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**IEEE P802.11  
Wireless LANs**

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**IEEE 802.11 TGax**

**January 2017 Atlanta Meeting Minutes**

Date: 2017-01-30

**Author(s):**

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**Abstract**

TGax meeting minutes from the IEEE 802.11 Atlanta session, January 16<sup>th</sup> – 20<sup>th</sup>, 2017.

Minutes from the ad hoc groups are contained in the following documents:

- PHY
  - Not available yet.
- MAC
  - <https://mentor.ieee.org/802.11/dcn/17/11-17-0155-00-00ax-11ax-mac-ad-hoc-minutes.docx>

The submission for MU and SR ad hocs were considered in the TG or other ad hoc sessions.

**IEEE 802.11 Task Group ax**  
**January 2016 Atlanta Meeting**  
**Grand Hyatt Atlanta in Buckhead, Atlanta, GA**  
**January 16<sup>th</sup> – 20<sup>th</sup>, 2017**

**TGax Chair Osama Aboul-Magd (Huawei Technologies)**  
**Vice Chair Simone Merlin (Qualcomm)**  
**Vice Chair Ron Porat (Broadcom)**  
**TGax Secretary Yasuhiko Inoue (NTT)**  
**TGax Technical Editor Robert Stacy (Intel)**

**Monday, January 16<sup>th</sup>, 2016, AM2 TGax Session (10:30-12:30)**

1. The meeting called to order by Osama Aboul-Magd (Huawei Technologies), the chair of the TGax, @10:30
  - 1.1. Introduction of the people on the front table..
2. **Announcement**
  - 2.1. Agenda Doc.11-16/1587r0 on the server. Rev. 1 is the working document.
  - 2.2. Meeting Protocol: Chair asked to announce name and affiliation when addressing the group for the first time during the meeting slot.
  - 2.3. Attendance reminder.
    - 2.3.1. The attendance server: <https://imat.ieee.org/>
3. **Agenda for Monday, January 16<sup>th</sup>, AM2 (10:30 – 12:30).**
  - 3.1. Proposed Agenda for Monday AM2:
    - 3.1.1. Call meeting to order
    - 3.1.2. Patent policy, etc.
    - 3.1.3. Call for submissions
    - 3.1.4. Set Ad Hoc Groups schedule and approve agenda
    - 3.1.5. Summary from November 2016 meeting
    - 3.1.6. Results of WG LB #225
    - 3.1.7. TG motions
      - 3.1.7.1. Approve TG meeting and Telecon minutes since November meeting.
      - 3.1.7.2. Approve resolutions of comments, if needed.
    - 3.1.8. Timeline
    - 3.1.9. Ad hoc group chair vacancies
    - 3.1.10. Ad Hoc Meeting before March IEEE 802 meeting
    - 3.1.11. Editor Report and Comment Assignment – Robert Stacey
      - 3.1.11.1. Including missed comments
    - 3.1.12. Presentations and Comment Resolution
      - 3.1.12.1. Simulation related submissions
  - 3.2. Chair asked if there are any other items – No items proposed. Meeting will be conducted based on this order.
4. **The chair reviewed the mandatory 6 slides of P&P.**
  - 4.1. Instructions for the WG Chair.
  - 4.2. Participants, Patents, and Duty to Inform.
  - 4.3. Patent Related Links.
  - 4.4. Call for potentially essential patents.
    - 4.4.1. Chair asked if anyone is aware of potentially essential patents.
    - 4.4.2. No potentially essential patents reported.

- 4.5. Other Guidelines for IEEE WG Meetings.
- 4.6. Participation in IEEE 802 Meetings (new slide)

## 5. Agenda items for the week

- 5.1. Approve TG and Teleconference minutes since November 2016 meeting.
- 5.2. Comment resolution on draft D1.0
- 5.3. Schedule TG ad hoc meeting(s)
- 5.4. Schedule Teleconference times.

## 6. General Flow of the meeting

- 6.1. Slides 14 and 15 of the 15/1587r0 contain general flow of the meeting.
- 6.2. There are eight meeting slots planed for TGax.

	Monday	Tuesday	Wednesday	Thursday
<b>AM1</b>			TGax	
<b>AM2</b>	TGax	TGax (Ad Hoc)	TGax (Ad Hoc)	
<b>PM1</b>			TGax	TGax
<b>PM2</b>	TGax (Ad Hoc)	TGax (Ad Hoc)	TGax (Ad Hoc)	TGax (Ad Hoc)
<b>PM3</b>				

## 7. Call for submissions – we have 48 submissions

### 7.1. PHY – 11 submissions

- 7.1.1. 11-17-0044, “NDP Feedback Report Design,” Ron Porat (Broadcom)
- 7.1.2. 11-17-0047, “1b225-cr-28\_4\_3,” Yongho Seok (Newracom)
- 7.1.3. 11-17-0056, “CR HE PHY Capabilities\_Part\_1,” Lochan Verma (Qualcomm)
- 7.1.4. 11-17-0060, “comment resolution for the CCA of preamble puncturing,” Yunbo Li (Huawei)
- 7.1.5. 11-17-0072, “CID 6124 Resolution: Remove 2x LTF+08.us GI for UL Transmission,” Jianhan Liu (MediaTek)
- 7.1.6. 11-17-0077, “Proposed changes to Draft 1.0,” Xiaogang Chen (Intel)
- 7.1.7. 11-17-0078, “RBW of 11ax,” Xiaogang Chen (Intel)
- 7.1.8. 11-17-0110, “Discussions on Signaling for UL HE MU PPDU,” John Son (Wilus)
- 7.1.9. 11-17-0112, “Link Transmit Power,” Matthew Fischer (Broadcom)
- 7.1.10. 11-17-0113, “Steering Vector Sanctity,” Matthew Fischer (Broadcom)
- 7.1.11. 11-17-0114, “CID-Trigger frame\_Part-1,” Lochan Verma (Qualcomm)

### 7.2. MAC – 14 submissions

- 7.2.1. 11-17-0037, “Comment resolution for clause 10.28,” Jarkko Knecht (Apple)
- 7.2.2. 11-17-0045, “1b225-cr-27\_11\_4,” Yongho Seok (Newracom)
- 7.2.3. 11-17-0046, “1b225-cr-27\_6\_4,” Yongho Seok (Newracom)
- 7.2.4. 11-17-0073, “CR for 27.5.2.7 NDP feedback report,” Laurent Cariou (Intel)
- 7.2.5. 11-17-0074, “Explanations for CR on 27.5.2.7,” Laurent Cariou (Intel)
- 7.2.6. 11-17-0082, “comment resolution for subclause 11.2.2.8,” Kaiying Lv (ZTE)
- 7.2.7. 11-17-0085, “CR for 9.2.5.2 and 9.2.5.7,” Po-Kai Huang (Intel)
- 7.2.8. 11-17-0088, “CR on 10.22.2.8 TXOP limits, » Woojin Ahn (Wilus)
- 7.2.9. 11-17-0089, “Discussion for CR on 10.22.2.8 TXOP limits,” Woojin Ahn (Wilus)
- 7.2.10. 11-17-0104, “Discussion on CR for CID 5066,” Dengyu Qiao (Huawei)
- 7.2.11. 11-17-0115, “Comment resolution to clause 27.8,” Jarkko Knecht (Apple)
- 7.2.12. 11-17-xxxx, “,” Matthew Fischer (Broadcom)
- 7.2.13. 11-17-yyyy, “,” Matthew Fischer (Broadcom)
- 7.2.14. 11-17-zzzz, “,” Matthew Fischer (Broadcom)

### 7.3. TG – 13 submissions

- 7.3.1. 11-16-0947, “Proposed text changes for OBSS\_PD-based SR parameters,” Matthew Fischer (Broadcom)

- 7.3.2. 11-16-1063, “Unified SR text DSC, ATPC, inter-BSS,” Graham Smith (SR Technologies)
- 7.3.3. 11-16-1362, “PAR Verification Through OFDMA,” Suhwook Kim (LG Electronics)
- 7.3.4. 11-16-1476, “CR-for section-25-9-spatial-reuse-operation-for-HE-PPDU,” Matthew Fischer (Broadcom)
- 7.3.5. 11-16-1567, “Proposal for DSC, ATPC, Inter-BSS with Responses to Comments,” Graham Smith (SR Technologies)
- 7.3.6. 11-17-0032, “Proposal on Simulation Scenario Document for 11ax PAR verification,” Suhwook Kim (LG Electronics)
- 7.3.7. 11-17-0075, “SRP-based SR Summary and Update,” James Wang (MediaTek)
- 7.3.8. 11-17-0076, “Multiple BSS Simulations for PAR Verification,” Frank Hsu (MediaTek)
- 7.3.9. 11-17-0081, “consideration of spatial reuse,” Kaiying Lv (ZTE)
- 7.3.10. 11-17-0090, “11ax PAR Verification using UL MU-MIMO,” Narendar Madhavan (Toshiba)
- 7.3.11. 11-17-0095, “Proposal on Simulation Scenario Document for 11ax PAR verification(doc),” Suhwook Kim (LG Electronics)
- 7.3.12. 11-17-0099, “Additional background for CID 8908,” Sigurd Schelstraete (Quantenna)
- 7.3.13. 11-17-0102, “LB225 comments on Spatial Reuse,” Sean Coffey (RealTek)

**7.4. Ad Hoc meeting scheduling**

- 7.4.1. Chair asked if there are any objections to approve the TGax schedule as follow.
  - 7.4.1.1. There are no objections. The TGax schedule is approved.

	Monday	Tuesday	Wednesday	Thursday
<b>AM1</b>			TGax (full)	
<b>AM2</b>	TGax (full)	TGax (PHY)	TGax (MAC)	
<b>PM1</b>			TGax (ful)	TGax (full)
<b>PM2</b>	TGax (PHY)	TGax (MAC)	TGax (PHY)	TGax (MAC)
<b>PM3</b>				

**8. Summary from November 2016 Meeting**

- 8.1. The TG completed the resolution of comments submitted during CC 23.
- 8.2. The TG approved draft D1.0.
- 8.3. A WG LB closed on January 8
- 8.4. The TG held 3 telecons since November 2016
  - 8.4.1. One telecon (December 15) was dedicated to system level simulations
  - 8.4.2. Two telecons (January 10 and January 12) were dedicated to comment assignment.

**9. Results of WG LB #225**

<b>Ballot Number</b>	<b>225</b>
<b>Ballot Group</b>	<b>TGax</b>
<b>Ballot opened:</b>	<b>2016-12-01</b>
<b>Ballot closed:</b>	<b>2017-01-08</b>
<b>Duration of ballot (days):</b>	<b>38</b>
<b>Pool (eligible voter):</b>	<b>371</b>
<b>Votes received</b>	
<b>Approve</b>	<b>145</b>
<b>Disapprove</b>	<b>106</b>
<b>Disapprove without comment (invalid)</b>	<b>4</b>
<b>Abstain</b>	<b>25</b>
<b>Total returns</b>	<b>280</b>

<b>Returns as % of pool:</b>	<b>75.47</b>
<b>Return requirement:</b>	<b>&gt; 50%</b>
<b>Is number of returns sufficient?</b>	<b>The &gt;50% return requirement has been met</b>
<b>Abstains as % of returns:</b>	<b>8.93</b>
<b>Abstain requirement:</b>	<b>&lt; 30%</b>
<b>Is number of abstains sufficiently small?</b>	<b>The 30% abstain requirement has been met</b>
<b>Approval rate as % of valid returns:</b>	<b>57.77</b>
<b>Approval requirement:</b>	<b>&gt;= 75%</b>
<b>Is number of approve votes sufficient?</b>	<b>The 75% approval requirement has not been met</b>
<b>Result</b>	<b>Motion fails</b>
<b>Number of comments received:</b>	<b>7334</b>

## 10. TG Motions

### 10.1. Motion: Approve TGax minutes of meetings and teleconferences from November 2016 plenary meeting to today:

- <https://mentor.ieee.org/802.11/dcn/16/11-16-1466-01-00ax-tgax-november-2016-san-antonio-meeting-minutes.docx>
- <https://mentor.ieee.org/802.11/dcn/16/11-16-1607-03-00ax-tgax-teleconferences-minutes-from-dec-2016-to-jan-2017.docx>
- <https://mentor.ieee.org/802.11/dcn/16/11-16-1569-00-00ax-november-2016-tgax-spatial-reuse-ad-hoc-group-meeting-minutes.docx>
- <https://mentor.ieee.org/802.11/dcn/16/11-16-1480-01-00ax-tgax-mac-ad-hoc-november-2016-meeting-minutes.docx>
- <https://mentor.ieee.org/802.11/dcn/16/11-16-1530-00-00ax-november-2016-tgax-phy-ad-hoc-minutes.docx>
- <https://mentor.ieee.org/802.11/dcn/16/11-16-1520-00-00ax-mu-ad-hoc-meeting-minutes-november-2016.docx>

10.1.1. Moved: Robert Stacy, Second: Alfred Asterjadhi

10.1.2. Discussion: No discussion.

10.1.3. Result: The motion was accepted with no objection.

## 11. Timeline

- 11.1. Slide 22 of the agenda (r0) document
- May 2014: start of the TG
  - Nov. 2014: First draft of the TG SFD was approved
  - Jan. 2016: proposed TG draft
  - March 2016: Draft D0.1 was approved and CC started
  - November 2016: Draft 1.0 and WG letter ballot
  - May 2017: Draft 2.0 and recirculation
  - November 2017: MDR (Mandatory Document Review)
  - January 2018: Formation of SB pool
  - March 2018: Sponsor Ballot
  - December 2018: RevCom
- 11.2. Timeline will be updated during the March 2017 session.

## 12. Ad Hoc Chair Vacancies

- 12.1. Two open positions – MAC ad hoc co-chair and MU ad hoc co-chair.
  - 12.1.1. Chao-Chun Wang was elected as a MAC ad hoc co-chair.
  - 12.1.2. David Xun Yang was elected as a MU ad hoc co-chair.

MAC	PHY	MU	SR
Eric Wong (Apple)	Bo SUN (ZTE)	Sigurd Schelstraete (Quantenna)	Laurent Cariou (Intel)
Reza Hedayat (Newracom)	Jianhan Liu (MediaTek)	Kiseon Ryu (LG Electronics)	Guido Hiertz (Ericsson)
<b>OPEN</b> → Chao-Chun Wang (MediaTek)	Hangyuan Zhang (Marvell)	<b>OPEN</b> → David Xun Yang (Huawei)	Jae Seung Lee (ETRI)

**13. TG Ad Hoc meeting**

- 13.1. Ad hoc meetings are required to speed up the comment resolution.
- 13.2. Two options
  - 13.2.1. Any volunteer to host the meeting
  - 13.2.2. Have an ad hoc meeting on Wed, Thu, and Fri before the IEEE 802.11 March meeting in the same hotel
    - 13.2.2.1. Contact to with the WG 1<sup>st</sup> vice-chair for arrangement and coordination.
    - 13.2.2.2. Likely there will be a registration fee (if we do not have a host).

**13.3. Straw Poll on the TGax ad hoc meeting – Which option do you prefer?**

- 13.3.1. 2-day meeting - 8
- 13.3.2. 3-day meeting - 8
- 13.3.3. Monthly meeting – alternating with the IEEE meeting – 14
- 13.3.4. Before the IEEE 802 meeting – more than 14
- 13.3.5. Who will attend the meeting - 30

**14. Motion**

- 14.1. Some comments for 802.11ax D1.0 were missing.

**14.2. Motion: Move to include comments in doc 11-17/0106r0 in the comment spread sheet 11-17/0010r4 and generate new revision.**

- 14.2.1. Moved by Kome Oteri, Seconded by Robert Stacy
- 14.2.2. Result: Approved with no objection.

**15. Editor’s Report and Comment Assignment**

- 15.1. Comment assignment
  - 15.1.1. Clause 10.3.1 DCF – General → Huizhao Wang (Quantenna)
  - 15.1.2. Clause 10.3.2.4a Duration based RTS → Huizhao Wang
  - 15.1.3. Clause 10.3.5 Individually addressed MPDU transfer procedure → Huizhao Wang
  - 15.1.4. Clause 9.4.2.218 HE Capabilities → Liwen Chu (Marvell)
  - 15.1.5. Clause 21.8 CCA on UL MU → Yongho Seok (Newracom)
  - 15.1.6. Clause 9.6.28.3 (Quiet) → Chao-Chun Wang (MediaTek)
  - 15.1.7. Clause 9.3.1.6 (CF-End) → Saishankar Nandagopalan (Cypress)
  - 15.1.8. Clause 9.4.1.11 (HE Category) → ANA
  - 15.1.9. Clause 9.4.2.46 (Multiple BSSID element) → Yongho Seok

15.1.10. Clause 9.6.16.2.2 (MESH)	→ Alfred Asterjadhi (Qualcomm)
15.1.11. Clause 10.2 (MAC Architecture)	→ Osama Aboul-Magd (Huawei)
15.1.12. Clause 10.2.1 (MAC Architecture)	→ Osama Aboul-Magd
15.1.13. Clause 10.2.4.2 (EDCA)	→ Laurent Cariou (Intel)
15.1.14. Clause 10.2.7 (Block ACK)	→ George Cherian (Qualcomm)
15.1.15. Clause 10.1 (General)	→ Alfred Asterjadhi (Qualcomm)
15.1.16. Clause 10.24.10.3 (GCR Block ACK)	→ Yongho Seok
15.1.17. Clause 11.3.5.3 (HE-MCSs rule)	→ Yongho Seok
15.1.18. Clause 28 HE PHY	→ Robert Stacy (Intel)
15.1.19. Clause 28.3.3.1 OFDMA and SU tone allocation - General	→ Sharnaz Azizi (Intel)
15.1.20. Clause 28.3.3.6 (20 MHz only HE STAs)	→ Sung Eun Lee (Cypress)
15.1.21. Clause 28.3.6.4 (Construction of L-SIG)	→ Xiaogang Chen (Intel)
15.1.22. Clause 28.4 (HE PLME)	→ Yongho Seok
15.1.23. Clause 28.4.1 (PLME_SAP sublayer management primitives)	→ Yongho Seok
15.1.24. Clause 28.4.2 (TXTIME and PSDU_LENGTH calculation)	→ Yongho Seok
15.1.25. General - PAR Compliance	→ Osama Aboul-Magd
15.1.26. General - Pre-association AID Assignment	→ Jarkko Knecht (Apple)
15.1.27. CID 6998 - General (Clause 4)	→ Osama Aboul-Magd
15.1.28. CID 7159 - Multiple BSSID	→ Liwen Chu
15.1.29. CID 7407 - General (eLWA)	→ Laurent Cariou
15.1.30. CID 7690 - General (TGax dominance)	→ Osama Aboul-Magd
15.1.31. CID 7892 - Clause 3.2 (Legacy preamble)	→ Editor
15.1.32. CID 7896 - PICS (UL MU-MIMO)	→ Osama Aboul-Magd
15.1.33. CID 6941 - Definition (HE AP)	→ Editor
15.1.34. CID 4077 - General (format of Tables)	→ Editor
15.1.35. CID 3288 - General (format of Tables)	→ Editor
15.1.36. CID 7893 - Definition (right 106-tone RU)	→ Jianhan Liu
15.1.37. CID 6900 - General (x4 improvement)	→ Osama Aboul-Magd
15.1.38. CID 9498 - Definition (RU)	→ Jianhan Liu
15.1.39. CID 5112 - Definition & Acronym (RU)	→ Jianhan Liu
15.1.40. CID 5114 - Definition (DL MU HE PPDU)	→ Jianhan Liu
15.1.41. CID 5115 - Definition (DL MU PPDU)	→ Jianhan Liu
15.1.42. CID 9218 - Definition (MU-MIMO)	→ Editor
15.1.43. CID 9219 - Definition (PPDU)	→ Editor
15.1.44. CID 8498 - Definition (RU)	→ Jianhan Liu
15.1.45. CID 9230 - Definition (DL OFDMA)	→ Jianhan Liu
15.1.46. CID 9231 - Definition (UL OFDMA)	→ Jianhan Liu
15.1.47. CID 9233 - Definition (SRP-based SR)	→ Sean Coffey
15.1.48. CID 9775 - Definition (20 MHz only HE STA)	→ Jarkko Knecht
15.1.49. CID 9224 - Definition (HE Beamformee)	→ Raja Banerjee (Qualcomm)
15.1.50. CID 9226 - Definition (HE-MCS)	→ Sigurd Shelstraete
15.1.51. CID 9223 - Definition (HE BSS)	→ Editor
15.1.52. CID 9221 - Definition (OFDMA)	→ Sigurd Shelstraete (Quantenna)
15.1.53. CID 9497 - Definition (20 MHz PPDU)	→ Sigurd Shelstraete
15.1.54. CID 10180 - Definition (Spectral mask)	→ Bin Tian
15.1.55. CID 6911 - Definition (PPDU)	→ Bin Tian
15.1.56. CID 6912 - Definition (PPDU)	→ Bin Tian
15.1.57. CID 9499 - Definition (RU)	→ Jianhan Liu
15.1.58. CID 6913 - Definition (PPDU)	→ Bin Tian
15.1.59. CID 10182 - Definition (Frequency segment)	→ Yusuke Asai (NTT)
15.1.60. CID 6918 - Definition (HE Beacon)	→ Yonggang Fang
15.1.61. CID 6233 - Definition (HE Beacon)	→ Yonggang Fang
15.1.62. CID 4708 - Definition (misc.)	→ Yonggang Fang (ZTE)
15.1.63. CID 7693 - PPDU related definitions	→ Yonggang Fang
15.1.64. CID 6923 - Definition (20 MHz only HE STA)	→ Jarkko Knecht

- 15.1.65. CID 6921 – Definition (OFDMA) → Jianhan Liu
- 15.1.66. CID 7694 – Definition (OFDMA) → Jianhan Liu
- 15.1.67. CID 5308 – Definition (S-MPDU) → Osama Aboul-Magd
- 15.1.68. CID 5307 – Definition (Class A and Class B STAs) → Lochan Verma (Qualcomm)
- 15.1.69. CID 6914 – Definition (HE STA) → Osama Aboul-Magd
- 15.1.70. CID 8306 – Definition (RU) → Jianhan Liu
- 15.1.71. CID 6070 – Missing abbreviations → Osama Aboul-Magd
- 15.1.72. CID 8171 – Incomplete abbreviation list → Osama Aboul-Magd
- 15.1.73. CID 6920 – Definition (DL) → Osama Aboul-Magd
- 15.1.74. CID 4710 – Definition (OBO) → Chittabrata Ghosh
- 15.1.75. CID 6922 – Definition of “HE” → Osama Aboul-Magd
- 15.1.76. CID 6942 – General (Clause 5) → Peter Loc (Huawei)
- 15.1.77. Clause 18.2 – parameters in TXVECTOR and RX VECTOR → Osama Aboul-Magd

## 16. AoB

- 16.1. PM2 is ad hoc sessions
  - 16.1.1. PHY –
  - 16.1.2. MAC –

17. TGax meeting recessed @ 12:22 AM until PM2 (16:00) today.

## **Monday, January 16<sup>th</sup>, 2017, PM2 TGax Ad Hoc Sessions (16:00-18:00)**

- PHY Ad hoc – BALLROOM I
  - Agenda: 11-17-0127
- MAC Ad hoc – BALLROOM II
  - Agenda: 11-17-0128

**Tuesday, January 17<sup>th</sup>, 2017, AM2 TGax Ad Hoc Sessions (10:30-12:30)**

- PHY Ad hoc – BALLROOM I
  - Agenda: 11-17-0127
  
- MAC Ad hoc – BALLROOM II
  - Agenda: 11-17-0128

**Tuesday, January 17<sup>th</sup>, 2017, PM2 TGax Ad Hoc Sessions (16:00-18:00)**

- PHY Ad hoc – BALLROOM I
  - Agenda: 11-17-0127
  
- MAC Ad hoc – BALLROOM II
  - Agenda: 11-17-0128

**Wednesday, January 18<sup>th</sup> 2016, AM1 Session (8:00-10:00)**

1. **The meeting called to order by Osama Aboul-Magd (Huawei Technologies), the chairperson of TGax, @8:02.**
  - 1.1. Agenda 11-16/1587r2 is on the server. Rev 3 is the working document.
2. **Administrative Items**
  - 2.1. Chair reminded the IEEE 802 and IEEE 802.11 P&P.
  - 2.2. Chair asked people to address himself/herself when speaking for the first time.
  - 2.3. Attendance
3. **Agenda for this session**
  - 3.1. Wednesday AM1
    - 3.1.1. Call Meeting to order
    - 3.1.2. Agenda Setting
    - 3.1.3. IEEE 802 and 802.11 IPR Policy and procedure
    - 3.1.4. Progress from MAC and PHY ad hocs
      - 3.1.4.1. Remaining PHY and MAC submissions related to comment resolution
    - 3.1.5. Presentations
      - 3.1.5.1. 11-17/00102 (<= 30 min)
      - 3.1.5.2. 11-17/0099 (<= 30 min)
      - 3.1.5.3. 11-17/0075 and 11-16/1476 (<= 60 min)
    - 3.1.6. Recess
  - 3.2. Chair asked if there are any objections to proceed with this agenda – no objections.
    - 3.2.1. The agenda approved.
4. **Progress Review**
  - 4.1. PHY
    - 4.1.1. Had three sessions and completed most presentations except five.
    - 4.1.2. Suggested cancellation of one of the PHY ad hoc sessions.
  - 4.2. MAC
    - 4.2.1. Completed all submissions including an SR submission.
5. **Presentations**
  - 5.1. **Sean Coffey (RealTek) presented “LB225 comments on Spatial Reuse” based on the submission 11-17-0102-00.**
    - 5.1.1. Summary
      - 5.1.1.1. Presenter classifies the LB225 comments on Spatial Reuse (OBSS\_PD and SRP, in 27.9 and elsewhere) into categories, i.e. Category 1: Fundamental change, Category 2: Major change, Category 3: Medium change, and Category 4: Minor change.
      - 5.1.1.2. The presenter proposes a way of moving forward with resolutions – to start with category 2.
    - 5.1.2. Discussions
      - 5.1.2.1. There was a discussion whether we can separate OBSS\_PD and SRP. SRP seems to be category 1 or 2.
      - 5.1.2.2. A member asked to include 16/947 in the presentation list in slide 7.
      - 5.1.2.3. Another member mentioned that the spec of the SRP-based SR is detailed in a submission.
      - 5.1.2.4. Chair asked to contact to Sean if interested in category 2 comments.
  - 5.2. **Sigurd Shelstraete (Quantenna) presented “Additional background for CID 8908” based on the submission 11-17-0099-00.**
    - 5.2.1. Summary
      - 5.2.1.1. In the TGax D1.0, SR is less mature than other parts of the document.
      - 5.2.1.2. SR is a risk to 11ax schedule and 11ax schedule is a risk to SR.

- 5.2.1.3. Proposed to consider decoupling 11ax and SR if progress remains elusive.
- 5.2.2. Discussions
  - 5.2.2.1. There were supportive comments on this presentation.
  - 5.2.2.2. A member mentioned that SRP might be separated.
  - 5.2.2.3. Chair mentioned that we are not making a decision right now, but this will be an option.

### 5.3. Matt Fischer (Broadcom) presented "" based on the submission 11-17-0075-05.

- 5.3.1. Summary
  - 5.3.1.1. An overview of the SRP Based Spatial Reuse Mechanism is summarized in this presentation.
  - 5.3.1.2. Details of SRP-based Spatial Reuse mechanism is contained in 11-16-1476r14.
  - 5.3.1.3.
- 5.3.2. Discussion
  - 5.3.2.1. A member discussed the relationship between OBSS\_PD and SRP-based Spatial Reuse and mentioned OBSS\_PD DISABLED may not be necessary.
  - 5.3.2.2. Another member discussed the ACK procedure in SR operation. The ACK may not be successful.
  - 5.3.2.3. There was a discussion on the PPDU format during the SR frame sequence. The SRP PPDU should be non-HE PPDU.
  - 5.3.2.4. Another member mentioned that there will be some uncertainty in SR transmissions depicted in slide 12, 13, 14 and 15. The presenter responded that everything is known.
  - 5.3.2.5. Many members asked questions such as NAV setting, transmission power and its accuracy and related CCA rules.

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### 5.3.3. Straw Poll: Do you support the adoption of 11-16-1476r14 as the resolution for CIDs related to SRP outlined in 11-17-0075-05?

5.3.4. Discussion: No question.

5.3.5. Result: Y/N/A = 24/11/30.

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- 6. AoB
  - 6.1. Two presentations are scheduled for PM1 session..
- 7. Recessed at 9:56 until PM1 (13:30) today.

## **Wednesday, January 18<sup>th</sup> 2017, PM1 TGax Full Session (13:30-15:30)**

### 8. Meeting called to order at 13:33 by Osama Aboul-Magd (Huawei Technologies), the TGax chairperson.

- 8.1. Agenda: 11-15-1587-02 is on the server. R3 still is the working document.

### 9. Announcement/Reminder

- 9.1. Chair reminded that we are still operating under the IEEE 802 and 802.11 P&P
- 9.2. Chair asked people to address himself/herself when speaking for the first time.
- 9.3. Attendance

### 10. Agenda Setting

- 10.1. Proposed agenda for PM1 and PM2
  - 10.1.1. Call Meeting to order
  - 10.1.2. IEEE 802 and 802.11 IPR Policy and procedure.

- 10.1.3. Presentations
  - 10.1.3.1. SR discussions
    - 10.1.3.1.1. PM1: 11-16/1567 and 11-16/1063, Graham Smith (<= 60 min.)
    - 10.1.3.1.2. PM1: 11-16/0947, Matt Fischer (<= 60 min.)
    - 10.1.3.1.3. PM2: 11-17/0081, Kaiying Lv
  - 10.1.3.2. PAR Verification submissions
- 10.1.4. AoB
- 10.1.5. Recess
- 10.2. Chair asked if there is any objection to accept this agenda → no objection.

## 11. Presentations

- 11.1. **Graham Smith (SR Technologies) presented “TG ax Proposal for DSC and OBSS\_PD with Responses to Comments,” based on the submission 16/1567r5.**
  - 11.1.1. Summary
    - 11.1.1.1. DSC allows STA to determine effective CS/CCA threshold (CCAeff) based upon RSSI of wanted beacon from AP.
    - 11.1.1.2. Proposal: DSC as a mean to set OBSS\_PD.
    - 11.1.1.3. Full text is in 11-16/1063.
  - 11.1.2. Discussion
    - 11.1.2.1. A member expressed a concern that it might be difficult to distinguish InBSS frames from OBSS frames.
    - 11.1.2.2. Some people commented that current spatial reuse technique consists of CCA part and TPC part. Setting of OBSS\_PD may not be consistent with current spec.
    - 11.1.2.3. There was a comment that the way that an AP sets the CCAeff could be an issue.
    - 11.1.2.4. A member commented that collision should be avoided. It is dangerous to use the RSSI of Beacons.

### 11.1.3. Straw Poll

#### 11.1.3.1. Straw Poll #1: Do you support the general direction of incorporating the DSC methodology as described in this document as an example of how to set OBSS\_PD parameters?

##### 11.1.3.1.1. Discussion

11.1.3.1.1.1. A member expressed objection of having this straw poll since it relates to the dominance issue.

11.1.3.1.1.2. Another member commented that this is just a high level concept.

11.1.3.1.1.3. Chair decided to proceed with this straw poll.

##### 11.1.3.1.2. Result: Y/N/A = 15/9/24.

11.1.3.1.3. Not very strong support. Still need more discussions.

## 11.2. Matt Fischer (Broadcom) presented “Proposed Text Changes for OBSS\_PD-based SR parameters,” based on the submission 16/0947r20.

### 11.2.1. Summary

11.2.1.1. Changes to the text for OBSS\_PD based SR is proposed.

11.2.1.2. New concept of Spatial Reuse Group is proposed.

### 11.2.2. Discussion

11.2.2.1. A member commented that changes from the previous revision (r19) are not clear enough. → Matt highlighted the changes from the rev 19.

11.2.2.2. Another member asked how to set the Spatial Reuse Group. → The assumption is it is set by a central controller.

11.2.2.3. Another member asked more explanation on the proposed scheme.

11.2.2.4. Another member discussed the NAV setting rule.

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**11.2.3. Straw Poll: Do you accept to resolve CID 8111 as revise, make the changes to D1.0 as shown in doc 11-16/0947r20?**

11.2.3.1. Discussion – No discussion.

**11.2.3.2. Result: Y/N/A = 26/2/19, this straw poll will be converted to a motion.**

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**11.3. Alfred Asterjadhi (Qualcomm) presented “Comment resolution for Target RSSI,” based on the submission 17/0156r1.**

11.3.1. Summary

11.3.1.1. Resolutions for the following 11 CIDs on Target RSSI and AP TX Power are proposed:

11.3.1.1.1. Target RSSI: 5012, 5059, 5324, 7259, 8336, 8532, 9483, 9828, 9829,

11.3.1.1.2. AP TX Power: 7677, 9482.

11.3.1.2. Changes to the draft are proposed as well.

11.3.2. Discussion

11.3.2.1. No discussion.

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**11.3.3. Straw Poll: Do you accept resolutions to CIDs 5059, 5324, 7259, 8336, 8532, 9483, 9828, 7677, 9482 in doc 11-17/0156r2?**

11.3.3.1. Discussion – No discussion.

**11.3.3.2. Result: Straw Poll was accepted with no objection. This straw poll will be converted to a motion.**

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**11.4. Alfred Asterjadhi (Qualcomm) presented “Comment resolutions for +HTC/Order subfield,” based on the submission 17/0131r0.**

11.4.1. Summary

11.4.1.1. Resolutions for the following CIDs on +HTC/Order subfield are proposed.

11.4.1.1.1. 3375, 3480, 3808, 3893, 4349, 4417, 5820

11.4.1.1.2. Basically, those comments are duplicates.

11.4.2. Discussion – No discussion

11.4.3. Straw Polls

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**11.4.3.1. Straw Poll: Do you accept resolutions to CIDs 3375, 3480, 3808, 3893, 4349, 4417, 5820 in doc 131r0?**

11.4.3.2. Discussion - No discussion.

**11.4.3.2.1. Result: Straw Poll was accepted with no objection. This straw poll will be converted to the motion.**

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12. AOB

13. Recess @ 15:29 until PM2 (16:00) today.

**Wednesday, January 18<sup>th</sup> 2016, PM2 TGax Full Session (16:00-18:00)**

14. Meeting called to order at 16:00 by Osama Aboul-Magd (Huawei Technologies), the TGax chairperson.
15. Announcement/Reminder
  - 15.1. Chair reminded that we are still operating under the IEEE 802 and 802.11 P&P
  - 15.2. Chair asked people to address himself/herself when speaking for the first time.
  - 15.3. Attendance
16. Agenda Setting
  - 16.1. Agenda for PM2
    - 16.1.1. Call Meeting to order
    - 16.1.2. IEEE 802 and 802.11 IPR Policy and procedure.
    - 16.1.3. Presentations
      - 16.1.3.1. 11-17/0081, Kaiying Lv (ZTE)
      - 16.1.3.2. CR straw poll
      - 16.1.3.3. PAR verification presentations
      - 16.1.3.4. CR submissions
    - 16.1.4. AoB
    - 16.1.5. Recess
  - 16.2. Chair asked if there is any objection to accept this agenda → no objection.
17. **Presentation on SR**
  - 17.1. **Kaiying Lv (ZTE) presented “Consideration of Spatial Reuse,” based on the submission 17/0081r0.**
    - 17.1.1. Summary
      - 17.1.1.1. Issues in current spatial reuse specification are summarized.
      - 17.1.1.2. Proposals:
        - 17.1.1.2.1. A trigger indication in the HE-SIG-A field of an HE PPDU
        - 17.1.1.2.2. Conditions to use SPR-based Spatial Reuse in conjunction with the OBSS\_PD based SR.
    - 17.1.2. Discussion
      - 17.1.2.1. A member asked for the assumption of this work whether a STA uses both OBSS\_PD based SR and SRP-based SR. → The answer is yes and the authors proposes the conditions for it.
      - 17.1.2.2. There was a discussion on requirement described in slide 6 whether both conditions for OBSS\_PD SR and SRP-based SR have to be satisfied.
      - 17.1.2.3. Another member asked for a clarification on the format of PPDU that a trigger frame is carried. → It could be a legacy format.
      - 17.1.2.4. A member discussed the backoff procedure for OBSS\_PD based SR and SRP-based SR.
      - 17.1.2.5. There was a discussion about the relationship between the CCA levels (CCA, OBSS\_PD, and ED) and NAV setting. → Basic NAV must be optional for SR operation.
18. **Presentation on System Simulation**
  - 18.1. **Suhwook Kim (LG Electronics) presented “11ax PAR Verification through OFDMA,” based on the submission 16/1363r1.**
    - 18.1.1. Summary
      - 18.1.1.1. Evaluate OFDMA gain when the number of STA is varied considering the indoor and outdoor environments.
      - 18.1.1.2. Some findings includes:
        - 18.1.1.2.1. OFDMA gain can be limited by RTS/CTS especially in indoor case.

- 18.1.1.2.2. In general, OFDMA gain increases when the number of STAs increases.
- 18.1.1.2.3. In terms of verifying 11ax PAR requirement, we can achieve four times throughput gain in outdoor scenario using OFDMA only.
- 18.1.1.2.4. To achieve four times in indoor scenario we may adopt Spatial Reuse and/or MU-MIMO.
- 18.1.2. Discussion
  - 18.1.2.1. Some people asked for the simulation condition/parameter such as Queue Size, Wall Penetration Loss, and number of STAs in simulations.
  - 18.1.2.2. A member asked how much the RTS/CTS procedure limits the performance of OFDMA. → It is shown in the authors' previous presentation.
  - 18.1.2.3. Chair mentioned that the results (graphs) show the aggregated throughput and would like to know how to get the per-user throughput. → Just divide by the number of STAs.
- 18.2. Suhwook Kim (LG Electronics) presented "Proposal on Simulation Scenario Document for 11ax PAR verification," based on the submission 17/0032r0.**
  - 18.2.1. Summary
    - 18.2.1.1. Proposed to add the following parameters for OFDMA:
      - 18.2.1.1.1. Number of RUs, Number of tones for each RU, OFDMA numerology, Trigger frame, M-BA frame length.
    - 18.2.1.2. Propose adding simplified Residential scenario:
      - 18.2.1.2.1. 1 Floor only, 20 APs (Fixed location: center of room) and Number of STA: 4 ~ 20
  - 18.2.2. Discussion
    - 18.2.2.1. A member discussed about the conditions on the primary channel.
    - 18.2.2.2. There was a question why the AP is located.
    - 18.2.2.3. Another member asked for the rationale for the assumed traffic model.
  - 18.2.3. Next Step
    - 18.2.3.1. There will be a straw poll (and a related motion) tomorrow.
- 18.3. Narendar Madhavan (Toshiba) presented "11ax PAR Verification using UL MU-MIMO," based on the submission 17/0090r1.**
  - 18.3.1. Summary
    - 18.3.1.1. Demonstrate 4 times throughput gain using UL MU-MIMO.
    - 18.3.1.2. AP deployments with high-density small cell size has the best performance of 11ax over 11ac.
    - 18.3.1.3. Future work:
      - 18.3.1.3.1. Focus on aligning the results for OFDMA with other companies
      - 18.3.1.3.2. Consider a more realistic traffic(DL/UL) and simulation scenario (multiple BSS)
  - 18.3.2. Discussion
    - 18.3.2.1. A member discussed how to align the simulation results with the results of other people. → Simulation conditions and calibrations.
    - 18.3.2.2. Another member asked for a clarification of the definition of density in slide 5.
- 18.4. James Yee (MediaTek) presented "PAR Verification Multiple BSS Simulation," based on the submission 17/0076r1.**
  - 18.4.1. Summary
    - 18.4.1.1. Presented results of UL system level throughput simulations, comparing 11ac and 11ax OFDMA in multiple BSS scenarios instead of just single BSS.
    - 18.4.1.2. Results show that modes of operation exists for 11ax OFDMA to achieve > 4x gain compared to 11ac and maintain fair bandwidth utilization.
    - 18.4.1.3. Several factors such as number of STAs inside a BSS, use of RTS, and STAs' access category distribution strongly affect the 11ac UL performance

18.4.1.4. Propose changes to the TGax Simulation scenario and EVM documents based on these results.

18.4.2. Discussion

18.4.2.1. A member discussed consideration for multiple BSS.

18.4.2.2. Another member asked for a question how the AP considers the QoS of the STA.

18.4.2.3. Chair suggested simplified simulation scenario.

**19. Straw Polls by Yongho Seok**

**19.1. 17/0045r3 (LB225 CR Sub-clause 27.11.4).**

19.1.1. Discussion

19.1.1.1. A member asked for clarification on the reference.

19.1.1.2. Another member asked for highlighting the changes. → Rev.4 to be uploaded.

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**19.1.2. Straw Poll: Do you agree to resolutions of CIDs, 5475, 5388, 5734, 5213, 5477, 8240, 7604, 10291, 5479, 9953, 7168 in doc 11-17/0045r4?**

**19.1.2.1. Discussion – No discussion.**

**19.1.2.2. Result: Accepted with no objection.**

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**19.2. 17/0046r1 (LB225 CR Sub-clause 27.6.4).**

19.2.1. Summary: Resolutions for CIDs 8501, 8717, 8718, 8719, 9086, 9604, 9930, 10071 (8 CID).

19.2.2. Discussion – No discussion.

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**19.2.3. Straw Poll: Do you agree to resolutions to CIDs CIDs: 8501, 8717, 8718, 8719, 9086, 9604, 9930, 10071 in doc 11-17/0046r1?**

**19.2.3.1. Discussion – No discussion.**

**19.2.3.2. Result: Accepted with no objection.**

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**20. AoB**

**21. Recess @ 16:20 until AM2 tomorrow (Thursday).**

**Thursday, January 21<sup>st</sup>, 2016, AM2 TGax full Session (10:30-12:30)****1 The meeting called to order by Osama Aboul-Magd (Huawei Technologies), the chairperson of the TGax, @10:30 AM**

1.1 Agenda 15/1516r2 is on the server. Rev. 3 is the working document.

**2 Announcement/Reminder**

2.1 Chair reminded IEEE 802 and 802.11 IPR P&P.

2.2 Chair asked people to state name and affiliation when addressing for the first time in the session.

2.3 Chair reminded people to do attendance.

**3 Agenda for this session**

3.1 Thursday PM1 and PM2

3.1.1 Call Meeting to order

3.1.2 Announcement/Reminder

3.1.2.1 IEEE 802 and 802.11 IPR Policy and procedure.

3.1.2.2 Attendance

3.1.3 Agenda Setting

3.1.4 Ad hoc meeting

3.1.5 Teleconference scheduling

3.1.6 SP on simulation scenarios document (Suhwook Kim)

3.1.7 TG Motions

3.1.8 Comment Resolution submissions and motions

3.1.8.1 11-17/0115

3.1.8.2 11-17/0134

3.1.8.3 11-17/0135

3.1.8.4 11-17/0137

3.1.8.5 11-17/0148

3.1.8.6 11-17/0132

3.1.8.7 11-17/0173

3.1.9 Adjourn

3.2 Chair asked if there are any modifications to the agenda.

3.3 Agenda approved without objection.

**4 Ad hoc meeting****4.1 Motion: Authorize TGax to hold an ad hoc meeting on March 8 – 10 in San Diego for the purpose of comment resolution.**

4.1.1 Moved by Bin Tian, Seconded by Yasu Inoue

4.1.2 Discussion

4.1.2.1 Two meeting rooms are secured.

4.1.2.2 A member asked if there is attendance fee for the ad hoc meeting. The answer was no. Thanks to the host.

4.1.2.3 Another member asked if the IEEE can issue the VISA. → Need to talk to WG vice chair.

4.1.3 Result: Y/N/A = 55/0/11, motion passes.

**5 Conference call scheduling**

5.1 Proposed teleconference schedule

5.1.1 February 2<sup>nd</sup>, 23<sup>rd</sup>, March 30<sup>th</sup>: 10:00 – 12:00 (ET)

5.1.2 February 16<sup>th</sup>, March 2<sup>nd</sup>, April 6<sup>th</sup>: 20:00 – 22:00 (ET)

**6 Straw Poll on Simulation Scenario (17/0032r1 by Suhwook Kim)**

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**6.1 Straw Poll: Do you agree to add following items which are described in 11-17/0095r1 to Simulation Scenario Document (11-14/0980r16)?**

- OFDMA parameters
- Simplified residential scenario
- Simplified outdoor large BSS

**6.1.1 Discussion**

6.1.1.1 C: We agreed to discuss parameters. → We can do it in March.

6.1.1.2 C: This is just to add simplified scenarios.

6.1.2 Result: There is no objection for this straw poll.

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**7 Motions – TG documents****7.1 CR Motions**

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7.1.1 CR Motion #133: Move to accept resolutions to CIDs; 3315, 3394, 3661, 3750, 4133, 4234, 10311 in doc 11-17/0047r1.

7.1.1.1 Moved by Young Hoon Kwon, Seconded by Reza Hedayat

7.1.1.2 Discussion – no discussion.

7.1.1.3 Result: The motion was accepted with no objection.

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7.1.2 CR Motion #134: Move to accept resolutions to CIDs; 3032, 3033, 3267, 3270, 3272, 3274, 3276, 3277, 3281, 3282, 3285, 3455, 3474, 3488, 3490, 3492, 3494, 3496, 3511, 3522, 3524, 3528, 3530, 3534, 3536, 3538, 3540, 3542, 3546, 3550, 3552, 5139, 5140, 5142, 5143, 5144, 5145, 5146, 7768, 7769, 7770, 7771, 7772, 7773, 8569, 8570, 8673, 6418, 6419, 6421, 6422, 6423, 6424, 9311, 9312, 9306, 9307, 9308, 9309, 9269, 8677, 8675 in doc 11-17/0056r1

7.1.2.1 Moved by Bin Tian, Seconded by Abhishek Patil

7.1.2.2 Discussion – no discussion.

7.1.2.3 Result: The motion was accepted with no objection.

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7.1.3 CR Motion #135: Move to accept resolutions to CIDs, 7684 and 7685 in doc 11-17/0056r1.

7.1.3.1 Moved by Bin Tian, Seconded by Abhishek Patil

7.1.3.2 Discussion – no discussion.

7.1.3.3 Result: The motion was accepted with no objection.

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7.1.4 CR Motion #136: Move to accept the resolution to CID 9773 in doc 11-17/0114r1.

7.1.4.1 Moved by Bin Tian, Seconded by Abhishek Patil

7.1.4.2 Discussion – no discussion.

7.1.4.3 Result: The motion was accepted with no objection.

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7.1.5 CR Motion #137: Move to accept resolutions to CIDs; 6125, 6193, 7037, 7248, 9418, 10162 and 10178 in doc 11-17/0060r3.

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7.1.5.1 Moved by Yunbo Li, Seconded by Lei Wang

7.1.5.2 Discussion – no discussion.

7.1.5.3 Result: The motion was accepted with no objection.

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7.1.6 CR Motion #138: Move to accept the resolution of CID 6541 in doc 11-17/0037r0.

7.1.6.1 Moved by Jarkko Kneckt, Seconded by Alfred Asterjadhi

7.1.6.2 Discussion – no discussion.

7.1.6.3 Result: The motion was accepted with no objection.

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7.1.7 CR Motion #139: Move to accept resolutions to CIDs, 5448, 5449, 7724, 7905, 8251, 8340, 9813 in doc 11-17/0085r1.

7.1.7.1 Moved by Po-Kai Huang, Seconded by Reza Hedayat

7.1.7.2 Discussion – no discussion.

7.1.7.3 Result: The motion was accepted with no objection.

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7.1.8 CR Motion #140: Move to accept resolutions to CIDs; 5059, 5324, 7259, 8336, 8532, 9483, 9828, 7677, 9482 in doc 11-17/0156r2.

7.1.8.1 Moved by Alfred Asterjadhi, Seconded by Abhishek Patil

7.1.8.2 Discussion – no discussion.

7.1.8.3 Result: The motion was accepted with no objection.

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7.1.9 CR Motion #141: Move to accept resolutions to CIDs 3375, 3480, 3808, 3893, 4349, 4417, 5820 in doc 11-17/0131r0.

7.1.9.1 Moved by Alfred Asterjadhi, Seconded by Abhishek Patil

7.1.9.2 Discussion – no discussion.

7.1.9.3 Result: The motion was accepted with no objection.

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7.1.10 CR Motion #142: Move to accept to resolve CID 8111 as revise, make the changes to D1.0 as shown in doc 11-16/0947r21.

7.1.10.1 Moved by Matthew Fischer, Seconded by Alfred Asterjadhi

7.1.10.2 Discussion

7.1.10.2.1 A member commented that the text is not relate to the CID#8111. But it is good to proceed.

7.1.10.2.2 Another member mentioned that he does not have objection to the text, but concerned with current language.

7.1.10.3 Result: Y/N/A = 45/0/31, motion passes.

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## 8 CR Presentations and Motions

8.1 Jarkko Kneckt (Apple) presented “,” based on the submission 11-17-0115-06.

8.1.1 Summary

8.1.2 Discussion

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**8.1.3 CR Motion #143: Move to accept resolutions to CIDs; 3077, 3218, 4783, 5196, 5197, 6192, 7023, 7024, 7025, 7026, 7027, 7507, 7615, 7890, 7970, 9592, 3217, 3219, 3220, 3221, 5198, 5199, 5679, 5946, 6013, 6015, 6016, 6017, 6157, 6158, 6190, 7028, 7029, 7030, 7031, 7202, 7247, 7614, 7616, 8085, 8720, 9409, 9725, 9726 and 9939 in doc 11-17/0115r7.**

**8.1.3.1 Moved by Jarkko Knecht, Seconded by Kiseon Ryu**

**8.1.3.2 Discussion – No discussion.**

**8.1.3.3 Result: The motion was accepted with no objection.**

## 8.2 CR Motion by Yongho Seok (Newracom)

**8.2.1 CR Motion #144: Move to accept resolutions to CIDs: 8501, 8717, 8718, 8719, 9086, 9604, 9930, 10071 in doc 11-17/0046r1.**

**8.2.1.1 Moved by Yongho Seok, Seconded by Abhishek Patil**

**8.2.1.2 Discussion – No discussion**

**8.2.1.3 Result: Motion was accepted with no objection.**

## 8.3 Abhishek Patil (Qualcomm) presented “,” based on the submission 11-17-0135-04.

8.3.1 Summary

8.3.2 Discussion

8.3.3 Next Step – Offline discussion suggested.

## 9 AoB

9.1 No other business.

## 10 Recess until start of PM2 session (16:00) today.

## Thursday, January 19<sup>th</sup>, 2017, PM2 TGax full Session (16:00-18:00)

### 11 The meeting called to order by Osama Aboul-Magd (Huawei Technologies), the chairperson of the TGax, @16:00.

11.1 Agenda 15/1587r4 is on the server. Rev. 3 is the working document.

### 12 Announcement/Reminder

12.1 Chair reminded IEEE 802 and 802.11 IPR P&P.

12.2 Chair asked people to state name and affiliation when addressing for the first time in the session.

12.3 Chair reminded people to do attendance.

### 13 Agenda for this session

13.1 Thursday AM2 and PM2 – as approved during the PM1 session.

13.1.1 Call Meeting to order

13.1.2 Announcement/Reminder

13.1.2.1 IEEE 802 and 802.11 IPR Policy and procedure.

13.1.2.2 Attendance

13.1.3 Agenda Setting

13.1.4 Ad hoc meeting

13.1.5 Teleconference scheduling

- 13.1.6 SP on simulation scenarios document (Suhwook Kim)
- 13.1.7 TG Motions
- 13.1.8 Comment Resolution submissions and motions
  - 13.1.8.1 11-17/0134, Abhishek Patil
  - 13.1.8.2 11-17/0135, Abhishek Patil
  - 13.1.8.3 11-17/0137, Abhishek Patil
  - 13.1.8.4 11-17/0148, Alfred Asterjadhi
  - 13.1.8.5 11-17/0132, Alfred Asterjadhi
  - 13.1.8.6 11-17/0173, John Son
- 13.1.9 Adjourn

#### 14 Comment Resolution Submissions and Motions (continued)

##### 14.1 Abhishek Patil (Qualcomm) presented “Proposed resolution for comments related to HE Operation element,” based on the submission 11-17-0135-05.

###### 14.1.1 Summary

###### 14.1.1.1 Resolutions for the following CIDs were proposed.

14.1.1.1.1 3035, 4771, 7998, 9674, 9338, 3034, 5923, 5924, 8261, 3036, 3177, 4772, 5331, 5551, 6062, 7561, 8134, 8259, 8400, 8683, 9337, 9510, 9663, 9845, 5214, 5909, 6437, 6439, 6441, 6442, 6443, 6447, 4775, 6452, 6458, 9673, 5910, 7996, 4774, 5922, 7995, 9757, 6551

###### 14.1.2 Discussion

14.1.2.1 A member asked for editorial modification. → Abhi updated the document to rev. 6.

**14.1.3 CR Motion #145: Move to accept resolutions to CIDs; 3035, 4771, 7998, 9674, 9338, 3034, 5923, 5924, 8261, 3036, 3177, 4772, 5331, 5551, 6062, 7561, 8134, 8259, 8400, 8683, 9337, 9510, 9663, 9845, 5214, 5909, 6437, 6439, 6441, 6442, 6443, 6447, 4775, 6452, 6458, 9673, 5910, 7996, 4774, 5922, 7995, 9757, 6551 in doc 11-17/0135r6.**

**14.1.3.1 Moved by Abhishek Patil, Seconded by Bin Tian.**

**14.1.3.2 Discussion: No discussion.**

**14.1.3.3 Result: The motion was accepted with no objection.**

#### 14.2 Leftover motions.

**14.2.1 CR Motion #146: Move to accept resolution of CID 6124 in doc 11-17/0072r2.**

**14.2.1.1 Moved by Bin Tian, Seconded by Bo Sun.**

**14.2.1.2 Discussion: No discussion.**

**14.2.1.3 Result: The motion was accepted with no objection.**

**14.2.2 CR Motion #147: Move to accept resolutions to CIDs, 5475, 5388, 5734, 5213, 5477, 8240, 7604, 10291, 5479, 9953, 7168 in doc 11-17/0045r6.**

**14.2.2.1 Moved by Yongho Seok, Seconded by Reza Hedayat.**

**14.2.2.2 Discussion:**

**14.2.2.2.1 Clarification requested whether CID 9953 is included. → It is included.**

**14.2.2.3 Result: The motion was accepted with no objection.**

#### 14.3 Presentation by Abhishek Patil (Qualcomm)

14.3.1 Abhi presented “Proposed resolution for comments related to Section 27.11.4 (BSS Color),” based on the submission 11-17-0134-07.

14.3.1.1 Summary

14.3.1.1.1 Resolutions for the following CIDs on 27.11.4 BSS Color were proposed.  
 14.3.1.1.1.1 CIDs 3084, 3085, 3086, 5387, 7166, 3088, 9458, 10299, 6777, 6781, 6786, 6779.

14.3.1.2 Discussion

14.3.1.2.1 A member discussed the relation between BSS Color and primary/secondary channels. Also discussed the format of BSS Color Collision information element.

14.3.1.2.2 Another member discussed that multiple BSS Color may be reported. Although the report is optional, it will be good to specify more details on this point.

14.3.1.2.3 There was a discussion whether the request mechanism is necessary or not. Current assumption is it is not required.

14.3.1.2.4 Another member discussed the possibility of temporary collision of BSS Color assuming that there will be 802.11ax based mobile AP.

14.3.1.2.5 Another member suggested MIB.

14.3.1.3 Next Step – Need more discussion. Motion was deferred.

**14.3.2 Abhi presented “Proposed resolution for comments related to BSS Color Change element (section 9.4.2.222),” based on the submission 11-17-0137-02.**

14.3.2.1 Summary

14.3.2.1.1 Resolutions for following CIDs were proposed:

14.3.2.1.1.1 3037, 7060, 9676, 5400, 5405, 6320, 3179, 5844, 7776

14.3.2.2 Discussion – No discussion.

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**14.3.2.3 CR Motrion #148: CR Motion #148: Move to accept resolutions to CIDs; 3037, 7060, 9676, 5400, 5405, 6320, 3179, 5844, 7776 in doc 11-17/0137r2.**

**14.3.2.3.1 Moved by Abhishek Patil, Seconded by Yasu Inoue.**

**14.3.2.3.2 Discussion – no discussion.**

**14.3.2.3.3 Result: The motion was accepted with no objection.**

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14.4 Presentation by Alfred Asterjadhi (Qualcomm)

14.4.1 Alfred presented “Comment Resolution for multiple subclauses of 9.2.4.2,” based on the submission 11-17-0132-00.

14.4.1.1 Summary

14.4.1.1.1 Resolutions for the following CIDs on multiple subclauses in 9.2.4.2 were proposed.

14.4.1.1.1.1 5881, 4723, 4724, 5433, 6253, 7709, 8174, 8590, 9985, 9986, 5434, 5435, 5821, 6256, 7710, 7711, 7712, 7866, 7868, 7869, 5446, 5447, 7721, 7758, 7920, 7921, 8137, 9661, 9662

14.4.1.2 Discussion – No discussion.

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**14.4.1.3 CR Motion #149: Move to accept resolutions to CIDs;**

**- 5881**

**- 4723, 4724, 5433, 6253, 7709, 8174, 8590, 9985, 9986**

**- 5434, 5435, 5821, 6256, 7710, 7711, 7712, 7866, 7868, 7869**

**- 5446, 5447, 7721**

**- 7758, 7920, 7921, 8137, 9661, 9662**

**In doc 11-17/0132r0**

**14.4.1.3.1 Moved by Alfred Asterjadhi, Seconded by Bin Tian**

**14.4.1.3.2 Result: The motion was accepted with no objection.**

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**14.4.2 Alfred presented “Comment resolution for 9.2.4.1.X,” based on the submission 11-17-0148-01.****14.4.2.1 Summary**

**14.4.2.1.1** Resolutions for the following CIDs on multiple subclauses in 9.2.4.2 were proposed.

14.4.2.1.1.1 3151, 3152, 4721, 5819, 6249, 6252, 7392, 7708, 8367, 8368, 8642, 9355, 9618, 7298

**14.4.2.2 Discussion**

**14.4.2.2.1** There was a comment that we need definition for “non-HE.” → Currently we have definition for non-HE PPDU, but we do not for non-HE STA.

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**14.4.2.3 CR Motion #150: Move to accept resolutions to CIDs; 3151, 3152, 4721, 5819, 6249, 6252, 7392, 7708, 8367, 8368, 8642, 9355, 9618, 7298 in doc 11-17/0148r1.**

**14.4.2.3.1 Moved by Alfred Asterjadhi, Seconded by Abhishek Patil.**

**14.4.2.3.2 Discussion – no discussion.**

**14.4.2.3.3 Result: The motion was accepted with no objection.**

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**14.5 Presentation by John Son (WILUS Institute)****14.5.1 John presented “CIDs on Signaling for UL HE MU PPDU,” based on the submission 11-17-0173-00.****14.5.1.1 Summary**

**14.5.1.1.1** Resolutions for the following CIDs were proposed.

14.5.1.1.1.1 5409, 5412, 6194, 7032, 7033, 9770

**14.5.1.2 Discussion**

**14.5.1.2.1** A member discussed the possibility of using different format

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**14.5.1.3 CR Motion #151: CR Motion #151: Move to accept resolutions to CIDs; 5409, 5412, 6194, 7032, 7033, 9770 in doc 11-17/0173r0.**

**14.5.1.3.1 Moved by John Son, Seconded by Bin Tian**

**14.5.1.3.2 Discussion – No discussion.**

**14.5.1.3.3 Result: The motion was accepted with no objection.**

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**15 AOB**

**15.1** No other business to conduct.

**16 Adjournment**

**16.1** TGax adjourned for the week @ 17:36 (ET).