IEEE P802.11  
Wireless LANs

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| IEEE 802.11 TGax  May 2016 Waikoloa PHY Ad Hoc Meeting Minutes | | | | |
| Date: 2016-01-21 | | | | |
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Abstract

TGax meeting minutes for the IEEE 802.11 Waikoloa PHY ad hoc session, May, 2016.

**IEEE 802.11 Task Group ax PHY Ad Hoc**

**May 2016 Waikoloa Meeting**

**Monday, May 16th, 2016, PM2 TGax Session**

1. **Meeting called to order by Bo Sun (ZTE)** 
   1. The agenda is contained in 11-16/0693r0 which is on the server.
2. **Administrative Items**
   1. Chair reminded the IEEE 802 and IEEE 802.11 Policy and Procedure.
   2. Chair also reminded to do attendance.
3. **Set and approve agenda**
4. **Presentations**

**4.1**

**16/0608 Beamforming Feedback Report Structure**

**Sameer Vermani (Qualcomm)**

**Discussions: None**

**SP#1:**

**Do you agree to add the following feedback structure for MU type feedback to 11ax SFD:**

**(Figure in slide 19)**

**SP Result: 46Y/0N/3A; SP passed.**

**SP#2:**

**Do you agree to add the following feedback structure for SU type feedback to 11ax SFD?**

**(Figure in slide 20)**

**SP Result: No objection; SP passed.**

**SP#3:**

**Do you agree to add the following feedback structure for CQI feedback to 11ax SFD :**

**(Figure in slide 21)**

**SP Result: No Objection; SP passed.**

**SP#4:**

**Do you agree to adopt the following design for the HE-MIMO control field and add it to the 11ax SFD?**

**Changes from VHT are listed below**

* + **BW (2 bits) – Same meaning as channel width field of VHT**
  + **RU\_Start\_Index (7 bits) : The index of the first RU26 of the feedback being sent**
  + **RU\_End\_Index (7 bits) : The index of the last RU26 of the feedback being sent**
  + **Grouping is 1 bit**
    - **0: Ng=4, 1: Ng=16**
  + **Feedback type is 2 bits**
    - **0: SU, 1: MU, 2: CQI only, 3: Reserved**
  + **4 bits unused (reserved)**

**(Figure in slide 22)**

**SP Result: No Objection; SP passed.**

**4.2**

**16/0611 Remaining Issues in Trigger Frame Design, Sameer Vermani (Qualcomm)**

**Discussions:**

Q: What does full BW mean?

A: One user in full BW.

Q: Is this just a design choice?

A: Yes

**SP#1:**

**Do you agree to add the following to the SFD?**

**“BW subfield length in the Common Info Field of the Trigger frame is 2 bits”**

**SP Result: No Objection; SP passed.**

**SP#2:**

**Do you agree to add the following to the SFD?**

**“PE subfield length in the Common Info Field of the Trigger frame is 3 bits”**

**SP Result: No Objection; SP passed.**

**SP#3:**

**Do you agree to add the following to the SFD?**

**“ ‘CP and LTF Type’ subfield length in the Common Info Field of the Trigger frame is 2 bits”**

Q: this is the same as those in SIGA and SIGB?

A: yes

Q: Is CP and LTF two fields?

A: No, one combined field.

**(Adding a quote mark in r1—refer to r1 for the SP text)**

**SP Result: No Objection; SP passed.**

**SP#4:**

**Do you agree to add the following to the SFD?**

**The AP specifies in the Trigger frame, the value of SR and Reserved bits which is used by the STA in HE-SIG-A of a trigger-based PPDU.**

**SP Result: No Objection; SP passed.**

**SP#5:**

**Do you agree to add the following to the SFD?**

* The HE AP shall set the MU MIMO LTF Mode bit in the trigger to indicate:
  + Single-stream pilots for any OFDMA transmission (including the case where MU-MIMO happens on part of the BW)
  + The appropriate LTF mode (single stream pilots or masked LTFs) for full BW MU-MIMO

**SP Result: No Objection; SP passed.**

**SP#6:**

**Do you agree to add the following ordering of the common info fields of the trigger frame to the SFD?**

**(Figure in slide 28)**

**SP Result: No Objection; SP passed.**

**4.3**

**16/0613 HE-SIG-B Related Issues, Lochan Verma (Qualcomm)**

**Discussions:**

Q: why select 2046

A: other combinations were used

**SP#1:**

**Do you agree to add the following to the 11ax SFD ?**

**“AID value of 2046 is used to indicate unallocated RUs in the user-specific HE-SIG-B content blocks”**

Q: could you change from reserved to used.

A: Yes

**(see modified SP text in r1)**

**SP Result: No Objection; SP passed.**

**SP#2:**

**Do you agree to add the following to the 11ax SFD?**

**“For an 80 MHz and 160 MHz PPDUs, in each SIG-B content channel, the HE-SIG-B common blocks of the multiple 20MHz channels that the content channel corresponds to, are transmitted in an increasing order of the absolute frequency”**

**SP Result: No Objection; SP passed.**

**SP#3:**

**Do you agree to add the following to the 11ax SFD?**

**“For MU-MIMO allocations of RU sizes larger than 242 tones, user specific content blocks are ordered across the two SIG-B content channels from left to right on the 1st SIG-B content channel, followed by left to right on 2nd SIG-B content channel”**

**SP Result: No Objection; SP passed.**

**SP#4:**

**Do you agree to add the following to the 11ax SFD?**

**“For HE MU PPDU transmissions on the UL, the STA-ID field of the HE-SIG-B per-user field shall carry the AID of the transmitter assigned by the AP”**

Q: No HE\_MU should be transmitted in UL?

A: Spec allows it if there is only one RU.

**SP Result: No Objection; SP passed.**

**4.4**

**16/0617 Remaining topics in power control, Bin Tian (Qualcomm)**

**Discussions:**

Q: no Tx power accuracy requirement?

A: we have that.

Q: Power range upper limit is too high, will submit comments.

A: It is just an upper limit

Q: Any simulation results on power control?

A: no, this just discusses signaling

**SP#1:**

**Do you agree to add the following text to 11ax SFD**

**The AP Tx power is signaled in trigger frame using 6 bits.**

**Value 0 to 60 maps to -20dBm to 40dBm with 1dB resolution. Value 61, 62 and 63 are reserved.**

**AP Tx power is defined as the averaged power in 20MHz unit and is the combined power over all Tx antennas.**

**SP Result: No Objection; SP passed.**

**SP#2:**

**Do you agree to add the following text to 11ax SFD**

**The target received power (RSSI) in trigger frame is signaled using 7 bits.**

**Value 0 to 90 maps to -110 to -20dBm target received signal level with 1dB resolution.**

**Value 127 indicates STA to transmit at its max power allowed for the assigned MCS**

**Other values are reserved.**

**SP Result: No Objection; SP passed.**

**SP#3:**

**Do you support adding the following text (in red) to 11ax SFD after the paragraph**

“STA sets its Tx power per the following equation

is the DL path loss computed by the STA based on the AP transmit power signaled in the Trigger message and the measured RSSI of the Trigger message

is signaled by the AP in the trigger message”

The STA’s actual Tx power is further subject to its minimum and maximum TX power limit due to hardware capability, regulatory requirements as well as non-802.11 in-device coexistence requirements

**SP Result: No Objection; SP passed.**

**SP#4:**

**Do you agree to add the following text to 11ax SFD**

STA’s power headroom is signaled using 6bits

5 bits indicate the headroom value of [0 31]dB with resolution of 1dB

1 bit flag indicates whether the minimum TX power of the current MCS is reached by the STA (=1: transmit at its minimum capable Tx power for current MCS)

where a STA’s headroom is defined as: where

is the potential transmit power of the STA when target RSSI is set to value of 127, i.e. max power, for current MCS and current UL packet

is the transmit power of the current UL packet

**SP Result: No Objection; SP passed.**

**SP#5:**

Do you agree to make the following changes (highlighted in red) to 11ax SFD

STAs that participate in HE trigger-based PPDU shall support the following absolute Tx power requirements and the RSSI measurement accuracy requirements for the two device classes:

Class A:

Tx power accuracy: +/-3dB

RSSI measurement accuracy: ~~+/-2dB~~ +/- 3dB

Class B:

Tx power accuracy: +/-9dB

RSSI accuracy: +/-5dB

The RSSI accuracy requirements shall be applied to receive signal level range from -82dBm to -20dBm (2.4GHz) or -30dBm (5GHz). The requirement is stated for nominal (room) temperature conditions. RSSI is measured over legacy preamble

**(Typo “82dBm” ->”-82dBm”, refer to r1 for the correct SP text)**

Q: don’t know how to measure given the inaccuracy, better to clarify the word “platform”

A: agree to work in other organization to clarify platform requirement.

**SP Result: 30Y/1N/8A; SP passed.**

**4.5**

**16/0618 11ax CSD Design, Bin Tian (Qualcomm)**

**Discussions:**

**SP#1:**

**Do you support to add to the SFD reuse the 11ac per stream CSD values for all HE PPDU?**

**(refer to r1 for revised SP text)**

**SP Result: No Objection; SP passed.**

**SP#2:**

**Do you support that in UL MU-MIMO transmission the per stream CSD value is based on global stream index?**

**(refer to r1 for revised SP text)**

**SP Result: No Objection; SP passed.**

**SP#3:**

**Do you support per antenna CSD values for in Pre HE modulation**

* + **Reuse the 11ac per antenna CSD values when beam change =1**
  + **Not specified (absorbed in the Q matrix) when beam\_change=0?**

**(refer to r1 for revised SP text)**

**SP Result: No Objection; SP passed.**

**SP#4:**

**Do you support that in UL MU transmission the per antenna CSD value is based on the antenna index of each STA (i.e. local index)?**

**(refer to r1 for revised SP text)**

**SP Result: No Objection; SP passed.**

**4.6**

**16/0619 PAPR Reduction for HE SIG-B, Bin Tian (Qualcomm)**

**Discussions**:

Q: Broadcast STAID being all 1s, phase rotates back to all 0?

A: no matter what SIGB content the (-1)^k introduces phase ramp in freq domain therefore time shift, reducing PAPR.

Q: Did you use random bits in SIGB or issued bit pattern

A: We tested both random and worst cases.

**SP#1:**

**Do you support the following PAPR reduction scheme for HE SIG-B**

* + Phase rotation is applied to the HE SIG-B data tones after constellation mapping. For the kth data tone in the HE SIG-B, the phase rotation pattern is defined as

1 for 0=<k<26 and (-1)k for 26=<k<52

* + For DCM + MCS0, since the same rotation has already been applied in the DCM BPSK bit mapping, this step of phase rotation after constellation mapping shall be skipped
  + Legacy gamma rotation still applies among different 20MHz channels

**SP Result: No Objection; SP passed.**

**Session Recessed**

**May, May 16th, 2016, PM1 TGax Session**

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**4.1**

**11-16/0620 DCM PHY Parameters, Hongyuan Zhang (Marvell)**

**Discussions:**

**SP1**

* **Do you agree to add the following text to the SFD:**
  + **When DCM = 1, the *NSD*, *NCBPS*, and *NDBPS* are set by the following expressions:**

**In the case of MCS0, DCM=1, Nss=1, 106-RU or 242-RU, if the coding is BCC, then for each OFDM symbol 1 bit is padded after the NDBPS\*2 BCC encoded bit before going into the BCC interleaver; if the coding is LDPC, LDPC encoding flow should be based on NDBPS and NCBPS as defined in the above equations**

****

**SP Result: No Objection; SP passed.**

**SP2:**

* **Do you agree to make the following changes to D0.1 MCS Tables:**
  + **When DCM=1, change the *NSD* parameter to be ½ of DCM=0 cases for the same RU size.**
  + **When DCM=1, change the *NCBPS* parameter to be ½ of DCM=0 case.**
  + **When DCM=1, change the *NDBPS* parameter to be ½ of DCM=0 case, or take the floor for the two cases: 106-RU, MCS0, DCM=1, Nss=1, and 242-RU, MCS0, DCM=1, Nss=1.**
  + **When DCM=1, change the coding rate *R* parameter to be identical to the DCM=0 case.**
  + **Limit DCM=1 only to the allowed Nss.**

**SP Result: No Objection; SP passed.**

**4.2**

**11-16/0621 BCC Interleaver Parameters for DCM, Tianyu Wu (Mediatek)**

**Discussions:**

**SP1**

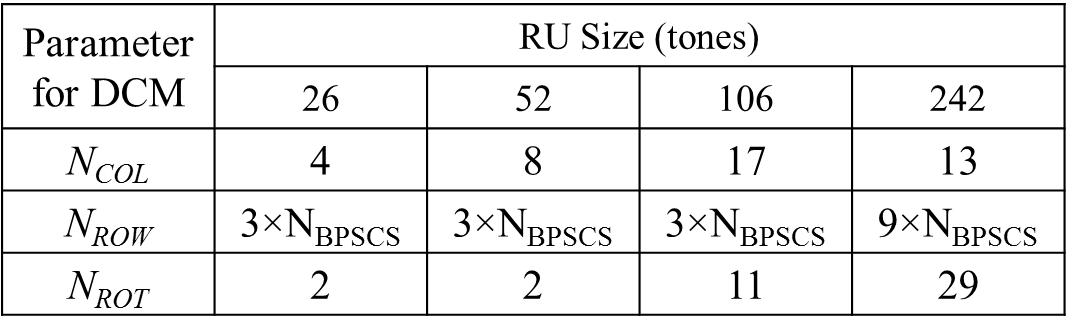
* **Do you agree to add the following text to the 11ax SFD?**

**DCM+MCS0 has same transmission flow as other DCM MCSs.**

**SP Result: No Objection; SP passed.**

**SP2:**

* **Do you agree to add the following text to 11ax SFD?**
  + **The interleaver parameters for DCM are given in the following table:**



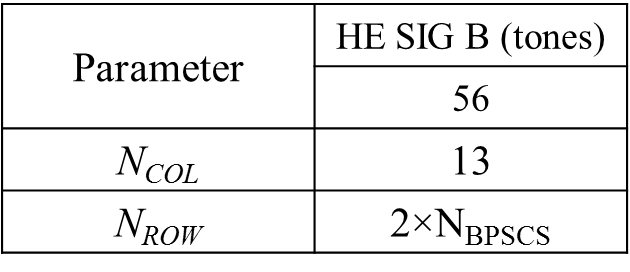
**Value of NBPSCS for DCM modulations equals to NBPSCS of non DCM modulations with same constellation size**

**SP Result: No Objection; SP passed.**

**SP3:**

* **Do you agree to add the following text to 11ax SFD?**

**The interleaver parameters for HE SIG B with DCM are given in the following table:**



**SP Result: No Objection; SP passed.**

**4.3**

**11-16/0655 On Modulation of MCS0 DCM and DCM Capability, Jianhan Liu (Mediatek)**

**Discussions:**

Q: if remove N\_SD.pi, the same effect

A: this item is more for illustration purpose

**SP1:**

**Do you agree to add the 11ax SFD the following MCS0 DCM constellation mapping for data subcarriers *k* and *k+NSD***

** is BPSK modulated , **

***Note: NSD is defined for DCM which is half of  ***

**SP Result: No Objection; SP passed.**

**SP2:**

* **Do you agree to add the following usage of DCM to 11ax SFD?**
  + **DCM is only applied to MCS0, MCS1, MCS3 and MCS4.**
  + **DCM is only applied to 1 and 2 spatial streams.**
  + **DCM is only applied to HE SU PPDU, HE extend range SU PPDU, and SU RUs in HE MU PPDU.**
  + **DCM is not applied to MU-MIMO. The DCM field in the HE-SIGB per user for MU-MIMO is changed to a reserved field.**
  + **DCM is not applied to STBC.**

**SP Result: No Objection; SP passed.**

**SP3:**

* **Do you agree to add the following capability field of DCM to 11ax SFD?**
  + **Max constellation supported: 2 bits.** 
    - **00: does not support DCM; 01: BPSK; 10: QPSK; 11: 16QAM**
  + **Max number of streams supported: 1 bit.**
    - **0: 1stream;  1: 2 streams**

**SP Result: No Objection; SP passed.**

**4.4**

**11-16/0622 16QAM Mapping for DCM, Sudhir Srinivasa (Marvell)**

**Discussions:**

**SP1:**

**Do you support to add the following to the 11ax SFD?**

* **When DCM=1, 16QAM constellation mapping is done by swapping b0 and b1, and also b2 and b3 for the second half of tones, where b0 ~ b3 are the encoded bits that maps to one 16QAM constellation for the first half of the tones, i.e.:**

****

**where NSD is defined for DCM=1, which is half of the NSD value for the same RU size when DCM=0.**

**SP Result: No Objection; SP passed.**

**4.5**

**11-16/0626 Feedback Element Compression for 802.11ax, Kome Oteri (Interdigital)**

**Discussions:**

Q: In slide 8 how much you save by exploring the psi dynamic range, e.g. only one psi\_7 but 8 psi\_1.

A: Need investigation, may see some reduction, not as much.

**SP1**

**Do you agree to add the following to section 4.6 of the SFD?**

* **11ax shall provide mechanisms that further compress the feedback elements/angles ((phi, psi)) of compressed beamforming feedback as defined in section 8.4.1.48 in 802.11ac shall be considered**

Q: No action when converting to draft spec, should not affect SFD text?

A: A simple extension of existing scheme in SFD.

Q: Change “consider” to “provide” to be clear

A: I am fine.

Q: You will narrow down the option in next meeting?

A: Yes, and may have additional idea.

Q: What is the baseline for “further compress”?

A: 11ac compression

**(see r1 for exact SP text)**

**SP Result: 3Y 11N (many)A SP Failed.**

**4.6**

**11-16/0633 Left over Issues in RA Signaling for HE-SIGB, Yan Zhang (Marvell)**

**Discussions:**

**SP1:**

**Do you support to add the following to the current SFD:**

* + **For full BW 80MHz, add 1 bit to indicate if center 26-tone RU is allocated in the common block fields of both SIGB content channels with same value.**
  + **For full BW160/80+80MHz, add 1 bit to indicate if center 26-tone RU is allocated for one individual 80MHz in common block fields of both SIGB content channels.**

Q: for 80MHz only?

A: for both 80MHz and 160MHz.

**(see r3 for exact SP text)**

**SP Result: No Objection; SP passed.**

**SP2:**

Do you support to use 36 “Definition TBD” entries in Table 4 in the current SFD 3.2.5 HE-SIG-B sub-clause to indicate most frequently used partial bandwidth allocations, as shown in slide 16?

**(see r3 for exact SP text)**

**SP Result: No Objection; SP passed.**

**4.7**

**11-16/0636 TXOP Duration field in HE-SIG A, Jeongki Kim (LG)**

**Discussions:**

**SP1:**

**Do you agree to add the following into SFD?**

**In HE-SIG-A of HE (extended range) SU PPDU/HE MU PPDU/HE trigger-based PPDU, the size of TXOP Duration field is 7btis and 1 bit is reserved**

**SP Result: No Objection; SP passed.**

**4.8**

**11-16/0635 BW indication for Non-contiguous Channel Bonding, Yunbo Li (Huawei)**

**Discussions:**

**SP1:**

**Do you agree that 3 bits are used for the BW field in SIG-A of HE\_MU PPDU?**

**(see r2 for exact SP text)**

**SP Result: No Objection; SP passed.**

**4.9**

**11-16/0637 Load balancing indication for MU-MIMO over 484-tone and larger RU in OFDMA, Ming Gan (Huawei)**

**Discussions:**

**SP1:**

**Do you agree to add the following entries in 8-bit table to the IEEE 802.11ax SFD**

**two entries to indicate ‘Zero STA for 484-tone RU’ and ‘Zero STA for 996-tone RU’ respectively**

**SP Result: No Objection; SP passed.**

**4.10**

**11-16/0638, Discussions for Non-contiguous Channel Bonding, Jon Son (WILUS)**

**Discussions:**

**SP1:**

* **Do you agree to add the following underlined text into 11ax SFD ?**
  + ***3.1 General***
  + ***The non-contiguous channel bonding will be supported in 802.11ax by:***
    - ***Transmitting using OFDMA PPDU format by nulling the tones of one or more secondary channels in 80 MHz and 160 (80+80) MHz;***
    - ***Modes for non-contiguous channel bonding are TBD;***
    - ***Non-contiguous channels within primary or secondary 80 MHz only exists at AP side.***
    - **When a secondary channel adjacent to a center 26-tone RU is overlapped or partially overlapped, the center 26-tone RU is also nulled.**

**(see r2 for revised SP text)**

**SP Result: No Objection; SP passed.**

**Session Recessed**

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**4.1**

**11-16/0639 Follow-up on HE-SIG-B user-specific field, Jinsoo Choi (LG)**

**Discussions:**

**SP1:**

* **Do you agree to add the following text to 11ax SFD** 
  + **The user-specific field for center 26-tone RU in BW>=80MHz is located at the end of the user specific fields in either SIGB content channel 1 or SIGB content channel 2 channel, if assigned?**
    - **SIGB content channel 1 in 80MHz BW**
    - **SIGB content channel 1 for lower 80MHz and SIGB content channel 2 for upper 80MHz in 160MHz BW**

**SP Result: No Objection; SP passed.**

**4.2**

**11-16/0649 Feedback Tone Map and Quantization, Sriram Venkateswaram (Broadcom)**

**Discussions:**

**SP1:**

**Do you agree add to the 11ax SFD**

* For all feedback types, the AP shall use 7 bits each to signal the *start* and *end* 26 RU for partial bandwidth feedback
* The index used to signal a 26 RU increases with frequency, with the minimum value of the index being 0. For NDP bandwidths of 20, 40, 80, 160 MHz, the maximum value of the index shall be 8, 17, 36 and 73 respectively.
* The *start* and *end* 26 RUs in the HE MIMO Control Field shall use the same indexing as above

**SP Result: No Objection; SP passed.**

**SP2:**

**Do you agree add to the 11ax SFD**

The STA feeds back the channel on all tones from the feedback roster (Table 1, document on slide 13) between

* *“S”* tonecorresponding to *start* 26 RU index

and

* *“E”* tonecorresponding to *end* 26 RU index

where the *“S”* and *“E”* tonesare defined as function of RU index in Table 2a for Ng = 4 and Table 2b for Ng = 16 (document on slide 13)

Note: For 160 MHz, to determine the *“S”* and *“E”* tones*,* RUs 37-73 occupying the higher 80 MHz use the same table as RUs 0-36 occupying the lower 80 MHz

**SP Result: No Objection; SP passed.**

**SP3:**

**Do you agree add to the 11ax SFD**

The only quantization resolutions for the Givens angles ϕ, ψ in

* + MU feedback shall be (9,7) and (7,5) bits
  + SU feedback shall be (6,4) and (4,2) bits

Note: MU resolution with Ng = 16 is limited to (9,7)

**SP Result: No Objection; SP passed.**

**4.3**

**11-16/0652 Power Scaling for Channel Training Signals, Xiaogang Chen (Intel)**

**Discussions:**

**SP1:**

* + Do you agree to add to the TG Specification Frame work document?
  + For the extended range SU PPDU,
    - L-LTF per-tone power is boosted by 3 dB relative to HE-SIG-A, L-STF is transmitted with the same total power as L-LTF;
    - The extra four tones on the edge of L-SIG/RL-SIG in 20MHz band have the same per-tone transmission power as the per-tone transmission power of L-LTF tones, while the other populated tones in L-SIG and RL-SIG have 3dB lower per-tone transmission power than L-LTF tones.

**SP Result: No Objection; SP passed.**

**4.4**

**11-16/0654 CP and LTF Options and Signaling, Ron Porat (Broadcom)**

**Discussions:**

**SP1:**

**Do you support to change the bit width of the CP+LTF field in SIGA for SU and MU to 2 bits?**

**(see r1 for precise SP text)**

**SP Result: No Objection; SP passed.**

**SP2:**

**Do you support to add 4x LTF + 3.2uS as an optional mode for the NDP frame?**

**(see r1 for precise SP text)**

**SP Result: No Objection; SP passed.**

**SP3:**

* **Do you support to define the following options to be signaled in the trigger frame for UL Trig PPDU**
  + 2x LTF + 1.6 uS (mandatory)
  + 4x LTF + 3.2 uS (mandatory)
  + 1x LTF + 1.6 uS for full BW only. TBD whether mandatory to transmit in UL Trig PPDU

**(see r1 for precise SP text)**

**SP Result: No Objection; SP passed.**

**4.5**

**11-16/0656 On 1024QAM Modulation, Jianhan Liu (Mediatek)**

**Discussions:**

Q: Typo on constellation mapping Quadrant-I, order of the bits is reversed.

A: will check, and bring back exact mapping

Q: Did you try MLD on NUC?

A: No, MLD only on UC

**SP1:**

**Do you agree to add 11ax SFD that 1024QAM uses uniform constellation with Gray mapping?**

**SP Result: No Objection; SP passed.**

**4.6**

**11-16/0610 Proposed resolutions to comments on clause 26.3.9.7, Ross Jian Yu (Huawei)**

Discussions on CID 1682 & CID 474:

Q: the reason is for rejecting all these two CIDs?

A: Yes

Discussions on CID 1196: revised the proposed text change, refer to r3

Discussions on CID 1197 & 356 & 2006 & 2533 & 2285: LDPC extra symbol setting may impact PAPR, better double check and keep the LDPC Extra Symbol 0/1 definition being TBD; the coding field can be defined as 0 for BCC 1 for LDPC, refer to r3 for precise edits. Change all the resolutions of these CIDs to revised.

Discussions on CID 1687: suggest to delete “further”, refer to r3.

Discussions on CID 296 & 1007 & 541 & 2538 & 2124: need some discussion on the detailed Num of MUMIMO users definitions, better keep the def TBD for now. Mark all the resolutions of this group of CIDs being “revised”

Discussions on CID 540 & 2168: editorial change on the text, refer to r3.

Discussion on CID 2004: suggest to remove the 2nd half of the reason for rejection. The 4 bits are not sufficient to include all the modes for SU so far, so as HE-MU case. Refer to r3 for revised reason.

**SP1: Do you agree with the comment resolution of the following CIDs (we went through in this session so far) in 0610r3?**

**SP Result: No Objection; SP passed.**

**Session Recessed**

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**4.1**

**(Continued from the previous session)** **11-16/0610-r3 Proposed resolutions to comments on clause 26.3.9.7, Ross Jian Yu (Huawei)**

Discussions on CIDs 2537 & 2128 & 2013 & 2009: change the resolution to “Revised”, also change the referred clause number of CRC calculation to the correct one. Refer to r4 for the changes.

Discussions on CID 2167: also add Doppler bit for HE-MU format, refer to r4 for the changes.

Discussions on CID 2534 & 2008: change resolution to revised, adding a-factor and PE disambiguity fields referring to detailed sections. Refer to r4 for the changes

Discussions on CID 2007: commenter’s suggestion is better, DCM is only for MCS0,1,3,4. May defer this CID for next time after more DCM restrictions are motioned.—will delete this CID from r4.

Discussions on CIDs 2005 & 2123 & 2747: new motions are coming, will defer these 3 CIDs for next meeting—will delete these CIDs from r4.

Discussions on CID 2015: change to revised. Refer to r4 for the change.

Discussions on CID 2018: change to revised. Refer to r4 for the change.

Discussions on CID 2244: will defer this CID to next time, will delete this CID from r4

**SP1: Do you agree with the comment resolution of the following CIDs (we went through in this session) in 0610r4?**

**SP Result: No Objection; SP passed.**

**4.2**

**11-16/0614 Comment Resolutions on Clause 26.1.1 Part 1, Lochan Verma (Qualcomm)**

Discussions: revise the channel bonding related changes, refer to r1 for the changes.

**SP1: Do you agree with the comment resolution of all the CIDs in 0614r1?**

**SP Result: No Objection; SP passed.**

**4.3**

**11-16/0615 Comment Resolutions on Clause 26.3.12 Part 1, Lochan Verma (Qualcomm)**

Discussions: revise the proposed text change on CID 2126, refer to r1 for the change.

**SP1: Do you agree with the comment resolution of all the CIDs in 0615r1?**

**SP Result: No Objection; SP passed.**

**4.4**

**11-16/0623 Comment Resolutions on Section 26.3.10.12 Pilot subcarriers, Bin Tian (Qualcomm)**

Discussions: RU numbers could be optimized, but not discussed in the referred subclause with this document.

**Session Recessed**

**May, May 18th, 2016, PM1 TGax Session**

1. **Meeting called to order by Bo Sun (ZTE)** 
   1. The agenda is contained in 11-16/0693r0 which is on the server.
2. **Administrative Items**
   1. Chair reminded the IEEE 802 and IEEE 802.11 Policy and Procedure.
   2. Chair also reminded to do attendance.
3. **Set and approve agenda**
4. **Presentations**

**4.1**

**11-16/0623 Comment Resolutions on Section 26.3.10.12 Pilot subcarriers, Bin Tian (Qualcomm) —**

Discussions: CID 2095 revised text changes, refer to r1

**SP1: Do you agree with the comment resolution of all the CIDs in 0623r1?**

**SP Result: No Objection; SP passed.**

**4.2**

**11-16/0625 Comment Resolutions on Section 26.3.6 Timing-related parameters, Bin Tian (Qualcomm)**

Discussions: suggest to conduct the modified text for the first CID, then the other similar CID resolutions refer to the resolution of the first CID. Refer to r1.

Will revise and come back run the SP

**4.3**

**11-16/0634 11ax Comment Resolutions for Clauses 26.3.2, Yan Zhang (Marvell)**

Discussions on CID 1929: change to revised and quote the revision text in this document, refer to r1.

Discussions on CIDs 836, 883, 884: new materials are discussed in this meeting and potentially will change SFD, will defer these three comments.

Need to refer to the doc number on the revision text in the resolution column.

Suggest to conduct the modified text for the first CID, then the other similar CID resolutions refer to the resolution of the first CID. Refer to r1.

Will revise and come back run the SP

**4.4**

**11-16-0653 11ax D0.1 Comment Resolution for Clause 26.3.3, 26.3.1, 26.3.10.8, Xiaogang Chen (Intel)**

Discussions: need to revise the resolution column formats, will revise and come back run the SP.

**4.5**

**11-16-0658 TGax D0.1 Comment Resolutions on 26.3.7.1, Jinsoo Choi (LG)**

Discussions: will revise from “xxx subcarrier-RU” to “xxx tone-RU” per editor. Refer to r2.

**Session recessed**

**May, May 18th, 2016, PM2 TGax Session**

1. **Meeting called to order by Bo Sun (ZTE)** 
   1. The agenda is contained in 11-16/0693r0 which is on the server.
2. **Administrative Items**
   1. Chair reminded the IEEE 802 and IEEE 802.11 Policy and Procedure.
   2. Chair also reminded to do attendance.
3. **Set and approve agenda**

**Presentations**

**4.1**

**11-16-0658 TGax D0.1 Comment Resolutions on 26.3.7.1, Jinsoo Choi (LG)—cont’d**

Discussions: remove 2 CIDs from the SP.

**SP1: Do you agree with the comment resolution of all the CIDs in 0658r2 with 2 CIDs removed?**

**SP Result: No Objection; SP passed.**

**4.2**

**11-16/0634 11ax Comment Resolutions for Clauses 26.3.2, Yan Zhang (Marvell) —cont’d**

**SP1: Do you agree with the comment resolution of all the CIDs in 0634r1?**

**SP Result: No Objection; SP passed.**

**4.3**

**11-16/0625 Comment Resolutions on Section 26.3.6 Timing-related parameters, Bin Tian (Qualcomm)—cont’d**

Disucssions: need to text revisions, refer to r2.

**SP1: Do you agree with the comment resolution of all the CIDs in 0625r2?**

**SP Result: No Objection; SP passed.**

**4.4**

**11-16/0659 TGax D0.1 Comment Resolutions on 26.3.9.9 and 26.3.5, Eunsung Park (LG)**

Discussions: need to remove “Note” from CID 355, will come later in r1

**SP1: Do you agree with the comment resolution of all the CIDs in 0659r1 with one CID355 removed?**

**SP Result: No Objection; SP passed.**

**4.5**

**11-16/0663 Proposed resolutions to comments on clause 26.2.2, Ke Yao (ZTE)**

Discussions:

CID 2675 needs to change to revised, because beam change 0 is also applied to HE\_EXT\_SU PPDUs, refer to r4.

CID 2136, 2148: need to revise the reasons for rejections, refer to r4

**SP1: Do you agree with the comment resolution of all the CIDs in 0663r4?**

**SP Result: No Objection; SP passed.**

**4.6**

**11-16-0653 11ax D0.1 Comment Resolution for Clause 26.3.3, 26.3.1, 26.3.10.8, Xiaogang Chen (Intel)—cont’d**

**SP1: Do you agree with the comment resolution of all two CIDs in 0653r5?**

**SP Result: No Objection; SP passed.**

**4.7**

**11-16/0681, Comment Resolution for CIDs 215 and 2486, Daewon Lee (Newracom)**

Discussions:

**SP1: Do you agree with the comment resolution of all two CIDs in 0681r3?**

**SP Result: No Objection; SP passed.**

**4.8**

**11-16/0682, Comment Resolution for CIDs on PHY Data Field Other, Daewon Lee (Newracom)**

Discussions:

CIDs on stream parser: better keep the note for stream parser but remove the equation and keep the text statement.

Some editorial corrections, refer to r2

CID 2086, change to revised

**SP1: Do you agree with the comment resolution of all two CIDs in 0682r2?**

**SP Result: No Objection; SP passed.**

**Adjourned for the week**