IEEE P802.11  
Wireless LANs

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| IEEE 802.11  TGax May 2019 Atlanta Meeting Minutes | | | | |
| Date: 2019-6-11 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Yasuhiko Inoue | NTT | * 1. Hikari-no-oka, Yokosuka, Kanagawa 239-0847 Japan | +81 46 859 5097 | yasu.inoue.h2k5@gmail.com |
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Abstract

This document contains the TGax meeting minutes from the IEEE 802.11 May 2019 Atlanta session.

The minutes of PHY and MAC ad hocs are contained in separate documents:

* PHY
  + To be uploaded
* MAC
  + https://mentor.ieee.org/802.11/dcn/19/11-19-0918-00-00ax-mac-ad-hoc-meeting-minutes-may-2019.docx

**IEEE 802.11 Task Group AX May 2019 Meeting**

**Grand Hyatt Atlanta in Buckhead, Atlanta, GA**

**May 12th – 17th, 2019**

**Chair Osama Aboul-Magd (Huawei Technologies)**

**The 1st Vice-Chair Ron Porat (Broadcom Ltd.)**

**The 2nd Vice-Chair Alfred Asterjadhi (Qualcomm)**

**Secretary Yasuhiko Inoue (NTT Corporation)**

**Technical Editor Robert Stacey (Intel Corporation)**

**Monday, May 13th, 2019, AM2 TGax Session (10:30 - 12:30)**

1. **The meeting called to order at 10:30 AM by Osama Aboul-Magd (Huawei Technologies), the chairperson of 802.11 TGax.**
   1. Introduction of TGax leadership.
   2. Agenda document 19/0615r1 on the server. R2 is the working document.
2. **Agenda Setting**
   1. Proposed agenda for Monday AM2
      1. Call meeting to order
      2. IEEE-SA IPR policy and Procedure
      3. Submissions and Ad hoc group schedule
      4. Summary from March 2019 meeting
      5. TG motions
         1. Approve TG meeting and Teleconference minutes since March 2019 meeting.
      6. Editor Report and comment assignment – Robert Stacey
      7. Ad hoc meeting before the July 2019 meeting
      8. Submissions and Comment Resolution
      9. Recess
   2. Chair asked if there is any item to add to the agenda.
      1. A member asked for an agenda time for scope editing 🡪 part of editor resport.
   3. Chair asked if there is any objection to proceed with this agenda. 🡪 No objection.
      1. The agenda for Monday AM2 is approved.
3. **Announcements**
   1. Chair asked people to announce name and the affiliation when addressing the group for the first time during a meeting slot.
   2. Attendance: <https://imat.ieee.org/attendance>
   3. Chair asked people to put the cellphone mute of switch off.
4. **IEEE-SA IPR Policy & Procedure**
   1. Chair read the following 5 slides:
      1. Participants have a duty to inform the IEEE – done.
      2. Ways to inform IEEE – done
         1. Chair asked if anyone in this meeting is aware of any potentially essential patents. 🡪 There was no response.
      3. Other guidelines for IEEE WG meetings – done
      4. Patent-related information – done
      5. Participation in IEEE 802 Meetings – done
5. **Agenda Items for the week – slide 12 of the agenda file (11-19-0238-04)**
   1. Approve meeting and teleconference minutes since January 2019.
   2. Start the resolution of comments received on draft D4.0
   3. Comment Resolution Submissions.
   4. Schedule TG ad hoc meeting, if needed.
   5. Schedule TG teleconference times.
6. **General flow and the TGax meeting schedule**
   1. TGax plans to have 8 sessions this week. Four of them are assigned to the ad hoc meetings.

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|  | **Monday** | | **Tuesday** | | **Wednesday** | | **Thursday** |
| **AM1** |  | |  | |  | | TGax  full |
| **AM2** | TGax  full | | PHY ad hoc | MAC ad hoc |  | |  |
| **PM1** | PHY  ad hoc | MAC ad hoc | PHY ad hoc | MAC ad hoc | TGax  full | | TGax  full |
| **PM2** |  | |  | | PHY ad hoc | MAC ad hoc |  |
| **PM3 (EVE)** |  | |  | |  | |  |

1. **Call for submissions**
   1. PHY submissions
      1. 11-18-1774, “Resolution to CID 16624 (HESIGB),” Brian Hart (Cisco Systems)
      2. 11-19-0378, “D4.0 CID20395 Unused Tone EVM,” Youhan Kim (Qualcomm)
      3. 11-19-0379, “D4.0 Comment Resolution - Part 1,” Youhan Kim (Qualcomm)
      4. 11-19-0385, “Resolution for CIDs in 27.1.1,” Sameer Vermani (Qualcomm)
      5. 11-19-0386, “CR Disallowed Subchannels,” Ron Porat (Broadcom)
      6. 11-19-0407, “Comment Resolutions PHY xVECTORs,” Bo Sun (ZTE)
      7. 11-19-0422, “CR for CID 21497, 21501, 21502,” Xiaogang Chen (Intel)
      8. 11-19-0553, “Comment Resolutions on Clause 27.3.15.2 (Beamforming feedback matrix V),” Kome Oteri (InterDigital)
      9. 11-19-0793, “Remaining PHY Math comment resolutions,” Yan Zhang (Marvell)
      10. 11-19-0826, “CR on DCM and STBC Combinations,” Youhan Kim (Qualcomm)
      11. 11-19-0827, “CR on Punctured Non-HT Duplicate PPDU,” Youhan Kim (Qualcomm)
      12. 11-19-0830, “CR on Clause 17,” Youhan Kim (Qualcomm)
      13. 11-19-0831, “D4.0 Comment Resolution – Part 2,” Youhan Kim (Qualcomm)
      14. 11-19-0836, “D4.0 Comment Resolution – Part 3,” Youhan Kim (Qualcomm)
      15. 11-19-0837, “CR on HE Capabilities,” Youhan Kim (Qualcomm)
      16. 11-19-0858, “PHY CR in Clause 10,” Youhan Kim (Qualcomm)
      17. 11-19-0866, “CR for Misc.,” Xiangang Chaen (Intel)
   2. MAC submissions
      1. 11-18-0218, “Fragment Flush BlockAckReq,” Matthew Fischer (Broadcom)
      2. 11-18-1822, “Temporarily Limited Connection,” Matthew Fischer (Broadcom)
      3. 11-19-0288, “CR for HE Beacon,” Po-Kai Huang (Intel)
      4. 11-19-0292, “Comments on TGax D4.0,” Robert Stacey (Intel)
      5. 11-19-0301, “Comment resolutions for HE beacon in 6 Ghz band,” Alfred Asterjadhi (Qualcomm)
      6. 11-19-0302, “Comment resolutions for HE BSS operation,” Alfred Asterjadhi (Qualcomm)
      7. 11-19-0303, “Comment Resolution for QoS Control,” Alfred Asterjadhi (Qualcomm)
      8. 11-19-0304, “Comment resolutions for HE BSS operation in 6 GHz,” Alfred Asterjadhi (Qualcomm)
      9. 11-19-0305, “Comment resolutions for transmit power control,” Alfred Asterjadhi (Qualcomm)
      10. 11-19-0309, “Comment resolutions for Frame Control,” Alfred Asterjadhi (Qualcomm)
      11. 11-19-0315, “Comment resolutions for TWT power save,” Alfred Asterjadhi (Qualcomm)
      12. 11-19-0316, “Comment resolutions for BSR operation,” Alfred Asterjadhi (Qualcomm)
      13. 11-19-0325, “11ax D4.0 MAC Comment Resolution for SM Power Save,” Po-Kai Huang (Intel)
      14. 11-19-0339, “11ax D4.0 MAC Comment Resolution for Co-hosted BSSID,” Po-Kai Huang (Intel)
      15. 11-19-0394, “Resolution for CIDs in 9.3.1.22,” Abhishek Patil (Qualcomm)
      16. 11-19-0395, “Resolution for CIDs related to BSS Color – Part 1,” Abhishek Patil (Qualcomm)
      17. 11-19-0413, “CR for MU EDCA,” Laurent Cariou (Intel)
      18. 11-19-0414, “CR for NFRP,” Laurent Cariou (Intel)
      19. 11-19-0415, “CR for OPS,” Laurent Cariou (Intel)
      20. 11-19-0417, “CR for 6 GHz out of band,” Laurent Cariou (Intel)
      21. 11-19-0427, “Comment resolution on CID 20175,” Zhou Lan (Broadcom)
      22. 11-19-0436, “Resolution for CIDs in clause 11.1.4,” Abhishek Patil (Qualcomm)
      23. 11-19-0447, “Resolutions to CID 20256, 20257,” Jarkko Kneckt (Apple)
      24. 11-19-0479, “Resolution for CID 20012,” Abhishek Patil (Qualcomm)
      25. 11-19-0488, “CR for Reduced Neighbor Report,” Jarkko Kneckt (Apple)
      26. 11-19-0492, “11ax D4.0 MAC Comment Resolution for MU-RTS/CTS,” Po-Kai Huang (Intel)
      27. 11-19-0494, “Resolution for CID 20346 related to BSS Color,” Kaiying Lu (ZTE)
      28. 11-19-0505, “Resolution for CIDs related to BSS Color – Part 2,” Abhishek Patil (Qualcomm)
      29. 11-19-0506, “Resolution for CIDs related to Multiple BSSID,” Abhishek Patil (Qualcomm)
      30. 11-19-0508, “Resolution for CIDs related to UORA,” Abhishek Patil (Qualcomm)
      31. 11-19-0510, “Resolution for CIDs related to MU Operation,” Abhishek Patil (Qualcomm)
      32. 11-19-0548, “Resolution for CIDs related to TF format (9.3.1.22) – Part 2,” Abhishek Patil (Qualcomm)
      33. 11-19-0561, “Comment resolutions for miscellaneous TWT,” Alfred Asterjadhi (Qualcomm)
      34. 11-19-0593, “Comment resolutions for Frame Control,” Alfred Asterjadhi (Qualcomm)
      35. 11-19-0594, “Comment resolutions for transmit power control - part 2,” Alfred Asterjadhi (Qualcomm)
      36. 11-19-0604, “11ax D4.1 MAC Comment Resolution for NAV part I,” Po-Kai Huang (Intel)
      37. 11-19-0605, “11ax D4.0 MAC Comment Resolution for MU-RTS part II,” Po-Kai Huang (Intel)
      38. 11-19-0652, “Comment resolutions for TWT Information frames,” Alfred Asterjadhi (Qualcomm)
      39. 11-19-0696, “OMI Comment Resolutions,” Jarkko Kineckt (Apple)
      40. 11-19-0703, “11ax D4.0 comment and resolution for Trigger frame MAC padding,” Tianyu Wu (Apple)
      41. 11-19-0724, “Comment resolutions for broadcast TWT,” Alfred Asterjadhi (Qualcomm)
      42. 11-19-0725, “Comment resolutions for Individual TWT,” Alfred Asterjadhi (Qualcomm)
      43. 11-19-0734, “11ax D4.0 Comment Resolution 9.7.3,” Liwen Chu (Marvell)
      44. 11-19-0735, “11ax D4.0 Comment Resolution 10.24,” Liwen Chu (Marvell)
      45. 11-19-0737, “11ax D4.0 comment-resolution 9.2.4.6, 9.4.2.242.2,” Liwen Chu (Marvell)
      46. 11-19-0745, “MAC CR for subclause 9.4.2,” Ming Gan (Huawei)
      47. 11-19-0748, “11ax D4.0 Comment Resolution 26.2.8,” Liwen Chu (Marvell)
      48. 11-19-0750, “11ax D4.0 comment-resolution 26.5.3.4,” Liwen Chu (Marvell)
      49. 11-19-0751, “Figure 26-3a,” Abhishek Patil (Qualcomm)
      50. 11-19-0753, “11ax D4.1 MAC Multiple BSSID Minor Bug Fix,” Po-Kai Huang (Intel)
      51. 11-19-0756, “Ack related CRs on Section 26.4,” George Cherian (Qualcomm)
      52. 11-19-0765, “CR MU EDCA Timer,” Zhou Lan (Broadcom)
      53. 11-19-0769, “CR for NFRP,” Laurent Cariou (Intel)
      54. 11-19-0770, “LB238 CR PPDU format, BW, MCS, NSS, and DCM selection,” Yongho Seok (MediaTek)
      55. 11-19-0785, “MAC CR Comment Resolution,” Ming Gan (Huawei)
      56. 11-19-0795, “Visio file for (updated) Figure 26-5,” Abhishek Patil (Qualcomm)
      57. 11-19-0816, “Resolutions to comments to subclause 9.3.1.8,” Tomoko Adachi (Toshiba)
      58. 11-19-0835, “Comment resolution for subclause 26.2.2,” Kaiying Lu (ZTE)
   3. SR submissions
      1. 11-19-0416, “CR for Spatial reuse,” Laurent Cariou (Intel)
      2. 11-19-0613, “SRP Comments,” Matthew Fischer (Broadcom)
2. **TG Motion**
   1. Approval of TG Minutes (November 2018 Meeting and Teleconferences Minutes)
   2. **Motion: Approve TGax minutes of meetings and teleconferences from January 2019 Interim meeting to today:**
      * [**https://mentor.ieee.org/802.11/dcn/19/11-19-0126-01-00ax-tgax-january-2019-st-louis-meeting-minutes.docx**](https://mentor.ieee.org/802.11/dcn/19/11-19-0126-01-00ax-tgax-january-2019-st-louis-meeting-minutes.docx)
      * [**https://mentor.ieee.org/802.11/dcn/19/11-19-0296-00-00ax-munites-of-tgax-teleconferences-from-feb-to-mar-2019.docx**](https://mentor.ieee.org/802.11/dcn/19/11-19-0296-00-00ax-munites-of-tgax-teleconferences-from-feb-to-mar-2019.docx)
      1. **Moved by Alfred Asterjadhi, Seconded by Abhishek Patil.**
      2. **Result: The motion was approved with unanimous consent.**
3. **Editors Report, Robert Stacey (Intel)**
   1. We still have about 1100 comments to go after this meeting.
4. **Ad hoc meeting discussion**
   1. Before July 2019 Plenary: July 10 – 12, 2019 in Rennes, France
   2. Discussion
      1. A member commented that we should make use of teleconferences more.
      2. PHY ad hoc may like to reserve one day meeting depending on the progress of this week.
   3. Plans
      1. We will have motion to approve the July 2019 ad hoc meeting on Thursday.
5. **Timeline**
   1. Form sponsor ballot pool February 2019 🡪 June 2019
   2. MEC/MDR March 2019
      1. 802.11ax MDR starts this week and will be completed before July 2019 meeting
   3. Sponsor Ballot August 2019
   4. Final WG Approval January 2020
   5. Final or Conditional 802 EC Approval March 2020
   6. RevCom & Standards Board Final or Continuous Process Approval June 2020
6. **Comment Resolution**
   1. **Youhan Kim (Qualcomm) presented “CR on HE Capabilities,” based on the submission 11-19-0837-00.**
      1. Summary
         1. Resolutions for the PHY related comments on the HE Capabilities are proposed.
         2. Youhan made some edits to the document.
      2. Discussion
         1. (Re: CID 20848) the commenter asked for more explanation for the proposed changes.
         2. (Re: CID 20515) the commenter suggested minor changes to the proposed text.
         3. (Re: CID 20993) a straw poll is proposed.
            1. **Straw Poll: Which option do you support?**

**Option 1: Add new requirement that higher Nss cannot require less nominal packet padding than lower Nss using the same QAM.**

**Option 2: Do not add new requirement that higher Nss cannot require less nominal packet padding than lower Nss using the same QAM**

**Result: Option 1/Option 2 = 6/21, Option 2 is the preference of the group.**

* + - 1. (Re: CID 20666) a member discussed the description of bit positioning.
    1. **Straw Poll: DO you accept resolutions to CIDs 20798, 21368, 21369, 20828, 20605, 20515, 20778,** 
       1. **Result: Y/N/A = 47/0/1, the straw poll will be converted to a motion.**
    2. Next step
       1. 11-19/0837r1 is ready for motion. Youhan to upload the latest revision (r1).
  1. **Xiaogang Chen (Intel) presented “CR for CID 21497, 21501, 21502,” based on the submission 11-19-0422-02.**
     1. Summary
        1. This submission proposes text changes of TGax Draft 4.0 related to CIDs 21497, 21501 and 21502.
        2. The resolution to the CID 21502 deferred from the March 2019 session was proposed.
     2. Discussion
        1. A member commented that the change could introduce an interoperability issue.
        2. Some other people asked for offline discussion.
     3. Next Step
        1. SP is deferred. Xiaogang to have offline discussions with interested people.
  2. **Alfred Asterjadhi (Qualcomm) presented “Comment resolutions for TWT Information frames,” based on the submission 11-19-0652-00.**
     1. Summary
        1. Resolutions for the comments with following CIDs related to TGax D4.0 on TWT information frame are proposed:
           1. Relevant CIDs: 20333, 20334, 20335, 20359, 20361, 20402, 20403, 20404, 20405, 20408, 21087, 21088, 21089, 21090, 21091, 21092, 21093, 21170, 20353, 20354, 20355, 20356, 20357, 20358, 20838 (25 CIDs).
     2. Discussion
        1. (Re: CID 20359) a participant commented that the comment is valid and rejection is not right resolution to this comment.
        2. (Re: CID 20361) a member discussed APSD power save related to TWT information frame.
        3. (Re: CID 20403) a member asked for more clarification on this CID.
        4. (Re: CID 20404) a member commented that the proposed change should be discussed.
     3. Next Step
        1. Presentation by Alfred was interrupted due to the time.

1. **AoB**
   1. We have ad hoc meetings tomorrow PM1.
2. **Recess**
   1. TGax is in recess @ 12:30.

**Monday, May 13th, 2019, PM1 TGax ad hoc sessions (13:30 - 15:30)**

* PHY ad hoc: Grand Ballroom I
  + Agenda: 11-19-0880
* MAC ad hoc: Grand Ballroom II
  + Agenda: 11-19-0881

**Tuesday, May 14th, 2019, AM2 TGax Ad Hoc Session (10:30 AM - 12:30)**

* PHY ad hoc: Grand Ballroom I
  + Agenda: 11-19-0880
* MAC ad hoc: Grand Ballroom II
  + Agenda: 11-19-0881

**Tuesday, May 14th, 2019, PM1 TGax Ad Hoc Session (13:30 - 15:30)**

* PHY ad hoc: Grand Ballroom I
  + Agenda: 11-19-0880
* MAC ad hoc: Grand Ballroom II
  + Agenda: 11-19-0881

**Wednesday, May 15th, 2019, PM1 TGax full session (13:30 - 15:30)**

1. **The meeting called to order at 13:31 by Osama Aboul-Magd (Huawei Technologies), the chairperson of 802.11 TGax.**
   1. Introduction of TGax leadership.
   2. Agenda document 19/615r3 on the server.
2. **Agenda Setting**
   1. Proposed Agenda for Wednesday AM1:
      1. Call meeting to order
      2. IEEE-SA IPR policy and Procedure
      3. Review Progress from Ad hoc groups
      4. Submissions and comment resolution
         1. Editing Discussion (11-19/0874)- Robert and Youhan
         2. 11-19/0858 - PHY CR in Clause 10 – Youhan Kim
         3. MAC Comment Resolution
      5. Recess
   2. Chair asked if there is any objection to proceed with this agenda. 🡪 No objection.
   3. The agenda for AM1 was approved.
3. **Announcements**
   1. Chair reminded that we are still operating under the IEEE-SA P&P.
   2. Attendance: <https://imat.ieee.org/attendance>
   3. Chair asked people to state name and affiliation when addressing the group for the first time in a session.
4. **Review Progress from Ad hoc groups**
   1. PHY ad hoc
      1. Completed hearing all submissions
   2. MAC ad hoc
      1. Still have many submissions to go.
5. **Submissions and Comment Resolution**
   1. **Robert Stacey (Intel) presented “Editorial changes to approved resolutions,” based on the submission 11-19-0912-00.**
      1. Summary
         1. Robert presented the editorial changes to approved resolutions showing some examples.
      2. Discussion
         1. A member (Youhan Kim) has related submission and commented to the example that Robert showed. Youhan suggested more preservative text from the original one.
   2. **Youhan Kim (Qualcomm) presented “PHY CR in Clause 10,” based on the submission 11-19-0858-00.**
      1. Summary
         1. Resolutions for the comments with following CIDs on the IEEE 802.11ax D4.0 PHY related comments in Clause 10.
            1. CIDs: 20507, 20953, 20882
         2. The changes are based on D4.1.
      2. Discussion
         1. No discussion.
      3. **Straw Poll: Do you accept the resolution for CIDs 20507, 20953, 20882 in doc 11-19/0858r0?**
         1. **Discussion: no discussion**
         2. **Result: Accepted with no objection.**
   3. **Xiaogang Chen (Intel) presented “CR for CID 21497, 21501, 21502,” based on the submission 11-19-0422-04.**
      1. Summary
         1. Resolutions for the comments with following CIDs received from WGLB 238 on the IEEE 802.11ax D4.0 are proposed:
            1. CIDs: 21497, 21501, 21502
      2. Discussion
         1. Re: CID 21502
      3. **Straw Poll: Do you accept the resolutions to CID 21502 in document 11-19/0422r4?**
         1. **Discussion: No discussion.**
         2. **Result: Y/N/A = 9/10/15.**
   4. **Alfred Asterjadhi (Qualcomm) presented “Comment resolutions for HE BSS operation in 6 GHz,” based on the submission 11-19-0304-01.**
      1. Summary
         1. Resolutions for the comments with following CIDs on the HE BSS operation in 6 GHz defined in the IEEE 802.11ax D4.0 are proposed.
            1. CIDs: 20074, 20130, 20241, 20411, 20980, 21280, 21281,21282, 21283, 21350, 21351, 21352, 21510, 21511, 21524, 21553.
      2. Discussion
         1. A member requested offline discussion regarding CIDs 20074 and 20130. 🡪 Two CIDs are deferred for more discussion.
         2. The document was updated to r2.
      3. **Straw Poll: Do you agree with the resolutions to the CIDs 20241, 20411, 20980, 21280, 21281, 21282, 21283, 21350, 21351, 21352, 21510, 21511, 21524, 21553 in 11-19/0304r2?**
         1. **Discussion: No discussion.**
         2. **Result: Accepted with no objection.**
   5. **Alfred Asterjadhi (Qualcomm) presented “Comment resolutions for QoS Control,” based on the submission 11-19-0303-03.**
      1. Summary
         1. Resolutions for the comments with following CIDs related to the QoS Control defined in the IEEE 802.11ax D4.0 are proposed.
            1. CIDs: 20459, 20460, 20461, 20462, 20463, 20572, 20672, 20717, 20734, 20907, 20908, 21123, 21452, 21465, 21453, 20532, 21346, 21347.
      2. Discussion
         1. A member asked for more discussion on the CIDs 20461, 20463 and 21465. 🡪 Three CIDs are deferred for more discussion.
      3. Next Step
         1. Alfred to have offline discussions.
   6. **Alfred Asterjadhi (Qualcomm) presented “Comment resolutions for TWT Information frames,” based on the submission 11-19-0652-01.**
      1. Summary
         1. Alfred updated 19/0652 based on the comments on CIDs 20404, 20405 and 20354 received during the TGax ad hoc.
      2. Discussion
         1. A member asked for more clarification on the STA’s behavior after receiving a TWT Information frame. Offline discussion was requested.
         2. Another member asked for the definition of AM (active mode).
         3. A member asked for further changes to the proposed text. 🡪 The document was updated to r2.
      3. Next Step
         1. Alfred to have offline discussion with a member.
   7. **Alfred Asterjadhi (Qualcomm) presented “Comment resolutions for Individual TWT,” based on the submission 11-19-0725-01.**
      1. Summary
         1. Alfred presented the update of 19/725 which was presented during the TGax MAC ad hoc on Monday.
      2. Discussion
         1. No discussion.
      3. Next Step
         1. Ready for motion.
   8. **Alfred Asterjadhi (Qualcomm) presented “Comment resolutions for broadcast TWT,” based on the submission 11-19-0724-02.**
      1. Summary
         1. Alfred presented the updated resolution for the CID 20843.
      2. Discussion
         1. A member asked for clarification of the NOTE in 26.8.2 (Individual TWT).
         2. (Re: CID 20125) A member requested further discussion on this CID.
         3. Document was updated to r3.
      3. Next Step
         1. The document is still ready for motion.
   9. **Alfred Asterjadhi (Qualcomm) presented “Comment resolutions for fast passive scanning,” based on the submission 11-19-0910-00.**
      1. Summary
         1. Resolutions for the comments with following CID received for the IEEE 802.11ax D4.0 on fast passive scanning are proposed.
            1. CIDs: 20077, 20078, 20079, 20349, 20350, 20351, 20373, 21043, 21526, 21527, 21528, 21529, 21530, 21554, 21577, 21578
      2. Discussion
         1. (Re: CID 20350) a member
      3. Due to the time constraint, the presentation of Alfred was interrupted. To be continued in the PM2 MAC ad hoc session.
6. **AoB**
   1. None.
7. **Recess**
   1. TGax meeting is in recess @ 15:30. There is TGax MAC ad hoc session in PM2 today.

**Wednesday, May 15th, 2019, PM2 TGax ad hoc sessions (16:00 - 18:00)**

* MAC ad hoc: Grand Ballroom II
  + Agenda: 11-19-0881

**Thursday, May 16th, 2019, AM1 TGax full session (8:00 - 10:00 AM)**

1. **The meeting called to order at 8:00 AM by Osama Aboul-Magd (Huawei Technologies), the chairperson of 802.11 TGax.**
   1. Introduction of TGax leadership.
   2. Agenda document 19/0615r5 available.
2. **Agenda Setting**
   1. Proposed Agenda for Thursday AM1 and PM1:
      1. Call meeting to order
      2. IEEE-SA IPR policy and Procedure
      3. Motion for ad-hoc meeting in Rennes, France
      4. 11-19/0876; Channelization for 6 GHz (CID 21378), Imran Latif
      5. TG Technical Motions
      6. Submissions and comments resolutions
      7. Teleconferences
      8. Recess
   2. Chair asked if there is any objection to proceed with this agenda. 🡪 No objection.
   3. The agenda for AM1 and PM1 was approved.
3. **Announcements and Reminder**
   1. Chair reminded that we are still operating under the IEEE-SA P&P.
   2. Chair asked people to state name and affiliation when addressing the group for the first time in a session.
   3. Attendance: <https://imat.ieee.org/attendance>
4. **Presentation**
   1. **Imran Latif (Quantenna Communication) presented “Channelization for 6 GHz (CID 21378),” based on the submission 11-19-0876-00.**
      1. Summary
         1. A resolution for the comment with CID 21378 regarding Channelization for 6 GHz defined in the IEEE 802.11ax D4.0.
      2. Discussion
         1. A member commented that the FCC rule is not finalized yet and global alignment is very important. 🡪 Imran agreed.
         2. The group discussed the 80 MHz and 20 MHz channelization for 6 GHz.
5. **Motion Ad Hoc Meeting in July 2019**
   1. **Motion: Authorize TGax to hold an ad-hoc meeting on July 10-12 in Rennes, France, for the purpose of resolving comments received on draft D4.0.**
      1. **Moved by Mark Rison, Seconded by Stephane Baron**
      2. **Discussion**
      3. **Result: Y/N/A = 28/1/4, motion passes.**
      4. **Note: This is MAC only ad hoc.**
6. **TG Technical Motion**
   1. **MAC Motion**
      1. **MAC Motion #124: Move to instruct the TG Editor to incorporate the draft text in doc 11-19/0753r1 into the TG draft.**
         1. **Moved by Po-Kai Huang, Seconded by Alfred Asterjadhi**
         2. **Discussion: No discussion.**
         3. **Result: Passed with unanimous consent.**
   2. **CR Motions**
      1. **CR Motion #832: Move to accept resolutions to CIDs 20540, 20548 in doc 11-19/0605r0.**
         1. **Moved by Po-Kai Huang, Seconded by Alfred Asterjadhi.**
         2. **Discussion**
            1. **Alfred mentioned that some text is missing. 🡪 Po-Kai checked with Robert Stacey and confirmed that it is okay.**
         3. **Result: Passed with unanimous consent.**
      2. **CR Motion #833: Move accept resolutions to CIDs, 20312, 20313, 20398, 20595, 20596, 20603, 20604, 20622, 20623,, 20625, 20661, 20662, 20676, 20811, 21128, 21143, 21414,, 21617 in doc 11-19/0413r4.**
         1. Moved by Laurent Cariou.
         2. **Note: This motion is covered by another motion (MAC Motion #852)**
      3. **CR Motion #834: Move to accept resolutions to CIDs 20054, 21196, 20542, 21549, 20663, 20055, 21548, 21114, 20056, 21130, 21144, 21145, 21197, 21133, 20052, 20065, 20066, 20067, 20068, 20058, 20059, 20578 in doc 11-19/0508r5.**
         1. **Moved by Abhishek Patil, Seconded by Alfred Asterjadhi.**
         2. **Discussion: No discussion.**
         3. **Result: Passed with unanimous consent.**
      4. **CR Motion #835: Move to accept resolutions to CIDs 20249, 20880, 20455, 20018, 20438, 21127, 20439, 21075, 21076, 20069, 20071, 20582, 20315, 20933 in doc 11-19/0506r3.**
         1. **Moved by Abhishek Patil, Seconded by Alfred Asterjadhi.**
         2. **Discussion: No discussion.**
         3. **Result: Passed with unanimous consent.**
      5. **CR Motion #836: Move to accept resolutions to CIDs 20010 20011 20108 20116 20494 20643 in doc 11-19/0745r1.**
         1. **Moved by Ming Gan, Seconded by Alfred Asterjadhi.**
         2. **Discussion: No discussion.**
         3. **Result: Passed with unanimous consent.**
      6. **CR Motion #837: Move to accept resolutions to CIDs 20807 in doc 11-19/0737r1.**
         1. **Moved by Liwen Chu, Seconded by Ming Gan.**
         2. **Discussion: No discussion.**
         3. **Result: Passed with unanimous consent.**
      7. **CR Motion #838: Move to accept resolutions to CIDs 20459, 20460, 20461, 20462, 20463, 20572, 20672, 20717, 20734, 20907, 20908, 21123, 21452, 21465, 21453, 20532, 21346, 21347 in doc 11-19/0303r4.**
         1. **Moved by Alfred Asterjadhi, Seconded by Abhishek Patil.**
         2. **Discussion: No discussion.**
         3. **Result: Passed with unanimous consent.**
      8. **CR Motion #839: Move to accept resolutions to CIDs 20121, 20125, 20381, 20401, 20843, 21077, 21078, 21079, 21081, 21083, 21084, 21085, 21086 in doc 11-19/0724r3.**
         1. **Moved by Alfred Asterjadhi, Seconded by Abhishek Patil.**
         2. **Discussion: No discussion.**
         3. **Result: Passed with unanimous consent.**
      9. **CR Motion #840: Move to accept resolutions to CIDs 20174, 21585 in doc 11-19/0593r0.**
         1. **Moved by Alfred Asterjadhi, Seconded by Abhishek Patil.**
         2. **Discussion: No discussion.**
         3. **Result: Passed with unanimous consent.**
      10. **CR Motion #841: Move to accept resolutions to CIDs 20748, 21188, 20220, 21612, 21189, 21113, 20044, 20045, 20323, 20698, 20046, 20047, 20048, 20539, 20592, 20049, 21547, 20855, 20531, 20050, 20051, 21194, 21195, 20324, 20535, 20416 in doc 11-19/0510r3.**
          1. **Moved by Abhishek Patil, Seconded by Alfred Asterjadhi.**
          2. **Discussion: No discussion.**
          3. **Result: Passed with unanimous consent.**
      11. **CR Motion #842: Move to accept resolutions to CIDs 20016, 20037, 21447, 20070, 20250 in doc 11-19/0415r2.**
          1. **Moved by Laurent Cariou, Seconded by Alfred Asterjadhi.**
          2. **Discussion: No discussion.**
          3. **Result: Passed with unanimous consent.**
      12. **CR Motion #843: Move to accept resolutions to CIDs 20910, 20912, 20749, 20829, 20940, 20938, 20129, 21100 in doc 11-19/0770r2.**
          1. **Moved by Yongho Seok, Seconded by Alfred Asterjadhi.**
          2. **Discussion: No discussion.**
          3. **Result: Passed with unanimous consent.**
      13. **CR Motion #844: Move to accept resolutions to CIDs 20997, 20998, 20221, 20750 in doc 11-19/0548r1.**
          1. **Moved by Abhishek Patil, Seconded by Ming Gan.**
          2. **Discussion: No discussion.**
          3. **Result: Passed with unanimous consent.**
      14. **CR Motion #845: Move to accept resolutions to CIDs 20798, 21368, 21369, 20828, 20605, 20515, 20778, 20993, 20666, 20295 in doc 11-19/0837r1.**
          1. **Moved by Youhan Kim, Seconded by Bin Tian.**
          2. **Discussion: No discussion.**
          3. **Result: Passed with unanimous consent.**
      15. **CR Motion #846: Move to accept resolutions to CIDs 20507, 20953, 20882 in doc 11-19/0858r0.**
          1. **Moved by Youhan Kim, Seconded by Bin Tian.**
          2. **Discussion: No discussion.**
          3. **Result: Passed with unanimous consent.**
      16. **CR Motion #847: Move to accept resolutions to CIDs 20780, 20781, 21565 in doc 11-19/0553r0.**
          1. **Moved by Al Petrick, Seconded by Robert Stacey.**
          2. **Discussion: No discussion.**
          3. **Result: Passed with unanimous consent.**
      17. **CR Motion #848: Move to accept comment resolution to the following 22 CIDs as in 11-19/0652r2.**

* **20333, 20334, 20335, 20359, 20361, 20402, 20403, 20404, 20408, 21087, 21088, 21089, 21090, 21091, 21092, 21093, 21170, 20353, 20354, 20355, 20356, 20357, 20358, 20838**
  + - 1. **Moved by Alfred Asterjadhi, Seconded by Abhishek Patil.**
      2. **Discussion: No discussion.**
      3. **Result: Pass with unanimous consent.**
    1. **CR Motion #849: Move to accept comment resolution to the following CIDs as in 11-19/0725r1.**
* **20119, 20124, 20262, 20263, 20380, 20383, 20399, 20680, 20702, 20819, 20844, 21063, 21064, 21070, 21071, 21072, 21073, 21074**
  + - 1. **Moved by Alfred Asterjadhi, Seconded by Abhishek Patil.**
      2. **Discussion: No discussion.**
      3. **Result: Passed with unanimous consent.**
    1. **CR Motion #850: Move to accept comment resolution to the following CIDs as in 11-19/0304r2**
* **20241, 20411, 20980, 21280, 21281,21282, 21283, 21350, 21351, 21352, 21510, 21511, 21524, 21553**
  + - 1. **Moved by Alfred Asterjadhi, Seconded by Abhishek Patil.**
      2. **Discussion: No discussion.**
      3. **Result: Passed with unanimous consent.**
    1. **CR Motion #851: Move to accept resolutions to CIDs 20182, 20213, 20219, 20316, 20317, 20318, 20388, 20607, 20608, 20609, 20763, 20789, 20791, 20890, 20932, 21021, 21065, 21187, 21299, 21307, 21459, 21593, 21029, 21030, 21451, 21187, 21455, 21175 in doc 11-19/0756r1.**
       1. **Moved by George Cherian, Seconded by Matthew Fischer.**
       2. **Discussion: No discussion.**
       3. **Result: Passed with unanimous consent.**
    2. **CR Motion #852: Move to accept resolutions to CIDs 20312, 20313, 20398, 20595, 20596, 20603, 20604, 20622, 20623, 20625, 20661, 20662, 20676, 20811, 21128, 21143, 21414, 21617 in doc 11-19/0413r4.**
       1. **Moved by Laurent Cariou, Seconded by Alfred Asterjadhi.**
       2. **Discussion: No discussion.**
       3. **Result: Passed with unanimous consent.**
    3. **CR Motion #853: Move to accept resolutions to CIDs 20077, 20078, 20079, 20349, 20350, 20351, 21043, 21526, 21527, 21528, 21529, 21530, 21554, 21577, 21578 in doc 11-19/0910r1.**
       1. **Moved by Alfred Asterjadhi, Seconded by Matthew Fischer.**
       2. **Discussion: Alfred presented the updates from rev0.**
       3. **Result: Passed with unanimous consent.**
    4. **CR Motion #854: Move to accept resolutions to CIDs 21045, 20584, 20200, 20827, 21171, 20105, 20954, 20955, 20893 in doc 11-19/0816r2.**
       1. **Moved by George Cherian, Seconded by Robert Stacey.**
       2. **Discussion: No discussion.**
       3. **Result: Passed with unanimous consent.**
    5. **CR Motion #855: Move to accept the proposed comment resolution to the following CIDs and the corresponding modification proposal to IEEE P802.11ax D4.1 as in 11-19/0793r1**

**- CID 20140, 20141, 20142, 20143, 20144, 20145, 20517, 20720, 21388, 21556, 21557, 21558, 21559, 21560, 21561, 21562, 20579, 21003, 21396, 21397, 21398, 21399, 21218, 21005, 20617, 20723, 21402, 21403, 21404, 21405.**

* + - 1. **Moved by Xiaogang Chen, Seconded by Robert Stacey.**
      2. **Discussion: No discussion.**
      3. **Result: Passed with unanimous consent.**
    1. **CR Motion #856: Move to accept the proposed comment resolutions to the following CIDs as in 11-19/0826r1**

**- CID 21006, 21406, 20715.**

* + - 1. **Moved by Youhan Kim, Seconded by Bin Tian.**
      2. **Discussion: No discussion.**
      3. **Result: Passed with unanimous consent.**
    1. **CR Motion #857: Move to accept the proposed comment resolution to the following 46 CIDs in 11-18/1774r18**

**- CID 21219, 21220, 21221, 21222, 21223, 21224, 21225, 21226, 21227, 21228, 21229, 21230, 21231, 21232, 21233, 21234, 21235, 21236, 21237, 21238, 21239, 21240, 21241, 21242, 21243, 21244, 21245, 21246, 21247, 21248, 21249, 21250, 21251, 21252, 21253, 21254, 21255, 21256, 21257, 21258, 21259, 21260, 21261, 21262, 21263, 21264.**

* + - 1. **Moved by Brian Hart, Seconded by Youhan Kim.**
      2. **Discussion: No discussion.**
      3. **Result: Passed with unanimous consent.**
    1. **CR Motion #858: Move to accept the proposed comment resolution to the following CIDs in 11-19/0830r1**

**- CID 20917, 20273, 20472, 20916, 21573.**

* + - 1. **Moved by Youhan Kim, Seconded by Bin Tian.**
      2. **Discussion: No discussion.**
      3. **Result: Passed with unanimous consent.**
    1. **CR Motion #859: Move to accept the proposed comment resolution to the following CIDs in 11-19/0831r1**

**- CID 21383, 20870, 20871, 21214, 20868, 20785, 20783, 20784, 20560, 21365, 21360, 20277, 20278, 21348, 21471.**

* + - 1. **Moved by Youhan Kim, Seconded by Alfred Asterjadhi.**
      2. **Discussion: No discussion.**
      3. **Result: Passed with unanimous consent.**
    1. **CR Motion #860: Move to accept the proposed comment resolutions to the following CIDs in 11-19/0827r3**

**- CID 20989, 21572, 21385.**

* + - 1. **Moved by Youhan Kim, Seconded by Bin Tian.**
      2. **Discussion: No discussion.**
      3. **Result: Passed with unanimous consent.**
    1. **CR Motion #861: Move to accept the proposed comment resolution to CID 20834 in 11-19/0836r0.**
       1. **Moved by Youhan Kim, Seconded by Bin Tian.**
       2. **Discussion: No discussion.**
       3. **Result: Passed with unanimous consent.**
    2. **CR Motion #862: Move to accept the proposed comment resolution to the following CIDs in 11-19/0866r3**
* **CID 20150, 20378, 20504, 20516, 20537, 20558, 20886, 20950, 21437, 21440, 21544.**
  + - 1. **Moved by Xiaogang Chen, Seconded by Alfred Asterjadhi.**
      2. **Discussion: No discussion.**
      3. **Result: Passed with unanimous consent.**
    1. **CR Motion #863: Move to accept resolutions to CIDs 20302 20423 20598 20701 21182 21183 21184 21301 21302 21303 21304 21305 21308 21309 21310 21311 21312 21313 21314 21315 21316 21317 21318 21319 in doc 11-19/0785r1.**
       1. **Moved by Ming Gan.**
       2. **Discussion:**
          1. **The group discussed clarification of the A-MPDU.**
          2. **To be reconsidered later**

1. **CR Presentation and Motion**
   1. **Liwen Chu (Marvell Semiconductor) presented “11ax D4.0 Comment Resolution 10.24,” based on the submission 11-19-0735-01.**
      1. Summary
         1. The resolutions for following CIDs regarding subclause 10.24 (HCF) of the IEEE 802.11ax D4.0.
            1. CIDs 20654, 20671, 20876.
      2. Discussion
         1. (CID 20654) The group discussed restrictions on the UL MU. A member commented the relationship with the admission control in the base standard.
         2. (CID 20671) The group discussed the admission control for the HE TB PPDU. Another member commented that current frame exchange sequence is not enough.
2. **AoB**
   1. Time is up.
3. **Recess**
   1. TGax is in recess @ 10:00 AM until start of PM1 (13:30) today.

**Thursday, May 16th, 2019, PM1 TGax full session (13:30 - 15:30)**

1. **The meeting called to order at 13:30 AM by Osama Aboul-Magd (Huawei Technologies), the chairperson of 802.11 TGax.**
   1. Introduction of TGax leadership.
   2. Agenda document 19/0615r4 available.
2. **Agenda Setting**
   1. The agenda for Thursday PM1 and PM2 as approved in AM1:
      1. Call Meeting to order
      2. IEEE-SA IPR policy and Procedure.
      3. Resolution of the outstanding comments
      4. TG Motions
      5. Goals for March 2019
      6. Ad hoc meeting, if necessary
      7. Telecon Schedule
      8. Adjourn
   2. Chair asked if there is any objection to proceed with this agenda. 🡪 No objection.
   3. The agenda for PM1 and PM2 was approved.
3. **Announcements**
   1. Chair reminded that we are still operating under the IEEE-SA P&P.
   2. Chair asked people to state name and affiliation when addressing the group for the first time in a session.
   3. Attendance: <https://imat.ieee.org/attendance>
4. **TG Motion**
   1. **CR Motion**
      1. **CR Motion #863: Move to accept resolutions to CIDs 20302, 20423, 20598, 20701, 21182, 21183, 21184, 21301, 21302, 21303, 21304, 21305, 21308, 21309, 21310, 21311, 21312, 21313, 21314, 21315, 21316, 21317, 21318, 21319 in doc 11-19/0785r1.**
         1. **Moved by Ming Gan, Seconded by Alfred Asterjadhi**
         2. **Discussion**
            1. **Ming double checked the editing instruction. 🡪 Okay.**
         3. **Result: Passed with unanimous consent.**
5. **CR Presentation and Motion**
   1. **Abhishek Patil (Qualcomm) presented update on the “CID 2676,” based on the submission 11-19-0512-02.**
      1. Summary
         1. The resolution for CID 2676: the revision number in the resolution is updated.
      2. Discussion
         1. A member asked if the DCN was correct.
      3. **MAC Motion #125: Move to instruct the TGax Editor to incorporate the draft text in doc 11-19/0512r2 into the TGax draft.**
         1. **Discussion – No discussion.**
         2. **Result: Passed with no objection.**
   2. **Abhishek Patil (Qualcomm) presented “Resolution for CIDs related to BSS Color – Part 2,” based on the submission 11-19-0505-01.**
      1. Summary
         1. Resolutions for the comments related to the BSS Color specified in the IEEE 802.11ax D4.0 with following CIDs are proposed.
            1. CIDs: 21463, 20928, 20924, 20929, 20927, 20062.
      2. Discussion
         1. (CID 21463) A member asked if the co-hosted BSSID Set is covered. 🡪 Abhi to fix it and the document is updated to rev 2.
         2. (CID 20924, 20929 & 20927) Editorial comments.
         3. (CID 20062) The resolution is updated based on feedback from members to exempt an MU PPDU from setting the color to 0 when it carries RU for unassociated STA.
      3. Motion
         1. **CR Motion #864: Move to accept comment resolutions to CIDs 21463, 20928, 20924, 20929, 20927, 20062 in doc 11-19/0505r2.**
            1. **Moved by Abhishek Patil, Seconded by Ming Gan**
            2. **Discussion – No discussion**
            3. **Result: Passed with unanimous consent.**
   3. **Menzo Wentink (Qualcomm) presented “11ax D4.0 sounding comments,” based on the submission 11-19-0863-02.**
      1. Summary
         1. Resolutions for the comments related to the sounding function specified in the IEEE 802.11ax D4.0 with following CIDs are proposed.
            1. CIDs: 20118, 20163, 20197, 20198, 20222, 20223, 20224, 20225, 20226, 20490, 20510, 20534, 20465, 20562, 20563, 20564, 20567, 20576, 20585, 20612, 20613, 20614, 20618, 20656, 20670, 20673, 20674, 20675, 20694, 20752, 20782, 20821, 20823, 20824, 20830, 20869, 20878, 20884, 20949, 20992, 21002, 21009, 21010, 21013, 21014, 21015, 21016, 21017, 21018, 21019, 21320, 21321, 21322, 21323, 21325, 21326, 21400, 21401, 21482, 21539, 21551, 21608, 21609, 21614, 21615.
      2. Discussion
         1. (CID 20163) Matt to check the definition (disallowed number of RU26).
         2. (CIDs 20118 – 20226) Another volunteer is working on these CIDs.
         3. (CIDs 21013 & 21014) Still open.
         4. (CIDs 20869, 20992 & 21002) Still open.
         5. (CID 20823) A member discussed HT TB Sounding and HE Beamforming.
         6. (CIDs 21615 & 20224) Deferred.
      3. Motion
         1. **CR Motion #865: Move to accept resolutions to CIDs 20118, 20163, 20197, 20490, 20510, 20534, 20465, 20562, 20563, 20564, 20567, 20576, 20585, 20612, 20613, 20614, 20656, 20670, 20673, 20674, 20694, 20752, 20782, 20821, 20823, 20830, 20878, 20884, 20949, 21009, 21010, 21015, 21017, 21320, 21321, 21322, 21323, 21400, 21401, 21482, 21539, 21551, 21608, 21614 in doc 11-19/0863r2.**
            1. **Moved by Abhishek Patil, Seconded by Ming Gan**
            2. **Discussion – No discussion**
            3. **Result: Passed with unanimous consent.**
6. **Teleconferences**
   1. Following teleconferences are scheduled after this meeting.
      1. Approved in March:
         1. May 23 10:00 – 12:00 ET
      2. New Schedule
         1. May 30 20:00 – 22:00 ET
         2. June 13 10:00 – 12:00 ET
         3. June 20 20:00 – 22:00 ET
         4. June 27 10:00 -12:00 ET
7. **AoB**
   1. Chair asked if there is any objection to recess at this time. – No objection.
8. **Adjournment**
   1. **TGax has adjourned for the week @ 15:30.**