sounders contained in Document **WAC/106(20.05.15)**.

On behalf of himself and Ms. Allison, Mr. Hutchison thanked the IWG-1 members who worked tirelessly to complete IWG-1's work in a cooperative and collegial manner. Ms. Manner also thanked Ms. Allison, Mr. Hutchison, and the IWG-1 membership.

IWG-2 – Terrestrial Services

Ms. Manner introduced IWG-2 Chair Mr. Rush.

Mr. Rush reported that IWG-2 had seven non-consensus proposals for the Committee, each with two views. He requested that he be allowed to take the documents in a slightly different order than appeared in the Agenda by grouping **Documents WAC/112, WAC/114 and WAC/115(20.05.15)** together as they are all in response to the NTIA proposals contained in Document **WAC/105(20.05.15)** and have a great deal of commonality. The Chair agreed that this made sense.

Agenda Item 1.1: to consider additional spectrum allocations to the mobile service on a primary basis and identification of additional frequency bands for International Mobile Telecommunications (IMT) and related regulatory provisions, to facilitate the development of terrestrial mobile broadband applications, in accordance with Resolution **233 (WRC-12)**:

- Mr. Rush reported that the proposals were generated as a result of NTIA's comments in **Document WAC/105(20.05.15)**, where there were three frequency bands of interest to the Committee: the 1300-1400 MHz, 2700-2900 MHz, and 4400-4990 MHz bands. NTIA's proposals were in accord with the U.S. proposals submitted to CITELE PCC.II for its February 2015 meeting, which are now preliminary proposals in CITELE. However, IWG-2 had not had an opportunity to comment on the proposals prior to their submission to CITELE, and IWG-2 is now in a position to comment. For all three documents, IWG-2 was not able to reach consensus.

Mr. Rush reported that View A, supported by Aviation Spectrum Resources, Inc., EchoStar Corporation, Inmarsat, Intelsat, Lockheed Martin Corp., New Wave Spectrum Partners LLC, SES Americom, and The Boeing Company, supported the NTIA/U.S. position of No Change (NOC) to the identified bands.

He said View B proposes No Change to the global allocation in the band 1 300-1 350 MHz and proposes No Change only in Region 2 in the band 1 350-1 400 MHz and does not comment on any aspects of 1 350-1 400 MHz in Regions 1 and 3.

Ms. Manner asked if there were any comments on Documents **WAC/112, WAC/114 and WAC/115(20.05.15)**. Mr. Rush explained that he had only reported on Document **WAC/112**, but if the Committee wanted to consider the three documents together he would propose that the Committee approve Documents **WAC/112, WAC/114 and WAC/115(20.05.15)**.

Ms. Manner again called for comments and hearing none, Document **WAC/112(20.05.15)** (Draft Proposals for the bands 1 300-1 400 MHz), Document **WAC/114(20.05.15)** (Draft Proposals for the bands 2 700-2 900 MHz) and Document **WAC/115(20.05.15)** (Draft Proposals for the bands 4 400-4 990 MHz), were approved.

- Draft Proposals for the bands 1 375- 1 400 and 1 427-1 452 MHz, Document **WAC/113(20.05.15)**, is a response to NTIA's proposal in Document **WAC/109(20.05.15)**.

Again, Mr. Rush said there was no consensus within IWG-2. He said that View A supported the NTIA proposal of mandatory limits on IMT to protect passive earth exploration satellite service in the band 1400-1427 MHz from IMT systems operating in adjacent bands, together with editorial changes incorporated in View A.

Mr. Rush reported View B proposes that the mandatory limits should be further reviewed and asks the Commission to do two things if the Commission considers following the proposal in Document **WAC/109(20.05.15)**: to assess whether the proposed out-of-band limits are consistent with Commission rules and to determine whether the studies used to establish the out of band limits have relied on realistic assumptions with regard to the deployment of IMT, particularly regarding LTE systems in the United States.

Document **WAC/113(20.05.15)**, was approved.

- Draft Proposals for the bands 5 925- 6 425 MHz, Document **WAC/116(20.05.15)**.

Mr. Rush reported that the IWG again was not able to reach consensus. He stated that View B supports No Change (NOC) to the Radio Regulations table of allocations for these bands only in Region 2 with no position as to Regions 1 and 3. View A's position is that the U.S. should not support any changes to the Radio Regulations globally.

Mr. Rush explained that changes to the Radio Regulations could involve an allocation to the mobile service on a primary basis and subsequent identification for IMT operation of mobile broadband, or in the case where there is already a mobile allocation, such as in this particular band, it would identify it for IMT mobile broadband applications.

Document **WAC/116(20.05.15)**, was approved.

Agenda Item 10: to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention:

- Draft Proposals for broadband over HAPS, Document **WAC/117(20.05.15)**.

Mr. Rush reported that View A, supported by Alcatel-Lucent and Harris Wiltshire and Grannis, is to expand frequencies for HAPS service and to identify possible additional frequency ranges and to revise technical and regulatory restrictions.

View B supporters do not support the broad frequency range given in View A, he said, and have questions regarding protection criteria for existing services, and want to specifically

limit the expansion of frequencies. View B is supported by DirecTV, EchoStar Corporation, Inmarsat, Intelsat, New Wave Spectrum Partners LLC, and SES Americom.

Ms. Manner called for comments.

Mr. Caldwell of 21st Century Fox stated that 21st Century Fox supports View B.

Ms. Paoletta, Harris Wiltshire and Grannis, thanked the View B proponents who worked very hard to try to reach consensus. She stated that HAPS has a long history and was first identified 20 years ago. There have been three different identifications added to the Radio Regulations, but none of those is global and have technical and geographic limitations, particularly in Region 2. Google is interested in deploying a version of HAPS involving light-weight solar panels and unmanned aircraft to provide broadband, and she urged the Commission to adopt View A. She stated that it is important for the U.S. to have a positive use case for UAS.

Mr. Bjornson, Steptoe and Johnson, stated that he had discussed View A with his client, Facebook, and said it is an appropriate proposal for future studies because it identifies a finite range of bands that can be studied and refined in the ITU study process and protects existing users while leaving flexibility for testing of this broadband platform. He said Facebook will support View A in its public comments.

Mr. Dockemeyer, Delphi, stated that Delphi had concerns about the changes being on the edge of the DSRC band 5925.

Ms. Baum, SES Americom, stated that the View B proponents spent a lot of time working with the View A proponents to focus on the most viable bands to find a way forward for HAPS that would minimize government and industry resources. She indicated the underlying goal of View B is to not have a wide-open agenda item that is hard to focus and find a way forward.

There being no other comments, Ms. Manner stated that 21st Century Fox would be added to the list of View B supporters and the Committee will note the comments in the meeting minutes. Document **WAC/117(20.05.15)** was approved.

- Draft Proposals for IMT in bands above 6 GHz, Document **WAC/118(20.05.15)**.

Mr. Rush stated that there were two proposals. He said View A supports an allocation specifically identifying bands for the terrestrial component of IMT above 6 GHz and is supported by Alcatel-Lucent, AT&T, Ericsson, Intel Corporation, Motorola Mobility, Nokia Solutions and Networks, Samsung, Sprint Corporation, Telecommunications Management Group Inc. and Verizon.

Mr. Rush reported View B supporters believe View A is too broad, too open ended

frequency-wise, fails to take into account existing services, fails to propose suppression of the resolution that has guided the work through WRC-15 below 6 GHz, and includes material that is not appropriate in a WRC proposal. EchoStar Corporation, Inmarsat, Intelsat, Iridium, Lockheed Martin Corp., New Wave Spectrum Partners, SES Americom, The Boeing Company, and ViaSat support View B.

Ms. Manner called for comments.

Mr. Caldwell of 21st Century Fox stated that 21st Century Fox supports View B.

Mr. Price, ARRL, stated that ARRL supports the result indicated in View B for a slightly different rationale that it will outline in its comments and asked that ARRL be added to the list of View B supporters.

There being no other comments, Ms. Manner stated that 21st Century Fox and ARRL would be added to the list of View B supporters. There being no other comments Document **WAC/118(20.05.15)**, was approved.

Mr. Rush thanked all of the IWG-2 participants for their effort, and stated that while IWG-2 was not always able to reach consensus everyone showed respect and professionalism in dealing with each other. He thanked his Vice Chair, Ms. Stancavage, for all of her assistance and the Committee's designated federal official, Mr. Roytblat.

Ms. Manner thanked Mr. Rush and IWG-2.

IWG-3 – Space Services

Ms. Manner called upon IWG-3 Chair Mr. Wengryniuk to provide the status report on the work of IWG-3.

Mr. Wengryniuk reported that IWG-3 had met three times since the last meeting of the Committee and had five draft proposals for consideration by the Committee.

Agenda Item 1.5: to consider the use of frequency bands allocated to the fixed-satellite service not subject to Appendices **30**, **30A** and **30B** for the control and non-payload communications of unmanned aircraft systems (UAS) in non-segregated airspaces, in accordance with Resolution **153 (WRC-12)** — Draft Proposal, Document **WAC/119(20.05.15)**, which completely replaces the previous proposal approved by the Committee in Document **WAC/085(27.08.14)**, was approved.

Agenda Item 10: to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention:

- To develop a regulatory framework that provides specific regulatory provisions for NGSO systems operating in the FSS frequency bands 37.5-42.5 GHz (space-to-Earth) and 42.5-43.5 GHz, 49.2-50.2 GHz and 50.4-51.4 GHz (Earth-to-space) — Draft Proposal, Document **WAC/120(20.05.15)**, was approved.
- To consider spectrum requirements for the satellite services operating in the fixed satellite services and possible regulatory actions, including additional allocations, for both geostationary and non-geostationary orbit use, taking into account existing services in the band and the results of ITU-R studies — Draft Proposal, Document **WAC/121(20.05.15)**, was approved.
- Earth stations on aircraft operating in the FSS in the frequency band 12.75-13.25 GHz (Earth-to-space) — Draft Proposal, Document **WAC/122(20.05.15)**, was approved.
- A definition of Space Weather— Draft Proposal, Document **WAC/129(20.05.15)**, IWG-3's proposed edits to the NTIA proposal contained in Document **WAC/105(20.05.15)**, was approved.

Mr. Wengryniuk thanked the members of IWG-3 and his Vice Chair, Ms. Baum, for their work and thanked Mr. Roytblat for his assistance. Ms. Manner also thanked the IWG-3 membership.

IWG-4 – Regulatory Issues

Ms. Manner invited the Chair of IWG-4, Mr. Baruch, to report on progress of the work of the IWG.

Mr. Baruch reported that IWG-4 has met twice since the last meeting of the Committee and had six proposals for consideration by the Committee.

Agenda Item 7: to consider possible changes, and other options, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, an advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution **86 (Rev. WRC-07)** to facilitate rational efficient, and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit:

- **Issue D**: General use of modern electronic means of communications in coordination and notification procedures — Draft Proposal, Document **WAC/123(20.05.15)**, IWG-4's comments on NTIA's proposal which aligns the proposal to the CPM text, contained in Document **WAC/105(20.05.15)**, was approved.
- **Issue G**: Clarification of bringing into use information provided under RR Nos. 11.44/11.44B — Draft Proposal, Document **WAC/124(20.05.15)**, was approved.

- **Issue H:** Using one space station to bring frequency assignments at different orbital locations into use within a short period of time — Draft Proposal, Document **WAC/125(20.05.15)** , IWG-4’s edits to NTIA’s proposal which aligns the proposal to the CPM text, contained in Document **WAC/105(20.05.15)**, was approved.
- **Issue I:** Possible method to mitigate excessive satellite network filings issue — Draft Proposal, Document **WAC/126(20.05.15)**, was approved.

Agenda Item 9.1.2: Studies on possible reduction of the coordination arc and technical criteria used in application of No. 9.41 in respect of coordination under No. 9.7 (Resolution **756** (WRC-12)) — Draft Proposal, Document **WAC/127(20.05.15)**, IWG-4’s comments which aligns the “Background” section to the CPM Report, was approved.

Agenda Item 10: to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention:

- Appendix 30 — Draft Proposal, Document **WAC/128(20.05.15)**, was approved.

Mr. Baruch advised that IWG-4 has no comments on NTIA’s proposal regarding Agenda Item 9.2 for clarification in the Radio Regulations for use of the space research service for deep space allocations contained in Document **WAC/105(20.05.15)**. He observed that there were some adjustments to the method in **Document WAC/105** at the CPM; that IWG-4 had also reviewed the CPM text with the guidance of those observations and that IWG-4 offered no comments on the method as modified at the CPM.

Mr. Baruch thanked his Vice Chair, Mr. Ladson, and the original Chair of IWG-4, Mr. Albuquerque, both of whom had been very helpful. He thanked the IWG-4 members for their effort, contributions and insights. Mr. Baruch also thanked Mr. Roytblat, Mr. Hill, Mr. Persaud and Mr. Fleming of the FCC for their capable assistance. Ms. Manner also thanked IWG-4 for its work.

6. Future Meetings

Ms. Manner referred to Document **WAC/004(Rev. 20.05.15)**, the updated timeline for the Committee’s work, and noted that no additional meetings of the Committee are anticipated. She further noted that there is a U.S. delegation meeting scheduled for June 4, 2015.

7. Other Business

Mr. Murphy, Inmarsat, suggested that the Committee move to a paperless meeting format for the next WAC. He stated that individuals can make use of the Committee’s website to access the documents. Ms. Manner stated that she was sure the Commission would consider the suggestion.

Ms. Manner, on behalf of Mr. Harris and herself, thanked the participants, the IWG Chairs and Vice

Chairs, IWG members, Mr. Roytblat and the FCC staff. She also thanked our Federal partners for the important role they play in the discussion process and letting the Committee comment on their documents.

Mr. Roytblat reminded the Committee that we are transitioning to the next phase of preparation for WRC-15. He said many of the Committee proposals became the foundation for U.S. proposals and will contribute to the U.S. success at WRC-15. He thanked Ms. Manner and Mr. Harris for leading the Committee and thanked the IWG Chairs and Vice Chairs for their work. He noted that Mr. Rush, Chair of IWG-2, would be retiring after WRC-15.

There being no other business, the meeting was adjourned.

Documents Distributed:

WAC/104	Draft Minutes of the seventh meeting
WAC/105	Letter, 22 January 2015, Draft Proposals on Agenda Items 1.1, 7, 9.2 and 10
WAC/106	Letter, 29 January 2015, Draft Proposals on Agenda Item 10
WAC/107	Agenda, 20 May 2015 Meeting
WAC/108	Letter, 12 February 2015, Draft Proposal on Agenda Item 7 (Issue H)
WAC/109	"Letter, 1 April 2015, Draft Proposal on Agenda Item 1.1 (IMT stations operating in
	the adjacent band to Earth exploration-satellite service (1400-1427 MHz
WAC/110	IWG-1 Draft Proposal on Agenda Item 1.17
WAC/111	IWG-1 Draft Proposal on Agenda Item 10
WAC/112	IWG-2 Draft Proposal on Agenda Item 1.1 for the bands 1 300-1 400 MHz
WAC/113	IWG-2 Draft Proposal on Agenda Item 1.1 for the bands 1 375- 1 400 and 1 427-1 452 MHz
WAC/114	IWG-2 Draft Proposal on Agenda Item 1.1 for the bands 2 700-2 900 MHz
WAC/115	IWG-2 Draft Proposal on Agenda Item 1.1 for the bands 4 400-4 990 MHz
WAC/116	IWG-2 Draft Proposal on Agenda Item 1.1 for the bands 5 925- 6 425 MHz
WAC/117	IWG-2 Draft Proposal on Agenda Item 10 for broadband over HAPS
WAC/118	IWG-2 Draft Proposal on Agenda Item 10 for IMT in bands above 6 GHz
WAC/119	IWG-3 Draft Proposal on Agenda Item 1.5
WAC/120	IWG-3 Draft Proposal on Agenda Item 10 • To develop a regulatory framework that provides specific regulatory provisions for NGSO systems operating in the FSS frequency bands 37.5-42.5 GHz (space-to-Earth) and 42.5-43.5 GHz, 49.2-50.2 GHz and 50.4-51.4 GHz (Earth-to-space)
WAC/121	IWG-3 Draft Proposal on Agenda Item 10 •• To consider spectrum requirements for the satellite services operating in the fixed satellite services and possible regulatory actions, including additional allocations, for both geostationary and
non-	geostationary orbit use, taking into account existing services in the band and the results of ITU-R studies
WAC/122	IWG-3 Draft Proposal on Agenda Item 10 • Earth stations on aircraft operating in the FSS in the frequency band 12.75-13.25 GHz (Earth-to-space)
WAC/123	IWG-4 Draft Proposal on Agenda Item 7 Issue D
WAC/124	IWG-4 Draft Proposal on Agenda Item 7 Issue G
WAC/125	IWG-4 Draft Proposal on Agenda Item 7 Issue H
WAC/126	IWG-4 Draft Proposal on Agenda Item 7 Issue I
WAC/127	IWG-4 Draft Proposal on Agenda Item 9.1.2
WAC/128	IWG-4 Draft Proposal on Agenda Item 10 • Appendix 30
WAC/129	IWG-3, Draft Proposal on Agenda Item 10 • A definition of Space Weather

MINUTES
Appendix 1
WRC-15 Advisory Committee Attendance
Eighth Meeting – May 20, 2015

Maqbool Aliani, LightSquared
Amy Alvarez, AT&T
Stephen Baruch, New Wave Spectrum Partners LLC
Kim Baum, SES Americom
Christopher Bjornson, Steptoe and Johnson
M. Winston Caldwell, 21st Century Fox
Joseph R. Dockemeyer Jr. Delphi
Kyle Entz, Sprint
Dr. Alexander Gerdenitsch, Motorola Mobility LLC
William K. Keane, Aerospace and Flight Test Radio
Coordinating Council
Robert Kubik, Samsung
Kris Hutchison, Aviation Spectrum Resources, Inc.
Jennifer Manner, EchoStar
Leslie Martinkovics, Verizon
Hazem Moakkit, O3b Networks
Christopher Murphy, Inmarsat
Brennan Price, ARRL
Mark Racek, Ericsson
Charles Rush, Telecommunications Management Group,
Inc.
Dileep Srihari, Telecommunications Industry Association
Jack Wengryniuk, DirecTV

MINUTES

Appendix 2

WRC-15 Advisory Committee – FCC Representatives and Observers Eighth Meeting – May 20, 2015

FCC Representatives:

Alexander Roytblat, FCC
Mindel De La Torre, FCC
Jose Albuquerque, FCC
Dante Ibarra, FCC
Michael Mullinix, FCC
Kathryn O'Brien, FCC
Sankar Persaud, FCC
Allen Yang, FCC

Observers:

Pasquale Amodio, EchoStar
Reza Arefi, Intel
Robert Briskman, Sirius XM
Charles Carr, EchoStar
Candice DeVane, Intelsat
Don Jansky, Jansky-Barmat Telecommunications
Scott Kotler, Lockheed Martin
Damon C. Ladson, Harris, Wiltshire & Grannis LLP
Kathryn Martin, Access Partnership
Kelly O'Keefe, Access Partnership
Patricia Paoletta, Harris Wiltshire Grannis for Google
Liching Sung, NTIA
Michael Taylor, Facebook
Joanne Wilson, ASRC representing NASA