IEEE P802.18  
Radio Regulatory Technical Advisory Group (RR-TAG)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Radio Regulatory Technical Advisory Group Minutes  – IEEE 802 July Mixed-mode Plenary Session 2022 | | | | |
| Date: 22 July 2022 | | | | |
| Author: | | | | |
| Name | Company | Address | Phone | email |
| Amelia Andersdotter | Comcast | Belgium |  | amelia.ieee@andersdotter.cc |
|  |  |  |  |  |

Abstract

This document constitutes the minutes of the IEEE 802.18 Technical Advisory Group from the IEEE 802 July Mixed-mode Plenary Session 2022 (meetings 12 July 2022, 10:30-12:30 ET and 14 July 2022, 08:00-10:00 ET).

In these minutes

**C:** means comment  
**Q:** means question  
**A:** means answer  
**Chair:** means comment from the chair in capacity of chair  
Highlight means action item

r1: change of attendance log to reflect current voting membership. highlighted action point for chair under para. 20. bold-faced C:, Q: and A: line-openings under para. 7 Discussion: item.

Chair: Edward Au (Huawei)

Co-Vice-chairs: Stuart Kerry (OK-Brit/Self) and Al Petrick (Skyworks Solutions)

Secretary: Amelia Andersdotter (Sky)

IEEE SA Program Manager: Jodi Hassz (IEEE SA)

* IEEE 802.18, RR-TAG website: <https://www.ieee802.org/18/>

These are the minutes of IEEE 802 RR-TAG meeting during the July IEEE 802 Mixed-mode Plenary meeting 10 July to 15 July 2022 in Montreal, Quebec, Canada.

**Opening plenary**

1. Chair calls the meeting to order at 10:45 ET.

Agenda slide deck [18/22-0062r2](https://mentor.ieee.org/802.18/dcn/22/18-22-0062-02-0000-rr-tag-2022-july-plenary-agenda.pptx)

1. Chair presents administrative items
   1. This meeting is part of the IEEE 802 mixed-mode plenary session in 10 July to 15 July 2022.
      * You **must** pay the registration fee in order to attend
      * If you have not already done so, you can register w/Face to Face Events – Registration website at: <https://web.cvent.com/event/5ab3e363-ef4b-45fe-b35d-cd88bf622491/summary>
      * If you do not intend to register for this session you must leave this meeting and, if you have logged attendance on IMAT, please email the 802.18 chair or a vice chair to have your attendance cancelled
      * At conclusion of each of the 802.18 calls, the Webex log and IMAT will be reviewed.
      * No payment, become dead beat and lose voting rights in all groups, after 60-day grace.
   2. Group officers and voting membership
      * As of the beginning of this meeting the voting membership of the group has changed.
      * Voters: 47 (8 on LMSC)
      * Nearly Voters: 0
      * Aspirant members: 5
      * [802.18 Voters List](https://www.ieee802.org/18/RRTAG_Voters.pdf)
      * [802.18 Honor Roll](https://www.ieee802.org/18/RRTAG_HonorRoll.pdf)
   3. RR-TAG Policies & Procedures [[802 LMSC WG P&P](https://mentor.ieee.org/802-ec/dcn/21/ec-21-0207-23-0PNP-ieee-802-lmsc-working-group-policies-and-procedures.pdf)]
   4. IEEE 802 meeting and participant’s guidelines and requirements [[link](http://www.ieee802.org/devdocs.shtml)]
   5. IEEE policies and procedures [[link](https://standards.ieee.org/about/policies/opman/)]
   6. The IEEE SA Individual method participant behavior slide set was presented
   7. **Reminder that IMAT is being used for attendance**
   8. Mixed-mode meeting procedures reminder
      * For call-in info, see below at para. 22.
   9. No questions or comments on the above materials from the room.
2. Chair presents the agenda (slide #12). No modification to the agenda proposed.
3. Administrative:
   1. **Motion #1:** To approve the agenda as presented on previous slide

Moved by: Stuart Kerry (OK-Brit, Self)

Seconded by: Hassan Yaghoobi (Intel Corporation)

Discussion? None

Vote: Passed with unanimous consent

* 1. The chair presents the meeting minutes from the RR-TAG 2022 May wireless session. No comments or questions from the participants. **Motion #2:** To approve the meeting minutes of the RR-TAG 2022 May wireless session as shown in the document [18-22/0055r1](https://mentor.ieee.org/802.18/dcn/22/18-22-0055-01-0000-rr-tag-may-2022-wireless-interim-minutes.docx), with editorial privilege for the 802.18 Chair.

Moved by: Assaf Kasher (Qualcomm)

Seconded by: Claudio da Silva (Meta Platforms Inc.)

Discussion? None

Vote: Passed with unanimous consent

1. **2022 July Plenary Chair Opening Report (**[**18-22-0063r0**](https://mentor.ieee.org/802.18/dcn/22/18-22-0063-00-0000-ieee-802-18-rr-tag-2022-july-plenary-chair-opening-report.ppt)**)**Chair presents developments since the May interim.  
     
   Chair reminds everyone of meeting slots for the plenary week and of the meeting bridges used.
2. **European Commission Call for Evidence**Draft response on behalf of IEEE 802 developed by WG members, available in doc [18-22-0073r2](https://mentor.ieee.org/802.18/dcn/22/18-22-0073-02-0000-proposed-response-to-ec-consultation-on-better-regulation-initative.docx).  
     
   C: There are currently three ongoing consultations, as far as I'm aware. Ofcom, European Commission and European Commission's Radio Spectrum Policy Group. I see this a new policy mechanism at play because the European Commission is trying to insert itself in the RSPG.   
     
   Doc [18-22-0073r2](https://mentor.ieee.org/802.18/dcn/22/18-22-0073-02-0000-proposed-response-to-ec-consultation-on-better-regulation-initative.docx) is presented.  
     
   C: I agree with this presentation broadly, but we are now looking towards new applications in addition to already existing technologies. Perhaps we need to add these topics on emerging technologies and use-cases as well. Future use-cases are already discussed at CEPT and they will be part of the WRC-23 discussions as well. High-precision positioning, sensing and other applications could perhaps be added in a sentence.   
   C: We can work on some real-time crafting of a sentence.  
   Chair: OK, let's see if we can get agreement on a sentence with emerging issues and return to this issue later in our session.
3. **Presentation:** An introduction to ETSI TC ERM and the liaison related to UWB**, Dries Neirynck** (Rapporteur, RTR/ERM-TGUWB-611, Ultra Radio Ltd), [18-22-0072r0](https://mentor.ieee.org/802.18/dcn/22/18-22-0072-00-0000-recent-liaison-from-etsi-regarding-worldwide-uwb-regulations.pptx)Presenter highlights ongoing work to update ETSI TR 103 181-3, an overview of UWB regulations between 3.1 - 10.6 GHz. Many states have introduced new UWB regulations since the last revision of the TR, so ETSI is interested in hearing from different stakeholders.   
     
   Liaison request in [18-22-0060r0](https://mentor.ieee.org/802.18/dcn/22/18-22-0060-00-0000-liaison-from-etsi-tc-erm-re-revision-report-tr-103-181-3-summary-worldwide-uwb-regulations.docx).  
     
   **Q:** Is this a communication or an FMCW radar, in the context of ultra-wide band?  
   **A:** Regulations in Europe are very applications oriented, so it's in both context. FMCW is allowed in Europe but most of these regulations will be impulse-radio based, radio determination, location-tracking, ranging technologies and such things. Anything with a bandwidth more than 50 MHz can use the UWB regulations in Europe.  
   **Q:** What is the percentage of this spectrum used by UWB for FMCW visavi impulse radio?  
   **A:** The vast majority in my impression is impulse radio. Some radar uses FMCW but as far as I'm aware it's a small minority of applications.  
   **Q:** But in for instance the 60 GHz it's not even possible to have communication under these rules, right?  
   **A:** That's correct. That's why the UWB regulations were originally introduced. People wanted to be able to use these bands for data.   
   **C:** You're looking at Short Range Device (SRD) rules for 40 GHz to 260 GHz, and these bands are usually generically used, you can do what you want.   
   **Q:** So we have this UWB group and the BRAN group which are all working on standards for somehow similar bands? I guess it's a procedural conundrum for me?  
   **A:** There are different regulations for different bands. Some of them are regulated for more than 20 years, with no real restrictions on what you can do there, but if we develop things for these bands we need to take other users there into account. The victim will always be UWB, we have to be clear on that. So I believe when more specialised applications are introduced it is the UWB that will give way.  
   **Q:** How would you participate in this revision work? Would you be able to give us an indication of the time-line for your project?  
   **A:** This work item has already started. We've had some input from industry stakeholders already, and from other standards bodies. We will discuss it again in October. That would be a good meeting for which to introduce a contribution if you should want to do that.  
     
   Chair thanks presenter and questioners.
4. **European Commission Call for Evidence (cont. from para 6 above)**Doc [18-22-0073r3](https://mentor.ieee.org/802.18/dcn/22/18-22-0073-03-0000-proposed-response-to-ec-consultation-on-better-regulation-initative.docx) contains an updated version of the document presented under para. 6 above. The revision is presented. No further comments.  
     
   **Motion #3:** Move to approve document [22/0073r3](https://mentor.ieee.org/802.18/dcn/22/18-22-0073-03-0000-proposed-response-to-ec-consultation-on-better-regulation-initative.docx) in response to European Commission’s call for evidence: World Radiocommunication Conference 2023 – EU position for review and approval by the IEEE LMSC (802 EC) for submission to European Commission by the response deadline. The IEEE 802.18 Chair is authorized to make editorial changes as necessary.  
     
   Moved: Stuart Kerry (OK-Brit, Self)  
   Seconded: Claudio da Silva (Meta Platforms Inc.)  
   Discussion: None  
   Attendees: 28  
   Voters (present): 24  
   Results: 15 Y, 0 N, 3 Abstain, 6 Did not vote  
   Note: Chair did not vote
5. **Reminder of Thursday AM1, 14 July 2022, agenda**
6. **Any other business**
   1. Nobody raises any other business.
7. **Administrative items**
   1. Attendees (report by vice-chair Stuart Kerry)**: 3 new voters in this meeting. 29 attendees, 24 voters present for this meeting.**
   2. See also below at para. 22.
8. **Recess at 12:06 ET.**

These are the minutes of the second IEEE 802 RR-TAG meeting slot during the May Virtual Interim meeting on Thursday, 19 May 2022.  
 **Closing plenary**

1. **Chair calls the meeting to order at 08:08 ET.**
   1. Chair slide deck: [18-22/0062r4](https://mentor.ieee.org/802.18/dcn/22/18-22-0062-04-0000-rr-tag-2022-july-plenary-agenda.pptx).
   2. Reminder of policies and procedures (see paragraphs 2(i)--2(vi) above for links and content).
   3. Reminder of house keeping rules (see paragraphs 2(vii)--2(ix) above)
2. **Agenda review (slide #20)**
   1. **Q:** There is now new work being proposed in .11 for technologies after .11be. It is looking into using spectrum which is not allocated yet, such as 45 GHz bands. Would .18 be involved in the regulatory issues implied by developing technologies for such bands?  
      **Chair:** I will contact the .11 Wireless Next Generation (WNG) chairs and see how we can best support the .11 activities.
   2. No additions to agenda as shown.
3. **Administrative**
   1. **Motion #3:** To approve agenda as shown on previous slide.  
      Moved by: Jim Lansford (Qualcomm Inc)  
      Seconded by: Stuart Kerry (OK-Brit, Self)  
      Discussion? None.  
      Motion adopted by unanimous consent.
4. **Status of ongoing consultations (**[**18-22-0035r25**](https://mentor.ieee.org/802.18/dcn/22/18-22-0035-25-0000-status-of-ongoing-consultations-and-tag-documents-for-approval.docx)**)**Adopted response to EC initiative earlier this week. **Q:** What would be the high-level difference between EC and EC RSPG? **C:** The EC is an international body that has an independent administration, while the EC RSPG is constituted by member state representatives that do not work on a day to day basis in Brussels.   
   **C:** I propose we take the same response we already produced for the EC Better Regulation initiative and change the appropriate sentences and submit it also to RSPG.  
   **Chair:** I will follow up with the authors of the EC initiative response on how to proceed.   
   **Q:** What is the WRC-23 preparatory process in Germany?  
   **C:** There is an ongoing process at the Bundesnetzagentur constituted of working group meetings and you get invitations to them and participate. But there is no equivalent of public consultations in the sense of ARCEP and UK Ofcom. I can ask in what the stage the process is currently.  
   No further draft consultation responses to consider at this session.  
     
   No further comments.
5. **General topics**
   1. **Europe**  
      TS (Mesh-AP Performance Technical Specification) [103 754](https://www.etsi.org/deliver/etsi_ts/103700_103799/103754/01.01.01_60/ts_103754v010101p.pdf) is published. It is publicly accessible on the server for everyone to see.  
        
      In response to ENAP on EN 303 687, technical comments have been received. Thus, ETSI TC BRAN will need to address and resolve them. It is expected that during its plenary meeting #115 (September 2022) ETSI TC BRAN will submit EN 303 687 for second ENAP.  
        
      Related to EN 301 893 (5 GHz WAS/RLAN), two ad hoc meetings will be conducted prior to ETSI TC BRAN plenary meeting #115. It is expected that during its plenary meeting #115 ETSI TC BRAN will submit EN 301 893 for ENAP.  
        
      EN 303 753 is ETSI TC BRAN's third harmonized standard for the license-exempt 60 GHz spectrum. ETSI TC BRAN declared this draft to be stable. It is expected that during its plenary meeting #115 ETSI TC BRAN will submit EN 303 753 for ENAP.  
        
      UK Ofcom published its conclusions on extending the existing Shared Access licensing framework for 6425 to 7125 MHz bands on 30 June 2022. They have decided not to proceed on the proposal.  
        
      In CEPT, an attendee called attention to two open public consultations relating to UWB technologies. They are open until 11 August 2022. Further, ETSI is preparing a SRDoc to initiate a new round of UWB regulation update with the main goal of extending the band up to 12.4 GHz (or at least up to 10.6 GHz).  
        
      It was also mentioned that ECC Decision(06)04 has been updated with fixed outdoor in the band 6 GHz to 8.5 GHz, 10 dB higher power indoor in the band 6 GHz to 8.5 GHz (-41.3 dBm/MHz mean and 0 dBm/50 MHz peak) and vehicular usage without specific mitigation techniques (-41.3 dBm/MHz mean and 0 dBm/50MHz peak). The next steps in this procedure will be to resolve comments received so far and develop a final draft ahead of the WGFM in October.   
        
      CEPT will develop a report to the European Commission to initiate the harmonizing regulation at the European level before the end of 2022.   
        
      No further comments.
   2. **Americas**Next open meeting of FCC scheduled for 14 July after our session. It's available on Youtube.   
        
      The next open meeting is on 5 August 2022.  
        
      On 5 July 2022, FCC OETF opened a public consultation on request for a waiver on the Commission's rules for handheld UWB systems.  
        
      The FCC put out a proposal on a procedure for ULS, such as disaster recovery systems.   
        
      No additional comments.
   3. **Asia/Pacific**The APT Conference Preparatory Group for WRC-23 (APG23-4) will hold a hybrid meeting on 15 to 20 August 2022 in Bangkok, Thailand. It is open to full or associate members.  
        
      The APT Wireless Group (AWG-30) is holding a hybrid meeting on 5 to 9 September in Bangkok, Thailand.   
        
      They have circulated questions to stakeholders in the region on 6 GHz.   
        
      Japan and Singapore have signed a Memorandum of Understanding (MoU) on regulatory cooperation on cybersecurity, AI, mobile networks, and others.  
        
      Malaysia MCMC has released a notice on prohibiting further use of personal radio service devices in the 477.0125-477.4875 and 477.5250-477.9875 MHz bands effective 1 January 2023.  
        
      No additional comments.
   4. **Other/ITU-R**  
      No additional comments.
6. **IEEE Intelligent Spectrum Allocation and Management**The IEEE policy statement on Intelligent Spectrum Allocation and Management was produced in 2018. The IEEE has now reminded the IEEE 802 that the statement is four years old and due a revision.   
     
   The statement has been discussed during the weekly teleconferences. It is outdated and needs to be revised, renewed or archived.  
     
   The IEEE 802 EC has allocated further work with the statement to IEEE 802.18.  
     
   The Chair has coordinated with the IEEE Standards Association Public Affair Team Staff and produced two proposals for a timeline to complete this work. On 11 July 2022 the IEEE 802 EC decided to go with a slightly extended deadline which entails IEEE 802.18 giving its input to the IEEE 802 EC by 8 September 2022.  
     
   **Chair:** I would prefer to have a dedicated ad-hoc for this process to ensure we have enough time to discuss. For this reason I've proposed the formation of an IEEE Spectrum Statement Update (ISSU) ad-hoc, and it's a motion. I would like to know if we have any questions or comments on the statement or this process?  
     
   No questions or comments.  
     
   **C:** I don't have any issue with the content but "IEEE Spectrum" reminds me of the magazine. I propose to change it to "IEEE Statement Update on Spectrum (ISUS)".  
     
   No objections.  
     
   **Chair:** Following the 802 LMSC P&P, I would prefer to have a counted vote for this rather than pass by unanimous consent.  
   **Q:** Can we have a clarification on the timelines from 18-22-0062, slide #28?  
   **Chair:** The EC has already approved what was previously described as Option 2 for a timeline, so I will update 18-22-0062, slide #28 to reflect that there is now only one timeline. The decided timeline is available in the [18-22-0062r5](https://mentor.ieee.org/802.18/dcn/22/18-22-0062-05-0000-rr-tag-2022-july-plenary-agenda.pptx), slide #28.  
   1. **Motion #5 (internal):** To approve the formation of an IEEE Statement Update on Spectrum (ISUS) ad-hoc to develop a revised IEEE Standards Association policy statement on the Intelligent Spectrum Allocation and Management, and appoint Amelia Andersdotter as the ad-hoc Chair.  
        
      Moved: Rich Kennedy (Huawei Paris)  
      Seconded: kiwin Palm (Broadcom)  
      Discussion? None.  
      Attendees: 29  
      Voters (present): 24  
      Result: 20 Y, 0 N, 1 A, 3 Did not vote
7. **Future meetings reminder (18-22-0062, slide #30).**Chair presents September wireless interim reminder and information as contained in 18-22-0062, slide #30-31.

**Chair:** We have been requested to run a strawpoll on the kind of participation we should be expecting for the September interim.

**Straw Poll #1:** The 2022 September Interim session is a mixed mode session with the in person meetings being held in Waikoloa, Hawaii, United States. Will you:

Attend in person: 14

Attend virtually (remotely): 7

Not attend the Interim: 4

No answer: 5  
  
**C:** For polling on attendance during the September interim, it may be valuable for the executive leadership of the Wireless group to keep in mind that there is a big overlap in membership between .11, .15 and .18.

Chair presents the tentative November Plenary meeting arrangement and information as contained in 18-22-0062, slide #33.  
  
**Straw Poll #2:** If the 2022 November Plenary Session is held in Bangkok, Thailand as an in-person only session, will you attend?

Yes: 18

No: 5

No answer: 6 **C:** I would like to request that IEEE 802 EC does a poll a week after the Montreal plenary to assess whether people got infected with covid from meeting in person.  
**Chair:** I will bring this up with the IEEE 802 EC. Thank you for making this suggestion.  
**C:** The follow-up needs to happen a few days after the plenary to assess not only the risk of us meeting each other, but also the risk of travelling, getting into contact with people at airplanes, etc.  
**C:** It may be difficult for us to assess people's health status due to privacy concerns, but if such a poll were to be done it should probably give two weeks of incubation time.  
**C:** The EC should probably consider in such a poll the discomfort people may feel in disclosing health data and whether this will impact the reliability of the data. **Straw Poll #3:** If the 2022 November Plenary Session is held in Bangkok, Thailand as a mixed-mode session, will you attend:

Attend in person: 12

Attend virtually (remotely): 7

Not attend the Plenary: 2

No answer: 8

1. **Future meetings and Webex meeting invite.**Chair has an action point to attempt fewer overlaps with conflicting work in other IEEE 802 Working Groups. For now, IEEE 802.18 sessions are scheduled for Tuesday AM2 and Thursday AM1 during the September interim.  
     
   Weekly teleconference calls will continue at the current cadence.  
     
   Wireless Standards Frequency Table ad-hoc, joint with IEEE 802.19, continues throughout 2022, once per month.  
     
   **Chair:** We need to renew our weekly teleconference schedule and a teleconference schedule for the ad-hoc approved in motion #5.  
     
   **Motion #6 (Internal):** The 802.18 Chair or Chair designee is directed to conduct, as necessary, teleconferences on Thursdays at 15:00 ET (for 55 mins) through 26 January 2023.

Moved: Stuart Kerry (OK-Brit, self)

Seconded: Ian Sherlock (Texas Instruments)

Discussion: None.

Vote: Approved by unanimous consent.   
  
**Motion #7 (Internal):**  The 802.18 Chair or Chair designee is directed to conduct, as necessary, the IEEE Statement Update on Spectrum (ISUS) ad-hoc teleconferences on Mondays at 11:00 ET (for 60 mins) from 25 July 2022 through 23 January 2023.

Moved: Jim Lansford (Qualcomm Inc)

Seconded: Ian Sherlock (Texas Instruments)

Discussion: Note on potential overlap with CAC.

Vote: Approved by unanimous consent.

1. **Any other business**
   1. Inclusive language  
        
      An attendee mentioned that in the latest revision of EN 301 893 ETSI TC BRAN decided to replace the terms master resp. slave by controlling device and controlled device. These terms are used in the context of Dynamic Frequency Selection (DFS), which is a mechanism necessary to operate in 5 GHz bands that are used by radar services. The attendee stated that they hope that the new terms (controlling/controlled) will be used consistently across the industry, SDOs, and various entities. In the past, DFS master and slave had this consistent meaning as being associated with DFS operation.  
        
      Another attendee observed that the word "client" may have to evolve in the same way that the word "master" has to evolve. Having industry-wide harmonisation is important.  
        
      In light of this discussion, it was mentioned that the IEEE-SA has recently established a new Working Group, P3400 (Inclusive language working group), managed by BOG/SESCom - Strategic and Emerging Standards Committee.

For details on this new working group, you can

1) read the PAR at:

[https://development.standards.ieee.org/myproject-web/public/view.html#pardetail/9681](https://development.standards.ieee.org/myproject-web/public/view.html" \l "pardetail/9681)

2) visit their Working Group website for recent activities at:

<https://sagroups.ieee.org/3400/>  
  
Several attendees agree that it's good to have a common inclusive terminology across different standards bodies that work on, for instance, DSF.

* 1. No one raises other issues.

1. **Final administrative items**  
   1. **Next IEEE 802.18 plenary is during the 12-16 September IEEE Wireless Interim meeting in Waikoloa, US.**
   2. **Next weekly teleconference is Thursday, 21 July 2022 at 15:00 ET.**
      * 1. Call in info: <https://mentor.ieee.org/802.18/dcn/16/18-16-0038-24-0000-teleconference-call-in-info.pptx>
        2. Currently, weekly teleconferences are scheduled until 10 November 2022.
        3. All late changes/cancellations will be sent out to the 802.18 list server.
        4. Overall IEEE 802 schedule: <https://ieee802.org/16/cal-temp.html> or only 802.18: [IEEE 802.18 TAG Calendar](https://calendar.google.com/calendar/embed?src=c2gedttabtbj4bps23j4847004@group.calendar.google.com&ctz=America%2FNew_York)
   3. Adjourn:

* Any objection to Adjourn? None heard.
* Adjourn at 09:59 ET

**ATTENDANCE (Plenary Meeting Attendance Names and Affiliations):**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Voting Attendees:** | | | | Attendance |  |
| **>75%** |  |
| 1 | **Andersdotter** | Amelia | Sky UK Group | TRUE |  |
| 2 | **Au** | Edward (Kwok Shum) | Huawei Technologies Co., Ltd | TRUE |  |
| 3 | **Baykas** | Tuncer | Kadir Has University | TRUE |  |
| 4 | **Berens** | Friedbert | FBConsulting Sarl | TRUE |  |
| 5 | **Boldy** | David | Broadcom Corporation | TRUE |  |
| 6 | **da Silva** | Claudio | Meta Platforms, Inc. | TRUE |  |
| 7 | **de Vegt** | Rolf | Qualcomm Incorporated | TRUE |  |
| 8 | **Ecclesine** | Peter | Cisco Systems, Inc. | TRUE |  |
| 9 | **Eitan** | Alecsander | Qualcomm Incorporated | TRUE |  |
| 10 | **Fang** | Yonggang | MediaTek | TRUE |  |
| 11 | **Godfrey** | Tim | Electric Power Research Institute, Inc. (EPRI) | FALSE |  |
| 12 | **Hiertz** | Guido | Ericsson GmbH | TRUE |  |
| 13 | **Ikegami** | Tetsushi | Meiji University | TRUE |  |
| 14 | **Jeffries** | Timothy | FutureWei Technologies, Inc. | TRUE |  |
| 15 | **Kain** | Carl | USDOT, Noblis, Inc. | TRUE |  |
| 16 | **Kasher** | Assaf | Qualcomm Incorporated | TRUE |  |
| 17 | **Kennedy** | Richard | Huawei Paris | TRUE |  |
| 18 | **Kenney** | John | TOYOTA InfoTechnology Center U.S.A. | TRUE |  |
| 19 | **Kerry** | Stuart | OK‐Brit, Self | TRUE |  |
| 20 | **Kürner** | Thomas | TU Braunschweig | TRUE |  |
| 21 | **Lansford** | James | Qualcomm Incorporated | TRUE |  |
| 22 | **Levy** | Joseph | InterDigital, Inc. | TRUE |  |
| 23 | **Lynch** | Michael | MJ Lynch & Associates, LLC. | TRUE |  |
| 24 | **Palm** | kiwin (Stephen) | Broadcom Corporation | TRUE |  |
| 25 | **Petrick** | Al | Skyworks Solutions Inc. | TRUE |  |
| 26 | **Pirhonen** | Riku | NXP Semiconductors | TRUE |  |
| 27 | **Robert** | Joerg | TU-Ilmenau/Fraunhofer IIS | FALSE |  |
| 28 | **Rosdahl** | Jonathan | Qualcomm Technologies, Inc. | FALSE |  |
| 29 | **Sand** | Stephan | German Aerospace Center (DLR) | FALSE |  |
| 30 | **Sato** | Naotaka | Sony Group Corporation | TRUE |  |
| 31 | **Scott** | Andy | NCTA – The Internet & Television Association | TRUE |  |
| 32 | **Sherlock** | Ian | Texas Instruments | TRUE |  |
| 33 | **Verso** | Billy | Qorvo | TRUE |  |
| 34 | **Wang** | Lei | FutureWei Technologies, Inc. | TRUE |  |
| 35 | **Ward** | Lisa | Rohde & Schwarz | TRUE |  |
| 36 | **Yaghoobi** | Hassan | Intel Corporation | TRUE |  |
|  |  |  |  |  |  |
| **Non-Voting Attendees:** | | | | |  |
|  |
| 1 | **Bailey** | Jeff | Carleton University | TRUE |  |
| 2 | **Haasz** | Jodi | IEEE SA | TRUE |  |
| 3 | **Kozarev** | Aleksandra | MaxLinear | TRUE |  |
| 4 | ***Kumbhkar\*\**** | *Ratnesh* | *Intel Corporation* | *FALSE* |  |
| 5 | **Max** | Sebastian | Ericsson AB | FALSE |  |
| 6 | **Neirynck** | Dries | Ultra Radio Ltd | FALSE |  |
| 7 | **Porat** | Ron | Broadcom Corporation | TRUE |  |
| 8 | **Shigenobu** | Sasaki | Niigata University, Japan | TRUE |  |
| 9 | **Sugirtharaj** | David | Ericsson | FALSE |  |
|  |  |  |  |  |  |
| Note\*\*: This individual attended the Opening Session without having paid the registration fee. When the individual realized their mistake they asked to have any record of their attendance removed. If an individual attends the meeting with no payment, they are given a 60 day grace-period to offer the necessary payment required for having attended the meeting. After the 60 day grace-period, if no payment has been received, they become a "deadbeat" and lose voting rights in all 802 groups. The individual was given a warning and the attendance will not count towards voting credit. It is the first time that this individual attends a registration-only session without paying due fees. | | | | |  |
|  |
|  |
|  |
|  |
|  |