IEEE P802.11  
Wireless LANs

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| IEEE 802.11 TGax  September 2016 Warsaw PHY Ad Hoc Meeting Minutes | | | | |
| Date: 2016-09-12 | | | | |
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Abstract

TGax meeting minutes for the IEEE 802.11 Warsaw PHY ad hoc session, September, 2016.

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

**Sept 2016 Warsaw Meeting**

**Monday, Sept 12th, 2016, PM2 TGax Session**

1. **Meeting called to order by Bo Sun (ZTE)** 
   1. The agenda is contained in 11-16/1246r0 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**

**11-16/1133 11ax sounding modes reductions**

**Yan Zhang (Marvell)**

**Discussions:**

Ross: Does partial BW include full BW?

Yan: No. It is separate from full BW.

**SP#1: Do you agree to adopt the spec text changes as shown in doc 11/16-1134r0?**

Need more offline discussions.

**SP Result: Tabled.**

**4.2**

**11-16/1135r1 CR for clauses 26.3.2, 26.3.5 and 26.4.3**

**Yan Zhang (Marvell)**

**Discussion:**

Bo Sun: Change rejected to revised for CID 2523. If rejected, no change to the spec.

A: Ok.

Some editorial comments.

SP1 on CR for CID: 1927, 2521, 2522, 2523, 2107, 2108 will come back later after r2 uploaded.

**4.3**

**11-16/1136r1 11ax CR for Clause 26.3.8, Yan Zhang (Marvell)**

CID: 286, 2137, 287, 288, 289, 1676, 1980, 1982, 1983, 2417, 2418, 2419, 294, 298, 299, 300, 1979, 2370, 873, 901, 1847, 1967, 1968, 1970, 1977, 1978

**Discussions:**

Bo Sun: Which version of spec is based on?

Yan: Based on 0.2. Need to check page number so that editor can easier to change based on instruction.

Lei Wang: This is a moving object.

Bo Sun: Should be based on latest version.

Robert: Use the latest version for CR is helpful. Otherwise editor need to figure out what is resolution really needs to do. If the latest version already changes the CR, you can just refer to the CID that makes the change.

The document will be updated to r2 and come back for SP.

**4.4**

**11-16/1137r1 11ax CR for clause 26.3.9, Yan Zhang (Marvell)**

CID: 294, 1099, 1997, 1998, 1999, 2000, 2019, 2531, 2540, 2541.

**Discussions:**

Daewon: Do you have the equation 26-24 here?

Yan: Ok, I will add it.

The document will be updated to r2 and come back for SP.

**4.5**

**11-16/1138r2 11ax CR for clause 26.3.10, Yan Zhang (Marvell)**

CID: 2097, 2098, 2099, 2563, 2564, 2726, 2881, 484

**Discussions:**

Bo Sun: For 2099, need to double check equation 26-120.

Yan: ok.

The document will be updated to r3 and come back for SP.

**4.1-4.5 will update document on the server and come back for SP tomorrow.**

**4.6**

**11-16/1148r0 CR for clause 26.3.10.7 in D0.4, Ross Jian Yu (Huawei)**

CID: 1022, 226, 2864, 2678, 2016, 2011, 2010, 2001

**Discussions:**

Daewon: CID2016, center 26-tone RU exist should be center 26 tone RU subfield exist.

CID 226, James has a contribution. Should take a look at his contribution first, and SP after his presentation.

Ross: ok. CID226 will wait for the SP in doc 1216.

Newracom: In table 26-16, the bit position is not correct.

Ross: Double checked and revised.

Update the document to r1 and do SP for CID except CID 226.

**SP#1:**

* **Do you agree the resolution to the comments as below in 11-16/1148r1**
  + **CID 1022, 2864, 2678, 2016, 2011, 2010, 2001**
  + **Except CID 226**

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

**Session Recessed**

**Monday, Sept 12th, 2016, PM3 (Evening Session), TGax Session**

1. **Meeting called to order by Bo Sun (ZTE)** 
   1. The agenda is contained in 11-16/1246r1 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**

**11-16/1216 SR Field SRP Table for HE-Trigger-Based PPDU, James Wang (Mediatek)**

**Discussions:**

Q: Are you assume only one SR STA transmitting at a time?

James: I believe there is not collision.

Q: What is OA-CCA?

James: It is the name for this scheme, Opportunistic Adaptive CCA.

**SP1**

* **Move to adopt the following SRP values for the corresponding entries in Spatial Reuse fields (in Spatial Reuse 1, Spatial Reuse 2, Spatial Reuse 3, and Spatial Reuse 4) for He Trigger-based PPDU**

|  |  |  |  |
| --- | --- | --- | --- |
| **Spatial Reuse** | **SRP** | **Spatial Reuse** | **SRP** |
| **0001** | **-80 dBm** | **1000** | **-44 dBm** |
| **0010** | **-74 dBm** | **1001** | **-41 dBm** |
| **0011** | **-68 dBm** | **1010** | **-38dBm** |
| **0100** | **-62 dBm** | **1011** | **-35dBm** |
| **0101** | **-56 dBm** | **1100** | **-32 dBm** |
| **0110** | **-50 dBm** | **1101** | **-29 dBm** |
| **0111** | **-47 dBm** | **1110** | **-26 dBm** |

* **SRP= TX PWRAP + Acceptable Receiver Interference levelAP** 
  + **Adjustment range for parameters (referenced to the antenna port)**
  + **TX\_PWRAP: -10 dBm to 26 dBm**
  + **Acceptable Receiver Interference LevelAP: -82dBm to -36 dBm**
* **If SRP is below <-80 dBm, set to Spatial Reuse to 0001, if SRP is above -26 dBm, set Spatial reuse to 1110**
* **Set Spatial Reuse to 0000 for SR disallowed flag, Value 1111 is reserved**

**Same table is used for AP and STA.**

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

**4.2**

**Left over SP for 11-16/1148r0 CR for clause 26.3.10.7 in D0.4, Ross Jian Yu (Huawei)**

**CID 226.**

**SP1**

* **Do you agree to accept the resolution for CID 226?**

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

**4.3**

**11-16/1149 proposed resolution to comments on clause 26.3.10.8 in D0.4,**

**Ross Jian Yu (Huawei)**

CID: 304, 2035, 2033, 527, 478, 2550, 2157, 2131.

**Discussions:**

**SP1: Do you agree the resolution to the comments below as in 11-16/1149?**

* CID: 304, 2035, 2033, 527, 478, 2550, 2157, 2131.

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

**4.4**

**11-16/1150r2 proposed resolutions to comments on clause 26.3.10.15, Ross Jian Yu (Huawei)**

CID: 336, 1459, 2100, 2101, 2102, 2104, 2105, 2135, 2568, 2569, 2570, 2571, 2573, 1414, 1626

**Discussions:**

Q: For 2105 and 336, equations need to be referred in other sections.

A: Ok. I will handle these CIDs and SP later.

**SP1: Do you agree the resolution to the comments below as in 11-16/1150r2?**

* CID: 1459, 2100, 2101, 2102, 2104, 2135, 2568, 2569, 2570, 2571, 2573, 1414, 1626
* Except CID 2105 and 336.

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

**4.5**

**11-16/1160r0 TGax D0.4 Comment Resolution for CID 355, Eunsung Park (LG)**

**SP1: Do you agree the resolution to the comment below as in 11-16/1160r0?**

* CID: 355

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

**4.6**

**11-16/1170r0 HE PHY capabilities, Lochan Verma(Qualcomm)**

**Discussions:**

Bo Sun: This is not related to a comment?

A: No.

Bo Sun: B56 set to 1 if supported by the STA is not clear. What is supported by the STA? Better clearly say what function is supported if the bit is set.

A: I can change these minor parts.

Sharanaz: Is B23 covers B22?

A: B22 signal support MU-MIMO, B23 indicates support of MU-MIMO+OFDMA, mixed mode.

Q: There is Doppler bit, but there is no Doppler method.

A: yes, Doppler method is not discussed.

Will update based on the comments and upload r1.

**SP1: Do you agree the proposed spec text as in 11-16/1170r1?**

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

**4.7**

**11-16/1171r0 PHY Miscellaneous Part 1 Lochan Verma(Qualcomm)**

**Discussions:**

Bo Sun: This is not related to a comment?

A: No. It is for removing TBDs in D0.4.

**SP1: Do you agree the proposed spec text as in 11-16/1171r0?**

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

**4.8**

**11-16/1176r0 Comment resolutions PHY Miscellaneous Part 2 Lochan Verma(Qualcomm)**

CID: 834, 1030, 1604, 1861, 2242, and 2919

**Discussions:**

Bo Sun: Change accept to revised

Will update the document to r1.

**SP1: Do you agree the resolution to the comments below as in 11-16/1176r1?**

* CID: 834, 1030, 1604, 1861, 2242, and 2919.

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

**4.9**

**11-16/1167r0 UL MU clarification, Ron Porat (Broadcom)**

**Discussions:**

Q: Adding estimation of the gain will add another uncertainty. This may affect the accuracy.

A: If you do not take out beamforming gain, you will always transmit too strong.

**SP #1: Do you support adding in page 227 line 7 the following statement: A STA that applies beamforming (BF) in the UL should take the BF gain into account when calculating the transmit power needed to meet the target RSSI.**

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

**SP #2: Do you support to add to the spec framework on page 186 line 52 (after “It is mandatory to support transmission of 1x HE-LTF in an UL MU-MIMO PPDU over the full bandwidth, for a STA declaring support for UL MU-MIMO”) the following sentence: When 1xLTF is used for full BW UL MU-MIMO, no pilots (in the LTF field) or frequency domain masking are applied.**

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

**4.10**

**11-16/1169r1 CR duplicate MU MIMO, Sriram Venkateswaran (Broadcom)**

CID: 506, 851, 1024, 1628, 1693, 1694, 1696, 2159, 2162, 2163, 2165, 2166

**Discussions:**

Q: All the CIDs are duplicated?

A: Yes, I sum up all these CIDs.

**SP1: Do you agree the resolution to the comments below as in 11-16/1169r1?**

* CID: 506, 851, 1024, 1628, 1693, 1694, 1696, 2159, 2162, 2163, 2165, 2166

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

**Session Recessed**

**Tuesday, Sept 13th, 2016, PM2 TGax Session**

1. **Meeting called to order by Bo Sun (ZTE)** 
   1. The agenda is contained in 11-16/1246r2 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**

**Documents updates and SPs from Yan Zhang (Marvell)**

**11-16/1134r1 updated based on comments yesterday.**

**SP1**

**Do you agree to adopt the spec text changes as shown in doc 11-16/1134r1?**

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

**11-16/1135r2 updated based on comments yesterday.**

**SP2**

**Do you agree the resolution to the comments below as in doc 11-16/1135r2?**

* **CID: 1927 2521 2522 2523 2107 2108**

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

**11-16/1136r3 updated based on comments yesterday.**

**SP3**

**Do you agree the resolution to the comments below as in doc 11-16/1136r3?**

* **CID: 286 2137 287 288 289 1676 1980 1982 1983 2417 2418 2419 294 298 299 300 1979 2370 901 1847 1967 1968 1970 1971 1973 1974 1976 1977 1978**

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

**11-16/1137r3 updated based on comments yesterday.**

**SP4**

**Do you agree the resolution to the comments below as in doc 11-16/1137r3?**

* **CID: 294 873 1099 1698 1997 1998 1999 2000 2019 2531 2540 2541**

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

**11-16/1138r4 updated based on comments yesterday.**

**SP5**

**Do you agree the resolution to the comments below as in doc 11-16/1138r4?**

* **CID: 2097 2098 2099 2563 2564 2726 2881 484**

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

**4.2**

**11-16/1148r6 revisit CID 226, Ross Yu Jian (Huawei)**

**SP1**

**Do you agree to change the resolution to the comments below as in doc 11-16/1148r6?**

* **CID: 226**

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

**11-16/1150r3 updated based on comments yesterday, Ross Yu Jian (Huawei)**

**SP2**

**Do you agree the resolution to the comments below as in doc 11-16/1150r3?**

* **CID: 2105, 336**

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

**4.3**

**11-16/1168r2 DCM TBDs, Sriram Venkateswaran (Broadcom)**

**SP1:**

**Do you agree the proposed spec text as in 11-16/1168r2?**

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

**4.4**

**11-16/1259r2 Coding and other comments, Venkateswaran (Broadcom)**

Resolving CID: 1778, 1784, 2063, 2064, 2065, 2069, 2071, 2073, 2074, 925, 2561, 2560, 2562, 2076, 2070, 332, 2075, 328, 329, 331, 2160, 2161, 2164, 2067

**SP1:**

**Do you agree the resolution to the comments below as in doc 11-16/1159r2?**

* **CID:** 1778, 1784, 2063, 2064, 2065, 2069, 2071, 2073, 2074, 925, 2561, 2560, 2562, 2076, 2070, 332, 2075, 328, 329, 331, 2160, 2161, 2164, 2067

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

**4.5**

**11-16/1179r3 PHY section editorial comments on D0.4, Sungeun Lee (Cypress)**

**Discussion:**

Ross: The HE SIG A table shall keep the same as in 0.4.

Daewon: He is just splitting the table for SU and SU extended PPDU to avoid conditions.

Sungeun: This is because for SU extended PPDU, the table is for symbol 1 and 3.

Ross: If we change the table, maybe other resolutions may refer to the original table.

Bo: We can defer the SP one day to check.

Yan: On GI for the legacy part, I already changed the equations.

Bin Tian: I think Table 26-3 is wrong. Need to be careful to make change in this table since a lot of people may use the parameters in this table. We need more time to review this document.

**SP defer.**

**4.6**

**11-16/1190r0 Tx Quality Requirements, Daewon Lee (Newracom)**

**To be continued.**

**Session Recessed**

**Wednesday, Sept 14th, 2016, PM1 TGax Session**

1. **Meeting called to order by Bo Sun (ZTE)** 
   1. The agenda is contained in 11-16/1246r4 which is on the server.
   2. 2 more PHY ad hoc sessions added. Wednesday PM2 and Thursday AM1.
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**

**11-16/1190r0 Tx Quality Requirements, Daewon Lee (Newracom)**

**Continue presentation from last session.**

**Discussion:**

Osama: The motion will be in CR or not?

A: Yes, in CR.

**Go through the CR document**

**11-16/1191r1 comment and resolution for CIDs on PHY transmit Spec.**

CID: 538, 496, 497, 498, 499, 344, 501, 1026, 1115, 2351, 500.

**SP1:**

**Do you agree with the comment resolution to the comments below as in 11-16/1191r2**?

* CID: 538, 496, 497, 498, 499, 344, 501, 1026, 1115, 2351, 500.

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

**4.2**

**11-16/1179r4 PHY section editorial comments on D0.4, Sungeun Lee (Cypress)**

**This is a revisit based on comments in last session.**

**Discussion:**

Ross: Which part of this document do you want to do SP? Part of them is resolved in other document.

A: I already mentioned to editor that the document is on top of other CR document.

**SP1:**

**Do you agree the proposed spec text changes as in 11-16/1179r4?**

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

**4.3**

**11-16/1192r0 Comment and Resolution for CID 1450, Daewon Lee (Newracom)**

**Discussions:**

Osama: Did you talked to commenter?

A: Yes, commenter is ok with it.

**SP1:**

**Do you agree with the comment resolution to the comment below as in 11-16/1192r0**?

* CID: 1450

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

**4.4**

**11-16/1193r1 HT variant HT control – HE Link adaptation, Daewon Lee (Newracom)**

**SP1:**

**Do you agree with the comment resolution to the comments below as in 11-16/1193r1**?

* CID: 4 and 2740

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

**4.5**

**11-16/1194r1 Removal of Unnecessary PHY TBDs, Daewon Lee (Newracom)**

**SP1:**

**Do you agree the proposed spec text changes as in 11-16/1194r1**?

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

**4.6**

**11-16/1232r1 Text change proposal of RXTIME and TXTIME in 26. 3.19 and 26.4.3, Daewon Lee (Newracom)**

**Discussions:**

Sigurd: What is the use of signal extension? L\_Length will be calculated from TXTIME. This signal extension will affect the length.

Daewon: In the Length calculation formula, need to subtract signal extension from TXTIME. I will update the document and bring back later.

Sigurd: Since this is not CR, can you bring back next meeting so people have more time review it?

A: Ok.

**SP1: Defer to next meeting.**

**4.7**

**11-16/1233r1 CR for DCM related CID 503, 504 and 2750, Daewon Lee (Newracom)**

**SP1:**

**Do you agree with the comment resolution to the comments below as in 11-16/1233r1**?

* CID: 503, 504 and 2750

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

**4.8**

**11-16/1202r2 HE- LTF - 26. 3.10.3, Ming Gan (Huawei)**

**Discussions:**

Bin: Are you proposing to support beam change indication for both SU and SU extended range?

Ming: It‘s already in. I am just making the spec text consistent.

Q: What is your proposed text change? It’s a mix of your proposed change and previous change.

A: Ok, I will change it now, only mark red my change.

Bo: All the change are based on 0.1?

A: Yes.

Bo: I suggest revise your text and make all the change based on D0.4 and come back later.

**SP1: Defer.**

**4.9**

**11-16/0942r1 Service field – 26.3.10.3, Ming Gan (Huawei)**

**Discussions:**

Bin: I think this is not decided.

Ross: Put reserve for CID 327

Bo: Revise and come back later.

**SP1: Defer**

**4.10**

**11-16/1240r1 Packet extension factor calculation fix, Yan Zhang (Marvell)**

**Related spec text proposal**

**11-16/1242r0 11ax Spec Text on Packet extension factor calculation fix**

**SP1:**

**Do you agree to adopt the spec text changes as shown in doc 11/16-1242r1?**

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

**4.11**

**11-16/0942r2 Service field – 26.3.10.3, Ming Gan (Huawei)**

**Revisit after revision**

**SP1:**

**Do you agree the comment resolution to the comments below as in 11-16/942r2?**

* **CID: 327, 2442**

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

**4.12**

**11-16/1136r5 11ax CR for Clause 26.3.8, Yan Zhang (Marvell)**

**Change some terminology for CID 286, 2137.**

**SP1:**

**Do you agree to change comment resolution to CID 286 and CID 2137 to as in 11-16/1136r5?**

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

**11-16/1137r4 11ax CR for Clause 26.3.8, Yan Zhang (Marvell)**

**Revisit and change some terminology for CID 294 and 2531.**

**SP1:**

**Do you agree to change comment resolution to CID 294 and CID 2531 to as in 11-16/1137r4?**

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

**PM2 session cancelled.**

**Session Recessed for the day.**

**Thursday, Sept 15th, 2016, AM1 TGax Session**

1. **Meeting called to order by Bo Sun (ZTE)** 
   1. The agenda is contained in 11-16/1246r5 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**
   1. Chair sum up the CR progress.
4. **Presentations**

**4.1**

**11-16/1227r0 TGax D0.1 comment resolutions on 26.3.7, 26.3.7.3, 26.3.12, Shahrnaz Azizi (Intel)**

**Discussions:**

Kome: I remember DL MU-MIMO is a special case for DL MU transmission.

A: Should I put DL MU-MIMO as a sub section under DL MU transmission?

Jinsoo: It is separated section in D0.4.

Kome: I suggest moving DL MU-MIMO into DL MU transmission section.

Lochan: I have checked 866, it is not incorporated into D0.4 by the editor. This resolution need to based on 866.

**SP1: Defer to TG meeting.**

**4.2**

**11-16/1202r3 HE-LTF – 26.3.10.3, Ming Gan (Huawei)**

**Discussions:**

Daewon: For the LTF sequences we need to have indices.

Daewon: Can you go through other CIDs and give me some time to double check?

A: ok.

Daewon: There is a contribution passed saying there is no pilot for 1x LTF in trigger based PPDU. So in this document we shall add no pilot for 1xLTF.

Ming: Ok, I can copy the SP text in my CR document.

Daewon give some comments on how to revise the CR document.

Need more offline discussion on CID 323 and 2557.

Bo: Mark yellow for the note.

Daewon: We do not need to note since we capture everything in the document. Just delete it.

Q: I think the RU index shall start from 0

A: In table 26.6, RU index start from 1. Need double check and make things consistent.

**Document updated to r4.**

**SP1:**

**Do you agree the comment resolution to the comments below as in 11-16/1202r4?**

* CID: 1865 481 517 537 920 319 1059 2559 2551 2552 2553 2554 2555 2556 2558 923

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

**4.3**

**Revisit all the remaining PHY CIDs.**

There are a number of editorial comments but Robert believes need technical discussion.

CIDs for TXVECTOR/RXVECTOR assign to Ke Yao.

CIDs for section 26.3.3 assign to Xiaogang.

Section “Overview of the PPDU encoding process is empty” assign to Lochan.

CID 1666 on OFDMA tone plans same of CID 284. Remove CID.

CID 1788, 1670 OFDMA tone plan is resolved in 1965.

CID 261: Bin suggest to reject the CID. Reason: HE modulated field is define from HE STF. HE SIG B is not HE part. Defined in 26.3.2

CID 1672 Resolved by Yan in CID 286 2137

CID1675 already resolved in CID1052

CID2472 TXVECTOR assign to Ke Yao.

CID2745 already resolved.

**4.4**

**11-16/1227r1 HE-LTF – 26.3.10.3, Ming Gan (Huawei)**

**Ming come back with the modified resolution to CID 323 and 2557.**

**SP1:**

**Do you agree the comment resolution to the comments below as in 11-16/1202r5?**

* CID: 323 2557

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

**4.5**

**11-16/1227r1 TGax D0.1 comment resolutions on 26.3.7, 26.3.7.3, 26.3.12, Shahrnaz Azizi (Intel)**

**Shahrnaz come back with the modified resolutions based on the comments.**

**SP1:**

**Do you agree the comment resolution to the comments below as in 11-16/1227r2?**

* CID: 841,1787,1945, 1946,1949,1950,1965,2365,2366,2524,2525,2526,2918

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

**PHY ad hoc Adjourned for the week.**