IEEE P802.11
Wireless LANs

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| Minutes of the IEEE P802.11 Full Working Group |
| Date: 2019-09-16 |
| Author(s): |
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Abstract

This document constitutes the minutes of the IEEE 802.11 full working group for the September 2019, Hanoi, Vietnam meeting.

Please note that all affiliations at this meeting are shown in Annex A.

**IEEE 802 Wireless Interim Meeting – Joint Opening Plenary #111**

**Hanoi, Vietnam**

**September 16 - 20, 2019**

**8:04** **802.11, 802.15, 802.18, 802.19 and 802.24 Chairs called the joint meeting to order**.

802.15 WG chair (B Heile - Decawave) read the main logistic announcements prepared by the meeting organizer for the attendees of this session.

**General announcements:**

* No photography, no audio recording
* Don’t forget, book your room and register for September’s session
* Please note the new application for this meeting entitled “The Event App by EventsAir”
* There will be a “Bia Hoi” themed social on Wednesday evening
* There is a local tour operator who will be available here onsite near the registration desk today.

Straw Poll of new attendees: 0 (although 5 have registered for this session)

**8:10 IEEE patent policy**

802.15 WG chair read the IEEE-SA instructions and displayed the four slides explaining patent policy and informed the attendees that additional information could be found on the PatCom web site: (https://standards.ieee.org/about/sasb/patcom/materials.html).

802.15 WG chair read IEEE anti-trust policy. (http://standards.ieee.org/develop/policies/antitrust.pdf)

**8:13 Financial report** by J Rosdahl (Qualcomm)

The document is <https://mentor.ieee.org/802-ec/dcn/19/ec-19-0136-01-WCSG-wireless-treasurer-report-sept-2019-hanoi.pptx>

This is the report up to 31st August 2019 and everything is well at the moment. The co-existence workshop from the July 2019 meeting came in within the expected budget.

The total liabilities and equity are currently $430,000 (not including this meeting). The number of people who are currently registered at this meeting is 278. It looks as though this meeting will break even.

**8:20 Wireless and IMAT announcements** by R Alfvin (Linespeed)

Information can be found at ieee802.linspeed.io.

Please do not use MyWi units, which are personal IEEE 802.11 access points that use cellular as a backhaul.

**8:21** **WG15 Chair** informed the group that the Wireless Chairs Standing Committee (WCSC) met yesterday, Sunday at 16:00 local time. Chair noted that this is an open meeting, all are encouraged to attend. Minutes are available at <https://mentor.ieee.org/802-ec/dcn/19/ec-19-0152-00-WCSG-hanoi-september-2019-minutes.docx>

**8:23 Review future sessions**

* November 10-15, 2019, Hilton Waikoloa Village, Kona, HI, USA, 802 Plenary
* January 12-17, 2020, Hotel Irvine, Irvine, California, USA, 802 Wireless Interim
* March 15-20, 2020, Hilton Atlanta, Atlanta Georgia, USA, 802 Plenary Session.
* May 10-15, 2020, Marriott Hotel, Warsaw, Poland, 802 Wireless Interim (TBC)
* July 12-17, 2020, Sheraton Centre Montreal, Montreal Canada, 802 Plenary Session.
* Sept 13-18, 2020, Grand Hyatt Atlanta in Buckhead, Atlanta Georgia, USA, 802 Wireless Interim
* Nov 18-13, 2020, Marriott Marquis Queen's Park, Bangkok, Thailand, 802 Plenary

**8:30 Working Group Updates**

802.11 by Dorothy Stanley (HPE), (11-19-1372-00)

* voters: 320, potential voters 25, aspirant 127

802.15 by B Heile (Decawave)

* voters 94, nearly voters 9, aspirant members 16
* TASK GROUP 4md - 15.4 Revision 4
* TASK GROUP 4w – Low Power Wide Area (LPWA) 15.4 PHY amendment
* TASK GROUP 4y – Security Next Generation (SECN) 15.4 MAC amendment
* TASK GROUP 4z – Enhanced Impulse Radio (EIR) 15.4 PHY amendment
* TASK GROUP 9ma - 15.9 Key Management Protocol Revision 1
* TASK GROUP 13 - Multi-Gigabit OWC

802.18 by J Holcomb (Itron) (18-19-0126-00)

* voters: 44, potential voters 2, aspirant 19
* Focus on 2 items from the FCC regarding UWB this week, together with some other issues.

802.19 S Shellhammer (Qualcomm) (19-19-0062-00)

* Voters 52
* The main issue this week will be continued discussion regarding the co-existence document 19-19-0024r5 so that it can be considered at the IEEE 802 Executive Committee in November 2019.

802.21 has now gone into hibernation and will not meet this week.

802.22 is also in hibernation and will not meet this week.

802.24 Tim Godfrey (EPRI) (24-19-0026-00)

* 27 voters
* White Paper projects:
	+ Time Sensitive Networks (TSN)
	+ Low Latency
	+ IEEE 802 Solutions for Vertical Applications

**AoB**

**8:37** The WG chairs have been discussing whether this meeting has any particular use.

**8:38** Joint meeting adjourned

**IEEE 802.11 Interim Meeting – Session #177**

**Hanoi, Vietnam**

**September 16th – 20th, 2019**

**IEEE 802.11 Opening Plenary, Monday 16th September 2019**

Presiding chair: Dorothy Stanley (Hewlett Packard Enterprise) opened the meeting at 09:05 Indochina Time (ICT) and declared quorum for the Session.

2nd Vice-chair (VC2): Robert Stacey Intel Corporation

1st Vice-chair (VC1): Jon Rosdahl Qualcomm

Secretary: Stephen McCann BlackBerry Ltd.

There are 320 voting members and 11 Ex Officio voters of IEEE 802.11\*

There were 195 people in the room

\*11 who ask to be recognized as such in the 802.11 voters list.

1. **Notices** (11-19-1372r0)
	1. No photographs at this meeting and please turn your mobiles to vibrate.
	2. Chair: Are there any members of the press present.
		1. None
	3. From the IEEE, Jonathan Goldberg is present as a member of staff.
2. **Approve/modify working group agenda** (11-19-1371r2)
	1. This is a summary of all room allocations for the week.
	2. Chair: I suggest we approve this agenda.
	3. Changes to agenda graphic:
		1. There have been several changes made from last night’s CAC.
	4. **Move to approve the agenda 11-19-1371r2 (“Agenda Graphic” tab and the “WG11” tab Monday agenda)**
		1. Moved: Ian Sherlock, 2nd: Allan Jones
		2. No objection to approving by unanimous consent
3. **July 2019 WG Minutes**
	1. **Move to approve the Vienna July 2019 WG minutes document 11-19-1239r1**
	2. Moved: Stephen McCann, 2nd: Tim Godfrey
	3. Following neither discussion nor dissent the minutes were approved by unanimous consent.
4. **Attendance**
	1. Welcome to the 10 new participants in this meeting.
	2. Chair: Please note that Stephen McCann (Secretary) will be holding a new members’ session at 10:30am.
5. **Call for essential Patents** (11-19-1392r0)
	1. VC2: read out the current PatCom rules, and then called for essential patents information, as shown by:
	2. <https://development.standards.ieee.org/myproject/Public/mytools/mob/patut.pdf>
		1. There were no issues raised regarding the call for essential patents. There was no response to the call for essential patents.
	3. VC2: The slide about IEEE 802 meeting participation was also read.
	4. VC2: Read out other policies and procedures for the meeting. Please note the slide about the valid abstain response in ballots.
	5. VC1: Please contact the VC1 if you have a typo in any document titles or wish to remove a document number. They can assist with changing document parameters.
6. **Announcements** (11-19-1372r0)
	1. **Liaisons** (slide #4)
		1. Chair: There are 2 liaisons that have been received since the last meeting that will be considered this week:
			1. Liaison from ITU-T Focus Group on Vehicular Multimedia, <https://mentor.ieee.org/802.11/dcn/19/11-19-1391-00-0000-2019-07-liaison-statement-from-itu-tfg-vm.docx>
			2. This liaison will be considered by TGbd this week.
			3. Liaison from Wi-Fi Alliance re: Reserved values, <https://mentor.ieee.org/802.11/dcn/19/11-19-1501-00-0000-2019-08-liaison-from-wfa-re-reserved-values.docx>
			4. No action is required at the moment
	2. **EC and standard board decisions** (slides #5 & #6)
		1. Chair: The EC approved the following items on the slides.
7. **Logistics and Key events/activities**
	1. **Working group session documents** (11-19-1372r0 slide #8)
	2. **Joint meetings & reciprocal credit with IEEE 802 groups** (slides #9 & #10)
		1. Reminder that there are topics relevant to IEEE 802.11 to be covered in IEEE 802.18, IEEE 802.19 and some of the other IEEE 802 groups.
		2. Please note that the IEEE 802.18 reciprocal credit rules have recently changed.
	3. **M3.3 Other WG meeting plans** (11-19-1406r1 slides #6 & #7)
		1. This slide shows information about other WG meetings, future meetings and logistics this week.
		2. Please use the online schedule for the room allocations this week.
		3. Please remember to record your attendance for each 2 hour slot during the week.
		4. VC1: this slide deck shows information about other WG meetings, future meetings and logistics this week.
	4. **Other logistic items for the week** (11-19-1406r1 slide #8)
		1. Each registered attendee should have all received the logistics items email about this week.
		2. Please note that there is a new application “The Event App by EventsAir” for the room schedule and other information.
		3. Slides #11 - #13 describes the breakfast and lunch logistics, together with the social on Wednesday.
	5. **M3.6 Meeting registration (**11-19-1406r1 slide #19)
		1. There are about 232 registered people for this week’s IEEE 802 meeting.
	6. **M3.7 Recording attendance** (11-19-1406r1 slide #20)
	7. **M3.8 Local File Document Server information** (11-19-1406r1 slide #21)
		1. Linespeed are managing the network this week. They have a network helpdesk outside in the hallway area.
		2. If you want to synchronize all the documents on mentor, please use the local server and not the external link. The IT support company this week is Linespeed, so please note the new SSID, links and URLs.
	8. **M3.9 Next meeting reminder** (11-19-1406r1 slide #22)
		1. Next IEEE 802 Plenary: November 10th – 15th, 2019, Waikoloa, Hawaii
		2. Registration and Event Information: <https://www.regonline.com/november2019ieee802plenary>
8. **Status of all groups** (11-19-1372r0)
	1. **Group summary** (slide #12)
		1. Chair: This is a review of the current IEEE 802.11 groups.
	2. **Sub-Group Officer Status** (slide #15)
		1. Chair: Please note the changes to sub-group officers for this week.
	3. **Summary of Ballots** (slide #18)
		1. There have been no letter ballots between the July 2019 meeting and now.
9. **Group Summaries** (11-19-1408r0)
	1. Special notes were mentioned for the following groups:
	2. **Editor’s meeting and ANA**
		1. Tomorrow morning at 7.00am, including the ANA status, style guides and numbering situation.
	3. **AANI**
		1. There are several contributions this week, to cover all the work within this group. The main item will be discussions about 3GPP 5G Core – IEEE 802.11 interworking.
	4. **PAR SC**
		1. Not meeting this week.
	5. **WNG**
		1. There are 5 submissions for WNG this week and therefore there will be 2 meetings this week, Tuesday AM1 and Tuesday PM3. The topic of all these submissions is Wi-Fi Sensing.
		2. Chair: Several people have asked me that the creation of a topic interest group (TIG) may be requested following the WNG presentations. I would like to consider this during the Wednesday mid-week plenary.
	6. **JTC1**
		1. Review JTC1/SC6 status.
	7. **Co-ex**
		1. Will continue discussions about the 3GPP/IEEE 802.11 joint workshop held during the July 2019 IEEE 802 plenary. Other topics include LAA deployment.
	8. **TGmd**
		1. There are approximately 60 comments left to resolve from the previous letter ballot. The intention is to finish these comments and move towards another re-circulation ballot at the end of this week.
	9. **RCM (Random and Changing MAC address) TIG**
		1. The group will start working on a draft report this week, including use cases and summarizing all the discussions so far.
10. **Timeline Chart**
	1. There has been a minor update to the 802.11c line, but other than that, there have been no major changes to the timeline since the July 2019 meeting.
11. **Comment Ballot Resolution Resources** (11-19-1372r0 slide #20)
	1. Chair: please note that there are these resources to assist with comment ballot resolutions, which I encourage all members to review.
12. **Recess**
	1. Meeting recessed at 10:03 ICT.

**Wednesday, 18th September 2019**

**IEEE 802.11 Mid-Week Plenary**

Presiding chair: Dorothy Stanley (HPE) opened the meeting at 10:30 ICT.

Secretary: Stephen McCann BlackBerry Ltd.

191 people present.

1. **Approve/modify working group agenda** (11-19-1371r3)
	1. Chair: There are a couple of minor changes to the agenda fixing links and various items.
	2. Chair: This agenda item is in order. Let’s proceed to the agenda approval motion first.
	3. **Move to approve the agenda 11-19-1371r4**
		1. Moved: Edward Au, 2nd: Ian Sherlock
		2. No objection to approving by unanimous consent.
2. **Call for Essential Patents** (11-19-1373r0)
	1. The chair read out the Potentially Essential Patents slide.
	2. No statements were made.
	3. Please remember that everyone here is participating as an individual.
3. **CAC**
	1. Reminder about 19.30 ICT meeting on Thursday. The purpose of this meeting is to prepare for the Friday closing plenary. This is an open meeting and everyone is welcome to attend.
4. **Meeting Decorum**
	1. Chair: Please remember that professional behavior is expected in all the IEEE 802.11 meetings and no photographs are allowed.
	2. No questions
5. **Announcements**
	1. **Comment Resolution resources**
	2. Remember that there are comment resolution resources to assist you when working on comment resolutions.
6. **Wi-Fi Alliance Liaison** (11-19-1660r0)
	1. The Wi-Fi Alliance (WFA) last met in June 2019 in Washington DC, USA and the next meeting will be in October 2019 in Frankfurt, Germany.
	2. Chair: I’d like to congratulate the WFA on their recent launch of Wi-Fi CERTIFIED 6 based on IEEE 802.11ax.
		1. [www.wi-fi.org/news-events/newsroom/wi-fi-certified-6-delivers-new-wi-fi-era](http://www.wi-fi.org/news-events/newsroom/wi-fi-certified-6-delivers-new-wi-fi-era)
	3. No questions
7. **IETF Liaison** (11-19-1651r0)
	1. This is report about the current IEEE 802.11 related activities within the IETF.
	2. The next meeting will be in November 2019 in Singapore.
	3. No questions
8. **IEEE 1609 Liaison** (11-19-1670r0)
	1. This is a liaison describing the IEEE 1609 working group activities. This is a project of the IEEE Vehicular Technology Society.
	2. Question (Q): regarding slide #8, is this for a workshop before or after the IEEE 802 meeting, or just a meeting within the IEEE 802.11 meeting?
	3. Answer (A): The thinking is that IEEE 1609 would have a joint session with IEEE 802.11bd.
	4. VC1: So, as it’s an interim, Friday PM would be available for a joint meeting. However, I need to know as soon as possible.
	5. No questions
9. **IEEE 802.18** (11-19-1600r0)
	1. This is a summary of the IEEE 802.18 activities this week.
	2. No questions
10. **IEEE 802.19** (11-19-1664r0)
	1. This is a summary of the IEEE 802.19 activities this week.
	2. No questions
11. **Room assignment updates** (11-19-1371r4)
	1. Released rooms: ARC Thurs PM2, TGba Thurs AM1 slots
	2. Required rooms: TGbd Thurs AM1
	3. Comment (C): I would like to ask for agenda time regarding the WNG presentation from Tuesday.
	4. Chair: Are there any objections to these changes.
	5. None seen.
12. **Sensing Technical Interest Group (TIG)** (11-19-1654r0)
	1. This is a proposal to form a Sensing TIG.
	2. No questions
13. **Working Group Motions** (11-19-1393r0)
	1. **SEN TIG**
		1. **Approve formation of a WLAN sensing (SEN) TIG to investigate use cases, requirements, technical approaches and changes to the 802.11 standard to support WLAN sensing.**
		2. **The TIG is to bring a recommendation to the 802.11 WG at the November 2019 session to either**
		3. **a) Continue with the TIG until the next session; or**
		4. **b) Terminate the TIG with no further work; or**
		5. **c) Terminate the TIG and request formation of a SG to develop a PAR and CSD”**
		6. Moved: Carlos Cordeiro, 2nd: Jim Lansford
		7. C: It looks as though the lifetime of this TIF is just 2 months.
		8. Chair: The TIG can choose option a), which will then allow it to continue.
		9. Q: Why has the name been changed from “WSS” to “WLAN sensing”?
		10. Chair: I have changed the name. The new idea is “sensing” as I think WSS is confusing. WSS did mean “WLAN sensing”.
		11. Q: Why is the abbreviation just 3 letters, as opposed to 5, e.g. “SENSE”
		12. Chair: The mentor folder only uses up to 4 letters, so “SENS” would be ok.
		13. For: 123, Against: 0, Abstain: 8 (Motion passes)
		14. Chair: So the name of the TIG will be “SENS” and the nominated chair is Tony Hanxiao. I will ask for confirmation of this position on Friday.
14. **Standards Association Ballot Process and Hanoi Planning** (11-19-1373r0)
	1. Chair: The CAC discussed this topic earlier at the weekend and these slides were produced. They describe the entry process into the standards association (SA) ballot stage of amendment development.
	2. Pools are currently open for 11ax and 11md.
	3. Note that 11ax cannot enter SA ballot until 11md is ready to go into the SA ballot itself. This is because all dependent documents have to be available to everyone in the SA ballot pool. Therefore 11ax, 11az, 11ay and 11ba are all dependent on 11md D3.0 being ready for SA ballot.
	4. Also remember that to enter SA ballot, an unchanged amendment must have gone through letter ballot with no more changes.
	5. Chair: At this point, I’d like to thank all the editors for their hard work in bringing all the amendments up to date as quickly as they can.
	6. No questions
15. **Letter Ballot Process** (11-19-1671r0)
	1. This document is about further discussion of a working group self-imposed policy
	to limit simultaneous letter ballots.
	2. The working group may be in a situation where 11md, 11ax, 11ay, 11az and 11ba all go out to letter ballot at the completion of this week’s meeting.
	3. Q: regarding the proposed approach, how do you measure this?
	4. A: You measure the days for the letter ballot and the days between the meetings.
	5. C: Yes, but the point is that you are assuming that people spend all day reviewing the draft. Therefore, I don’t agree with your rational.
	6. Q: How often in IEEE 802.11 have there been many ballots at the same time. It would be useful to know how often this occurs.
	7. A: That’s not really known.
	8. C: I think it’s better that the 802.11 sub-groups chairs determine the schedule to try and progress the work as quickly as possible. I’m concerned that these rules may cause issues at sometimes.
	9. C: I also agree that not all letter ballots are equal, but I think that some flexibility in these rules is required.
	10. C: Within IEEE 802.11, between January and March 2019 there were 4 over lapping letter ballots. I think many people did not have time to review the drafts professionally. I also agree that these rules may be restrictive, but I think something needs to be done.
	11. C: I understand that you can vote “abstain: lack of expertise” if you run out of time.
	12. C: Regarding the proposed approach on the slide, if you combine 1) and 3), it means you can only have 1 letter ballot of a draft that is not “ready for SB”
	13. C: I think that our work here is also trying to develop technology for the market and therefore product deadlines have to be considered.
	14. C: The amount of time spent on a letter ballot is very dependent on the number of pages.
	15. **Straw Poll 1**
	16. **Do you agree that review of ballots is a critical voting member function and is a member responsibility?**
	17. Yes: 104
	18. No:1
	19. Abstain: 4
	20. **Straw Poll 2**
	21. **Do you agree that the WG should follow best practices outlined on slide 6?**
	22. Yes: 57
	23. No: 7
	24. Abstain: 31
	25. **Straw Poll 3**
	26. **Do you agree that having too many overlapping ballots defeats the goals on slide 6?**
	27. Yes: 41
	28. No: 6
	29. Abstain: 36
	30. **Straw Poll 4**
	31. **Would you support a policy (captured in the 802.11 Operations Manual) along the lines shown on slide 7?**
	32. Yes: 14
	33. No: 35
	34. Abstain: 45
16. **Recess**
	1. Meeting recessed at 12.10 ICT

**Friday, 20th September 2019**

**IEEE 802.11 Closing Plenary**

Call to order at 08:00 ICT by Dorothy Stanley (HPE).

62 people present in the room.

1. **Approve/modify working group agenda** (11-19-1371r6)
	1. Chair: There have been some minor changes to the agenda from earlier this week.
	2. **Approve the agenda for the Friday meeting as shown in 11-19-1371r6**
		1. Moved: Jim Lansford, 2nd: Ian Sherlock
		2. No objection to approving by unanimous consent.
2. **Call for Essential Patents** (11-19-1373r1 slide #15)
	1. Call for Essential Patents
	2. No statements
	3. No questions
3. **Announcements** (11-19-1373r1 slide #14)
	1. **Participation**
		1. Please can you remember to read this slide and understand that everyone is here as an individual subject matter expert.
	2. **Chair’s minutes, reports and web pages**
		1. Please can you ensure that the sub-group minutes are on the server within 30 days after the close of this meeting. Please can you also send web-page and timeline updates to the secretary.
		2. The next meeting of IEEE 802.11 is in November 2019 in Hawaii, USA.
		3. Please be aware of the Chair’s schedule for the chair’s committee meetings (CAC), which are on 8th October and 4th November 2019 at noon ET.
	3. **ETSI ITS and liaison web-sites** (slide #17)
		1. No questions
	4. **Letters of Assurance (LoA)** (slide #18)
		1. Chair: please remember about the LoA requirements.
		2. There is one LoA request open at the moment.
	5. **IEEE Store and ISO SCG** (slides #19 and #20)
		1. No questions
	6. **Press Releases** (slide #21)
		1. The slide summarizes the recent IEEE 802.11be and AANI related press release
4. **Current Venues** (11-19-1406r2 slide #26)
	1. **Straw Poll: How many people would like to come back to this venue?**
	2. Y: 28, N: 8
	3. **How many people enjoyed the social?** Y: 31, N: 1
	4. **How many people did not go to the social?** 3
5. **Upcoming Venues** (11-19-1406r2 slide #27)
	1. VC1: This slide shows the next wireless interim in November 2019, which will be in Hawaii, USA.
6. **Treasury Report** (ec-19-0136-01)
	1. VC1: This show the treasurers’ report and is correct up to 31st August 2019:
	2. <https://mentor.ieee.org/802-ec/dcn/19/ec-19-0136-01-WCSG-wireless-treasurer-report-sept-2019-hanoi.pptx>
	3. There have been about 278 people here this week.
7. **Timelines**
	1. There are timeline updates for many groups this week. The timeline chart will be updated over the weekend.
8. **Documentation & Attendance** (11-19-1394r1 slide #3)
	1. VC2: Here are the attendance statistics for this week.
9. **WG Committee Reports** (11-19-1394r1)
	1. **Technical editor** (slide #6)
		1. No questions
	2. **AANI Standing Committee** (slide #9)
		1. No questions
	3. **ARC Standing Committee** (slide #13)
		1. Please note that ARC is currently working on several issues involving 802.11 related items and 802.11 members are invited to help out if they can.
		2. TGbc and TGbd both have broadcast issues which may require some discussion and coordination between the two groups.
		3. The group has also been reviewing IEEE 1588 regarding fine timing measurement.
		4. No questions
	4. **COEX Standing Committee** (slide #23)
		1. The outcomes from the Coexistence workshop in July 2019 was discussed. There are currently many presentations and whitepapers for the workshop and references to many of these have been compiled into a liaison to many standards fora (e.g. 3GPP RAN, WFA, WBA and GSMA)
		2. Please note that IEEE 802.11 members do have access to all documents of the ETSI BRAN meetings.
		3. No questions
	5. **WNG** **Standing Committee** (slide #31)
		1. There were 5 presentations this week:
			1. “Wi-Fi Sensing: Cooperation and Standard Support”
			2. “Wi-Fi Sensing: follow up”
			3. “Wi-Fi Sensing in 60GHz band”
			4. “Wi-Fi sensing: Some important use cases, possible realizations, and the need of standardization”
			5. “Wi-Fi Sensing Application: Multipath Enhanced Device Free Localization” – Paul Unterhuber
		2. Within the WNG SC, there was strong support for the creation of a TIG addressing the Wi-Fi Sensing topic.
		3. No questions

* 1. **JTC1** **Standing Committee** (slide #35)
		1. This week, this meeting was just a review of previous activities, as there have been no activities.
		2. No questions
	2. **TGmd** (slide #38)
	3. The group has finished its comment resolution and intends to start a new re-circulation letter ballot starting around October 14th 2019.
	4. Please note that the Standards Association (SA) ballot pool is now open.
		1. No questions.
	5. **TGax** (slide #41)
	6. The group has finished its comment resolution and intends to start a new re-circulation letter ballot.
		1. No questions
	7. **TGay** (slide #48)
	8. The group has finished its comment resolution and intends to start a new re-circulation letter ballot.
		1. No questions
	9. **TGaz** (slide #53)
	10. The group have resolved many comments this week, but still have many remaining.
		1. No questions
	11. **TGba** (slide #58)
	12. The group has finished its comment resolution and intends to start a new re-circulation letter ballot.
		1. No questions
	13. **TGbb** (slide #63)
		1. No questions
	14. **TGbc** (slide #67)
		1. No questions
	15. **TGbd** (slide #73)
		1. Q: I’ve noticed that you have a skeleton 11bd draft on mentor. As it is filled out, please can you put the draft into the members’ area.
		2. A: Yes, sure.
	16. **TGbe** (slide #80)
		1. No questions
	17. **RCM (Random and Changing MAC address) TIG** (slide #85)
		1. A draft report has now been started for the TIG.
		2. No questions
1. **Liaison Reports**
	1. **IEEE 802.15** (11-19-1711r0)
		1. No questions
	2. **IEEE 802.18** (11-19-1394r1 slide #105)
		1. No questions
	3. **IEEE 802.24** (11-19-1705r0)
		1. No questions
2. **Working Group Motions (Old Business)** (11-19-1393r2)
	1. **Teleconferences** (slide #7)
		1. **Move to approve the following teleconferences**

|  |  |  |  |
| --- | --- | --- | --- |
| **Group** | **Date(s)** | **Start** | **Duration** |
| **CAC** | **Tuesday: October 8, Monday November 4th** | **Noon ET** | **1 hr** |
| **TGmd** | **Friday: November 1** | **10:00 ET** | **2 hr** |
| **TGax** | **None** |  |  |
| **TGay** | **None** |  |  |
| **TGaz** | **Wednesday: October 2, 9, 16, 30, November 6, 20** | **13:00 ET** | **1.5 hr** |
| **TGba** | **Monday: October 21,** **Monday: October 28,****Monday: November 4** | **10:00 ET****17:00 ET****23:00 ET** | **2 hr****2 hr****2 hr** |
| **TGbb** | **Wednesday: October 23** | **09:30 ET** | **1 hr** |
| **TGbc** | **Tuesday: October 29** | **10:00 ET** | **1.5 hr** |
| **TGbd** | **Tuesday: October 29****Tuesday: October 8** | **10:00 ET****18:00 ET** | **2 hr****2 hr** |
| **TGbe** | **Thursday: October 10, 31****Thursday: October 17, November 7** | **10:00 ET****19:30 ET** | **2.5 hr****2.5 hr** |
| **RCM TIG** | **Tuesday: October 15, 29** | **12:00 ET** | **1 hr** |
| **SENS TIG** | **Wednesday: October 9, 30** | **10:00 ET** | **1.5 hr** |

* + 1. Moved: Nikola Serafimovski, 2nd: Jim Lansford
		2. No objection to approving by unanimous consent.
	1. **SENS TIG Chair** (slide #8)
		1. **Confirm Tony Han as SENS TIG chair**
		2. Moved: Claudio da Silva, Second: Edward Au
		3. No objection to approving by acclamation
	2. **Coex Liaison** (slide #9)
		1. **Motion in IEEE 802.11 WG**
		2. **The IEEE 802.11 WG approves using the material in 11-19-1448-01 as the basis of a Liaison Statement from the IEEE 802.11 WG to 3GPP RAN, 3GPP RAN1, ETSI BRAN, WFA, WBA and GSMA, notifying them of the availability of documents from the IEEE 802.11 Coexistence Workshop (agenda, minutes, papers) and the results from the post workshop surveys (along with a caveat on their use)**
		3. Moved: Andrew Myles, Second: Harry Bims
		4. For: 38, Against: 0, Abstain: 1 (Motion passes)
	3. **TGmd recirculation ballot** (slide #10)
		1. **Having approved comment resolutions for all of the comments received from LB236 on P802.11REVmd D2.0 as contained in document https://mentor.ieee.org/802.11/dcn/18/11-18-0611-25-000m-revmd-wg-ballot-comments.xls,**
		2. **Instruct the editor to prepare P802.11REVmd D3.0 and**
		3. **Approve a 15 day Working Group Recirculation Ballot asking the question “Should P802.11REVmd D3.0 be forwarded to SA Ballot?”**
		4. [TGmd vote:  Moved: Michael Montemurro, 2nd: Stephen Palm, Result: 15-0-0]
		5. Moved: Mark Hamilton, Second: Michael Montemurro
		6. For: 38, Against: 0, Abstain: 0 (Motion passes)
	4. **TGax coexistence assurance document** (slide #11)
		1. **Approve document 11-16/1348r6**
		2. **https://mentor.ieee.org/802.11/dcn/16/11-16-1348-06-00ax-coexistence-assurance.docx**
		3. **as the TGax Coexistence Assurance document.**
		4. Moved: Osama Aboul-Magd, Second: Yasuhiko Inoue
		5. [TGax vote: Moved: Robert Stacey, 2nd: Bin Tian, Approved by unanimous consent]
		6. For: 39, Against: 0, Abstain: 2 (Motion passes)
	5. **TGax revisit CID 20481** (slide #12)
	6. Chair: I received a formal complaint about the resolution to this comment. Yesterday evening, the CAC debated and then decided that the original resolution to this 11ax comment was not suitably responsive. It then proposed a new resolution, as stated in the following motion:
		1. **Resolve CID 20481 as Rejected, with a resolution reason of**
		2. **“Usually in the MAC, a value of 0 indicates that a field is reserved and is ignored by the receiver.
		The identified field is an exception to this rule, as it has a value of all 1’s and is to be ignored by the receiver; the field is acting as padding, and can be ignored by the receiver. Therefore these 26 bits can be used in the future (when not set to all 1s); 26 bits may indeed provide value, depending on future use/feature(s).”**
		3. Moved: Osama Aboul-Magd, Second: Bo Sun
		4. Q: Within 11ax, all comments were resolved. Therefore, can the 802.11 WG correct the comments from 11ax?
		5. A: Yes, the WG can do this.
		6. TGax chair: I did provide extra time in the final TGax chair yesterday, but due to time constraints there was no time for debate on this particular comment. However, the original comment resolution did reflect the view of TGax.
		7. Q: So, does ever member of 802.11 have the right to re-consider task groups comments within the working group?
		8. Chair: Yes. In this particular situation a formal complaint was received and this is how the CAC have decided to resolve that complaint.
		9. No objection to approving by unanimous consent
		10. For: 26, Against: 0, Abstain: 13 (Motion passes)
	7. **TGax recirculation letter ballot** (slide #13)
		1. **Having approved comment resolutions for all of the comments received from LB 238 on P802.11ax D4.0 as contained in document 19/292r26, except for CID 20481, which is resolved as in slide #12 of 19/1393r3.**
		2. **Instruct the editor to prepare P802.11ax D5.0 incorporating these resolutions and,**
		3. **Approve a 15 day Working Group Recirculation Ballot asking the question “Should P802.11ax D5.0 be forwarded to SA Ballot?”**
		4. Osama Aboul-Magd, 2nd: Allan Jones
		5. [TGax vote of similar motion: Moved: Robert Stacey, 2nd: Bin Tian, Result: 52-0-2]
		6. C: I would like to state that TGax did a thorough job of their comment resolution.
		7. For: 41, Against: 0, Abstain: 0 (Motion passes)
	8. **TGay recirculation letter ballot** (slide #14)
		1. **Having approved comment resolutions for all of the comments received from LB242 on TGay D4.0 as contained in document 11-19/1180r5,**
		2. **Instruct the editor to prepare P802.11ay D5.0 and**
		3. **Approve a 15 day Recirculation Working Group Technical Letter Ballot asking the question “Should P802.11ay D5.0 be forwarded to SA Ballot?”**
		4. Moved by Edward Au on behalf of TGay
		5. [TG vote: Moved: Claudio da Silva, 2nd: Assaf Kasher, Result: 15/0/0]
		6. For: 35, Against: 0, Abstain: 0 (Motion passes)
	9. **TGaz ad-hoc** (slide #15)
		1. **Authorize TGaz to hold a 3 day ad-hoc meeting on Oct. 30 – Nov. 1st or week of Nov. 4th, 2019 (exact days to be announced) in the Bay Area CA, for the purpose of comment resolution.**
		2. Moved by Jonathan Segev on behalf of TGaz
		3. [TG vote: Move: Qinghua Li, 2nd: Roy Want, Results (Y/N/A): 12/1/0]
		4. No objection to approving by unanimous consent.
	10. **TGba recirculation letter ballot** (slide #16)
		1. **Having approved comment resolutions for all of the comments received from LB 241 on P802.11ba D3.0 as contained in document 11-19/1016r10,**
		2. **Instruct the editor to prepare Draft 4.0 incorporating these resolutions and,**
		3. **Approve a 15 day Working Group Recirculation Ballot asking the question “Should P802.11ba D4.0 be forwarded to SA Ballot?”**
		4. Moved by Minyoung Park on behalf of TGba
		5. [TG vote: Moved: Eunsung Park, 2nd : Po-Kai Huang, Result: 9-0-0]
		6. For: 34, Against: 0, Abstain: 1 (Motion passes)
1. **Letter Ballot Planning** (11-19-1373r1 slide #23)
	* 1. Chair: Based on the input from all the TG editors of those TGs which are now going out for letter ballots, this slide shows the schedule for the next couple of months.
		2. Q: It appears that there is an overlap of 8 days for 11ax and 11ba. Is there any chance that the 11ba ballot can be moved to minimise this overlap.
		3. Chair: Ok, I understand. I think it’s dependent of when the 11ax ballot will be available. It may be possible to extend the 11ax.
		4. C: I’m concerned about the level of review that 11ba has been receiving, so I’d also like to see that ballot being extended.
2. **Next Meeting** (11-19-1373r1 slide #25)
	1. The next meeting is at the Hilton Waikoloa Village, Big Island, Hawaii, November 11th – 15th 2019. Registration and hotel reservations are now open for this meeting.
	2. There will be an IEEE 802 Wireless Chairs meeting, as shown in slide #24, on Sunday at 16:00 local time at the November 2019 meeting. This is an open meeting, and everyone is welcome.
3. **AoB**
	1. None
4. **Adjournment**
	1. Chair: Having completed the agenda, the chair announced that the meeting was adjourned at 09:39 ICT.

**Annex A: Attendance & Affiliation**

| **Name** | **Affiliation** | **Attended >= 75%?** | **Status** |
| --- | --- | --- | --- |
| Abouelseoud, Mohamed | Sony Corporation | Yes | Voter |
| Aboulmagd, Osama | Huawei Technologies Co. Ltd | Yes | Voter |
| Adachi, Tomoko | TOSHIBA Corporation | Yes | Voter |
| Aio, Kosuke | Sony Corporation | Yes | Potential Voter |
| Akhmetov, Dmitry | Intel Corporation | Yes | Potential Voter |
| Alex, Sam | Facebook | No | Non-Voter |
| Andersdotter, Amelia | Article 19 | Yes | Voter |
| Ansley, Carol | CommScope | Yes | Voter |
| Arokkiam, Jerome | OSRAM GmbH | Yes | Voter |
| Asterjadhi, Alfred | Qualcomm Incorporated | Yes | Voter |
| Au, Kwok Shum | Huawei Technologies Co., Ltd | Yes | Voter |
| Au, Oscar | Origin Wireless | Yes | Aspirant |
| Baik, Eugene | Qualcomm Incorporated | Yes | Voter |
| baron, stephane | Canon Research Centre France | Yes | Voter |
| Baykas, Tuncer | Vestel | No | Voter |
| Berkema, Alan | HP Inc. | Yes | Voter |
| Bhandaru, Nehru | Broadcom Corporation | Yes | Voter |
| Bims, Harry | Bims Laboratories, Inc. | No | Voter |
| Bober, Lennert | Fraunhofer Heinrich Hertz Institute | Yes | Voter |
| Boldy, David | Broadcom Corporation | Yes | Voter |
| Bredewoud, Albert | Broadcom Corporation | Yes | Voter |
| Calcev, George | Futurewei Technologies | Yes | Voter |
| Cao, Rui | Marvell Semiconductor, Inc. | Yes | Voter |
| Cariou, Laurent | Intel Corporation | Yes | Voter |
| Carney, William | Sony Corporation | Yes | Voter |
| Chen, Na | MaxLinear Corp | Yes | Aspirant |
| Chen, Xiaogang | Intel | Yes | Voter |
| CHERIAN, GEORGE | Qualcomm Incorporated | Yes | Voter |
| Chitrakar, Rojan | Panasonic Asia Pacific Pte Ltd. | Yes | Voter |
| Cho, Hangyu | LG ELECTRONICS | Yes | Voter |
| Choi, Jinsoo | LG ELECTRONICS | Yes | Voter |
| Chu, Liwen | Marvell Semiconductor, Inc. | Yes | Voter |
| Ciochina, Dana | Sony Corporation | Yes | Voter |
| Coffey, John | Realtek Semiconductor Corp. | Yes | Voter |
| Cordeiro, Carlos | Intel Corporation | Yes | Voter |
| da Silva, Claudio | Intel Corporation | Yes | Voter |
| Das, Dibakar | Intel Corporation | Yes | Voter |
| Das, Subir | Applied Communication Sciences | No | ExOfficio |
| de Vegt, Rolf | Qualcomm Incorporated | Yes | Voter |
| DeLaOlivaDelgado, Antonio | Universidad Carlos III Madrid | Yes | Voter |
| Derham, Thomas | Broadcom Corporation | Yes | Voter |
| Ding, Yanyi | Panasonic corporation | Yes | Potential Voter |
| Dong, Xiandong | Xiaomi Inc. | Yes | Voter |
| Du, Rui | Huawei Technologies Co., Ltd | Yes | Potential Voter |
| Du, Zhenguo | Huawei Technologies Co., Ltd | Yes | Aspirant |
| Duan, Ruchen | SAMSUNG | Yes | Aspirant |
| Eitan, Alecsander | Qualcomm Incorporated | Yes | Voter |
| Emmelmann, Marc | Self Employed / Koden-TI / Fraunhofer FOKUS | Yes | Voter |
| Erceg, Vinko | Broadcom Corporation | Yes | Voter |
| Fang, Yonggang | ZTE TX Inc | Yes | Voter |
| Fischer, Matthew | Broadcom Corporation | Yes | Voter |
| Gan, Ming | Huawei Technologies Co. Ltd | Yes | Voter |
| Gardner, James | Qualcomm Incorporated | Yes | Aspirant |
| Ghosh, Chittabrata | Intel Corporation | Yes | Voter |
| Godbole, sachin | Broadcom Corporation | Yes | Voter |
| Godfrey, Tim | Electric Power Research Institute, Inc. (EPRI) | No | ExOfficio |
| Guo, Yuchen | Huawei Technologies Co., Ltd | Yes | Voter |
| Gwak, Yongsu | Korea National University of Transportation | Yes | Potential Voter |
| Hamilton, Mark | Ruckus Wireless | Yes | Voter |
| HAN, Xiao | Huawei Technologies Co. Ltd | Yes | Voter |
| Handte, Thomas | Sony Corporation | Yes | Voter |
| Hansen, Christopher | Covariant Corporation | Yes | Voter |
| Hart, Brian | Cisco Systems, Inc. | Yes | Voter |
| hervieu, Lili | Cable Television Laboratories Inc. (CableLabs) | Yes | Voter |
| Hiertz, Guido | Ericsson AB | Yes | Voter |
| Hirata, Ryuichi | Sony Corporation | Yes | Voter |
| Ho, Duncan | Qualcomm Incorporated | No | Voter |
| Holcomb, Jay | Itron Inc. | No | ExOfficio |
| Hong, Hanseul | Yonsei University | Yes | Voter |
| Hsieh, Hung-Tao | MediaTek Inc. | Yes | Aspirant |
| Hu, Chunyu | Broadcom Corporation | Yes | Voter |
| Huang, Lei | Panasonic Asia Pacific Pte Ltd. | Yes | Voter |
| Huang, Po-Kai | Intel Corporation | Yes | Voter |
| Hwang, Sung Hyun | Electronics and Telecommunications Research Institute (ETRI) | Yes | Voter |
| Ikegami, Tetsushi | Meiji University | Yes | Voter |
| Inoue, Yasuhiko | Nippon Telegraph and Telephone Corporation (NTT) | Yes | Voter |
| Jang, Insun | LG ELECTRONICS | Yes | Voter |
| Jauh, Alan | Unisoc Comm. | Yes | Voter |
| Jeffries, Timothy | Huawei R&D USA | Yes | Voter |
| Ji, Chenhe | Huawei Technologies Co. Ltd | Yes | Voter |
| Jia, Jia | Huawei Technologies Co., Ltd | Yes | Voter |
| Jones, Allan | Activision | Yes | Voter |
| JONES, JEFFRUM | Qorvo | Yes | Voter |
| Jones, Vincent Knowles IV | Qualcomm Incorporated | Yes | Voter |
| Jungnickel, Volker | Fraunhofer Heinrich Hertz Institute | Yes | Voter |
| Kandala, Srinivas | SAMSUNG | Yes | Voter |
| Kasher, Assaf | Qualcomm Incorporated | Yes | Voter |
| Kenney, John | TOYOTA InfoTechnology Center U.S.A. | Yes | Voter |
| Khorov, EVGENY | IITP RAS | Yes | Voter |
| Kim, Jeong Gon | Korea Polytechnic University (KPU) | No | Voter |
| Kim, Jeongki | LG ELECTRONICS | No | Voter |
| Kim, Jin Min | LG ELECTRONICS | Yes | Voter |
| Kim, Namgi | Kyonggi University | No | Aspirant |
| Kim, Sang Gook | LG ELECTRONICS | Yes | Voter |
| Kim, Sanghyun | SeoulTech | Yes | Aspirant |
| Kim, Suhwook | LG ELECTRONICS | Yes | Voter |
| Kim, Yongho | Korea National University of Transportation | Yes | Voter |
| Kim, Youhan | Qualcomm Incorporated | Yes | Voter |
| Kim, Youn-Kwan | The Catholic University of Korea | Yes | Voter |
| Kishida, Akira | Nippon Telegraph and Telephone Corporation (NTT) | Yes | Voter |
| Kitazawa, Shoichi | Muroran IT | No | Non-Voter |
| Kloper, David | Cisco Systems, Inc. | Yes | Voter |
| KNECKT, JARKKO | Apple, Inc. | Yes | Voter |
| Kondo, Yoshihisa | Advanced Telecommunications Research Institute International (ATR) | Yes | Aspirant |
| Kumar, Manish | Marvell Semiconductor, Inc. | Yes | Voter |
| Lalam, Massinissa | SAGEMCOM BROADBAND SAS | Yes | Voter |
| Lan, Zhou | Broadcom Corporation | Yes | Voter |
| Lansford, James | Qualcomm Incorporated | Yes | Voter |
| Lee, Hyeong Ho | Netvision Telecom Inc. | Yes | Voter |
| LEE, JOONSOO | Newracom Inc. | Yes | Potential Voter |
| Lepp, James | BlackBerry | Yes | Voter |
| Levitsky, Ilya | IITP RAS | Yes | Potential Voter |
| Levy, Joseph | InterDigital, Inc. | Yes | Voter |
| Li, Guoqing | Apple, Inc. | Yes | Voter |
| Li, Jianhui | Huawei Technologies Co., Ltd | Yes | Potential Voter |
| Li, Nan | ZTE Corporation | Yes | Potential Voter |
| Li, Qinghua | Intel Corporation | Yes | Voter |
| Li, Yiqing | Huawei Technologies Co. Ltd | Yes | Aspirant |
| Li, Yunbo | Huawei Technologies Co. Ltd | Yes | Voter |
| Liang, dandan | Huawei Technologies Co. Ltd | Yes | Voter |
| Lim, Dong Guk | LG ELECTRONICS | Yes | Voter |
| Lim, Sang-Kyu | Electronics and Telecommunications Research Institute (ETRI) | No | Non-Voter |
| Lin, Cheng-Hui | Qorvo | Yes | Aspirant |
| Lin, Wei | Huawei Technologies Co. Ltd | Yes | Voter |
| Lindskog, Erik | SAMSUNG | Yes | Voter |
| LIU, CHENCHEN | Huawei Technologies Co., Ltd | Yes | Aspirant |
| Liu, Jeff | Broadcom Corporation | Yes | Aspirant |
| Liu, Jianhan | MediaTek Inc. | Yes | Voter |
| Liu, Yong | Apple, Inc. | Yes | Voter |
| Lomayev, Artyom | Intel Corporation | Yes | Voter |
| Lopez, Miguel | Ericsson AB | Yes | Voter |
| Lopez-Perez, David | Nokia | Yes | Voter |
| Lu, Liuming | ZTE Corporation | Yes | Potential Voter |
| Lv, Kaiying | MediaTek Inc. | Yes | Voter |
| Lv, Lily | Huawei Technologies Co. Ltd | No | Voter |
| Madpuwar, Girish | Broadcom Corporation | Yes | Voter |
| Maltsev, Alexander | Intel Corporation | Yes | Voter |
| Mano, Hiroshi | Koden Techno Info K.K. | Yes | Voter |
| MAQBOOL, Masood | Apple, Inc. | No | Non-Voter |
| MARIAPPAN, VINAYAGAM | SNUT | No | Voter |
| Max, Sebastian | Ericsson AB | Yes | Voter |
| McCann, Stephen | BlackBerry | Yes | Voter |
| Meng, Xing | Tencent | Yes | Voter |
| Monajemi, Pooya | Cisco Systems, Inc. | Yes | Voter |
| Montemurro, Michael | BlackBerry | Yes | Voter |
| Morioka, Hitoshi | SRC Software | Yes | Voter |
| Motozuka, Hiroyuki | Panasonic Corporation | Yes | Voter |
| Mueller, Robert | Ilmenau University of Technology - TU Ilmenau | Yes | Voter |
| Murti, Wisnu | SeoulTech | Yes | Aspirant |
| Myles, Andrew | Cisco Systems, Inc. | Yes | Voter |
| nagata, kengo | Nippon Telegraph and Telephone Corporation (NTT) | Yes | Aspirant |
| Nandagopalan, SAI SHANKAR | Cypress Semiconductor Corporation | Yes | Voter |
| Naribole, Sharan | SAMSUNG | Yes | Voter |
| Nezou, Patrice | Canon Research Centre France | Yes | Voter |
| Nguyen, An | U.S. Department of Homeland Security | Yes | Potential Voter |
| Noh, Si-Chan | Newratek | Yes | Aspirant |
| Noh, Yujin | Newracom Inc. | Yes | Voter |
| Ohsawa, Tomoki | NICT | Yes | Aspirant |
| Palm, Stephen | Broadcom Corporation | Yes | Voter |
| Pan, Chun | HUAWEI | Yes | Aspirant |
| Pare, Thomas | MediaTek Inc. | Yes | Voter |
| Park, Eunsung | LG ELECTRONICS | Yes | Voter |
| Park, Minyoung | Intel | Yes | Voter |
| Park, So Ryoung |  | No | Non-Voter |
| Park, Sung-jin | LG ELECTRONICS | Yes | Voter |
| Patil, Abhishek | Qualcomm Incorporated | Yes | Voter |
| Patwardhan, Gaurav | Hewlett Packard Enterprise | Yes | Voter |
| Perkins, Richard | Qorvo | Yes | Aspirant |
| Pulikkoonattu, Rethnakaran | Broadcom Corporation | Yes | Voter |
| Purwita, Ardimas | University of Edinburgh | No | Non-Voter |
| Qi, Emily | Intel Corporation | Yes | Voter |
| Raissinia, Alireza | Qualcomm Incorporated | Yes | Voter |
| Redlich, Oded | Huawei | Yes | Potential Voter |
| Riegel, Maximilian | Nokia Networks | Yes | Voter |
| Rison, Mark | Samsung Cambridge Solution Centre | Yes | Voter |
| Rosdahl, Jon | Qualcomm Technologies, Inc. | Yes | Voter |
| Sadeghi, Bahareh | Intel Corporation | Yes | Voter |
| Sakoda, Kazuyuki | Sony Corporation | Yes | Voter |
| Sambasivan, Sam | AT&T | Yes | Voter |
| Sarris, Ioannis | u-blox | Yes | Voter |
| Schelstraete, Sigurd | Quantenna Communications, Inc. | Yes | Voter |
| Segev, Jonathan | Intel Corporation | Yes | Voter |
| Seok, Yongho | MediaTek Inc. | Yes | Voter |
| Serafimovski, Nikola | pureLiFi | Yes | Voter |
| Sharma, Prashant | Marvell Semiconductor, Inc. | Yes | Voter |
| Shaul, yossef | Auto-Talks | No | Aspirant |
| Shellhammer, Stephen | Qualcomm Incorporated | No | ExOfficio |
| Sherlock, Ian | Texas Instruments Incorporated | Yes | Voter |
| Shilo, Shimi | HUAWEI | Yes | Voter |
| Smith, Graham | SR Technologies | Yes | Voter |
| Son, Ju-Hyung | WILUS Inc. | Yes | Potential Voter |
| Song, Taewon | LG ELECTRONICS | Yes | Voter |
| Stacey, Robert | Intel Corporation | Yes | Voter |
| Stanley, Dorothy | Hewlett Packard Enterprise | Yes | Voter |
| Stavridis, Athanasios | Ericsson AB | Yes | Voter |
| SU, HONGJIA | Huawei Technologies Co., Ltd | Yes | Potential Voter |
| Suh, JUNG HOON | Huawei Technologies Co. Ltd | Yes | Voter |
| Sumi, Takenori | Mitsubishi Electric Corporation | Yes | Voter |
| Sun, Bo | ZTE Corporation | Yes | Voter |
| Sun, Li-Hsiang | InterDigital, Inc. | Yes | Voter |
| sun, sheng | Huawei Technologies Co., Ltd | Yes | Voter |
| Sundman, Dennis | Ericsson AB | No | Voter |
| Tanaka, Yusuke | Sony Corporation | Yes | Voter |
| Tian, Bin | Qualcomm Incorporated | Yes | Voter |
| Torab, Payam | Facebook | Yes | Voter |
| Tsodik, Genadiy | Huawei Technologies Co. Ltd | Yes | Voter |
| Unterhuber, Paul | German Aerospace Center (DLR) | Yes | Aspirant |
| Urabe, Yoshio | Panasonic Corporation | Yes | Voter |
| V Padaki, Aditya | Samsung Research America | Yes | Voter |
| Van Nee, Richard | Qualcomm Incorporated | Yes | Voter |
| Varshney, Prabodh | Nokia | Yes | Voter |
| Venkatesan, Ganesh | Intel Corporation | Yes | Voter |
| Verma, Lochan | Qualcomm Incorporated | Yes | Voter |
| Vermani, Sameer | Qualcomm Incorporated | Yes | Voter |
| Wang, Chao Chun | MediaTek Inc. | Yes | Voter |
| Wang, Huizhao | Quantenna Communications, Inc. | Yes | Voter |
| Wang, James June | MediaTek Inc. | Yes | Voter |
| Wang, Lei | Huawei R&D USA | Yes | Voter |
| Wang, Qi | Apple, Inc. | Yes | Voter |
| Wang, Xiang | Huawei Technologies Co., Ltd | Yes | Aspirant |
| Wang, Xiaofei | InterDigital, Inc. | Yes | Voter |
| Want, Roy | Google | No | Voter |
| Ward, Lisa | Rohde & Schwarz | Yes | Voter |
| Wendt, Matthias | Signify | Yes | Voter |
| Wentink, Menzo | Qualcomm | Yes | Voter |
| Wilhelmsson, Leif | Ericsson AB | Yes | Voter |
| Wu, Dave | Google | Yes | Aspirant |
| Wu, Tianyu | Samsung Electronics Co., Ltd. | Yes | Voter |
| Xin, Yan | Huawei Technologies Co., Ltd | Yes | Voter |
| Xu, Yanchao | Unisoc | Yes | Potential Voter |
| Xue, Ruifeng | Cisco Systems, Inc. | Yes | Aspirant |
| YAGHOOBI, HASSAN | Intel Corporation | Yes | Voter |
| Yang, Bo | Huawei Technologies Co. Ltd | Yes | Voter |
| YANG, RUI | InterDigital, Inc. | Yes | Voter |
| Yang, Steve TS | MediaTek Inc. | Yes | Voter |
| Yang, Xun | Huawei Technologies Co. Ltd | Yes | Voter |
| Yano, Kazuto | Advanced Telecommunications Research Institute International (ATR) | Yes | Voter |
| Yee, James | MediaTek Inc. | Yes | Voter |
| Yee, Peter | NSA-Cybersecurity | Yes | Voter |
| Yong, Su Khiong | Apple, Inc. | Yes | Potential Voter |
| Yu, Chinghwa | Unisoc Comm. | Yes | Voter |
| Yu, Jian | Huawei Technologies Co. Ltd | Yes | Voter |
| Yun, Ji-Hoon | SeoulTech | Yes | Potential Voter |
| Zeng, Yan | Huawei Technologies Co., Ltd | Yes | Aspirant |
| Zhang, Hongyuan | Marvell Semiconductor, Inc. | Yes | Voter |
| Zhang, Xingjian | Huawei Technologies Co., Ltd | Yes | Potential Voter |
| Zhang, Yan | Marvell Semiconductor, Inc. | Yes | Voter |
| Zhou, Yifan | Huawei Technologies Co., Ltd | Yes | Potential Voter |
| Zuo, Xin | Tencent | Yes | Voter |

**Annex B : Working Group Officers**

**Working Group**

|  |  |  |
| --- | --- | --- |
| Name (Affiliation) | Position | Contact Details |
| Dorothy Stanley(HP Enterprise) | IEEE 802.11 Working Group Chair | +1( 630) 363-1389 dstanley@ieee.org |
| Jon Rosdahl(Qualcomm) | 1st Vice Chair (Venues and meeting planning)Treasurer | +1 (801) 492-4023jrosdahl@ieee.org |
| Robert Stacey(Intel Corporation) | 2nd Vice Chair (Rules and reflectors)IEEE 802 (LMSC) EC delegate | +1 (503) 712 4447robert.stacey@intel.com |
| Stephen McCann(Blackberry Ltd.) | Secretary | +44 1753 667099stephen.mccann@ieee.org |
| Peter Ecclesine(Cisco Systems, Inc.) | Co-Technical Editor | +1 (408) 710-3403petere@ieee.org |
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**Standing Committees**

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**Annex C : Minutes**

This Annex contains references to all IEEE 802.11 SC/TG/SG & Ad Hoc Committee (AHC) minutes from this meeting. Please note that they are NOT subject to the approval of these minutes, but are confirmed and approved by their individual group in the opening meeting at their next session.

|  |  |  |
| --- | --- | --- |
| WG | TE | 19-1565r1 |
| TGmd | TG | 19-1407r0 |
| TGax | TG | 19-1630r0 |
| TGay | TG | 19-1669r0 |
| TGaz | TG | 19-1599r0 |
| TGba | TG | 19-1685r0 |
| TGbb | TG | 19-1704r0 |
| TGbc | TG | 19-1370r0 |
| TGbd | TG | 19-0825r0 |
| TGbe | TG | 19-1728r1 |
| AANI | SC | 19-1702r0 |
| COEX | SC | 19-0xxxr0 |
| WNG | SC | 19-1648r0 |
| JTC 802 | SC | 19-0xxxr0 |
| ARC | SC | 19-1513r0 |
| RCM | TIG | 19-1766r0 |

**Annex D : Revisions and Standards Pipeline**

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**IEEE 802.11 Revisions**

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**IEEE 802.11 Standards Pipeline**

End.