IEEE P802.11  
Wireless LANs

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| LB-238 Miscellaneous Comment Resolution | | | | |
| Date: 2019-07-06 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Osama Aboul-Magd | Huawei Technologies |  |  |  |
|  |  |  |  |  |

Abstract

This document provides proposed resolutions to the following CIDs.

20602, 20735, ~~20742, 20751~~, 20756, 20762, 20766, ~~20792~~, 21012, 21027and 21037

CID 20792 moved to George.

R0: Initial draft.

R1: added resolution to CID 21037

R2: CIDs 20724 and 20751 are transferred to Youhan

Resolutions to CIDs 20735 and 21012 were discussed and received input from PHY expert as it was discussed before.

R3: Resolutions to CIDs 20756 and 20762 were changed lightly. Resolution of CID 20766 is included.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 20602 |  |  | > 80 MHz capabilities make no sense for a device that does not support > 80 MHz | Add "or the Supported Channel Width Set field does not indicate support for bandwidths greater than 80 MHz" before the last full stop in the Encoding cell of the Number Of Sounding Dimensions > 80 MHz row in Table 9-321b. Add "or if the Supported Channel Width Set field does not indicate support for bandwidths greater than 80 MHz" before the last full stop in the Encoding cell of the STBC Tx > 80 MHz row in Table 9-321b Add "Reserved if the Supported Channel Width Set field does not indicate support for bandwidths greater than 80 MHz" at the end of the Encoding cell of the STBC Rx > 80 MHz row in Table 9-321b | Accepted. |
| 20735 |  |  | Re CID 16086: the resolution to CID 12587 suggests that there is no pre-compensation, just compensation (proposed change in CID 16086 was wrong though) | Change "pre-correct" to "correct" throughout, case-insensitively and case-preservingly | Rejected.  The correction in the referred places are performed prior to transmission, hence the terminology pre-correction was chosen. |
| ~~20742~~ |  |  | ~~Re CID 16117: examples are 410.53 "Each 8 bits of the RU\_ALLOCATION are set to 01110001", 410.55, 458.54 "For each 8 bits, only the following values are allowed: 01110001 11000000", 548.8 "8-bit RU Allocation subfield used to signal that 996-tones RU shall be set to 01110011.", 607.24 "For each non-HT duplicate PPDU transmission that is a preamble punctured PPDU, each punctured 20 MHz subchannel is indicated as punctured by including the value of 01110001", 607.28 "including the value of 11000000 in the 8 bits of the TXVECTOR parameter RU\_ALLOCATION"~~ | ~~As it says in the comment~~ | ~~Revised.~~  ~~Talk to PHY to make sure the correct numbers. And check every binary sequence is covered~~  ~~Agree with the commenter. The indicated binary sequences are converted to decimal values.~~  ~~TG Editor: make the changes indicated in <this document> related to CID 20742.~~ |
| ~~20751~~ |  |  | ~~Re CID 16146: the problem was clearly identified (duplication), and it does cause harm to repeat the same requirement in multiple places as this leads to spec rot~~ | ~~Make the change indicated in CID 16146~~ | ~~CID 16146 is “That an AP with >= 4SS needs to support DL MU-MIMO is stated too many times”~~  ~~The proposed resolution was “Delete in at least one of 4.13.4a, T9-262aa, 27.6.2, 28.1.1, 28.3.3.9.2” (28.3.3.1.2)~~  ~~The reference draft is D3.0.~~  ~~In 4.13.4a, it is mentioned “Mandatory support for DL MU-MIMO by an HE AP that supports 4 or more spatial streams when MU-MIMO is done on the entire PPDU bandwidth” The clause is a summary of general HE STA capabilities and it is appropriate to mention the capability there.~~  ~~In T9-262aa; it is not clear where it was mentioned in this table. The only mentions on P158L60 in the context of SU Beamformer.~~  ~~In 27.6.2; “A MU beamformer is an HE AP that sets the MU beamformer subfield in the HE PHY Capabilities Information field in the HE Capabilities element it transmits to 1. An HE AP that indicates support for 4 or more space-time streams in the Tx HE-MCS Map <=80 MHz subfield in the Supported HE-MCS And NSS field in the HE Capabilities element shall set the MU Beamformer subfield to 1. A non-AP HE STA shall set the MU Beamformer subfield to 0. An MU beamformer is also an SU beamformer and shall set the SU Beam-former subfield to 1.”~~  ~~Which simply state conditions with which the MU Beamformer subfield~~  ~~There is no clause 28.3.3.9.2 in draft D3.0 or draft D4.0.~~  ~~The multiple times where the statement is mentioned is not contradicting each other and serve a good purpose as discussed above.~~ |
| 20756 | 33.09 | 3.1 | Re CID 16170: the new definition is unclear. It is not clear what "treated as a single MSDU" means | Shorten the definition to "aggregate medium access control (MAC) service data unit (A-MSDU): A structure that contains one or more MSDUs." | Revised  Agree in principle with the commenter. The group suggested a new definition that removed the word “treated”  TGax Editor: Please make changes related to CID 20756 in <this document> |
| 20762 |  |  | Re CID 16190: right, so if an HE ER SU PPDU is not a kind of HE SU PPDU, then references to HE SU PPDUs need to be references to HE ER SU PPDUs too (unless there really is a difference in behaviour that depends on the format). Example "An HE STA may transmit an HE SU PPDU or HE MU PPDU that carries an A-MPDU" at 352.1 surely applies to HE ER PPDUs too | Make the changes indicated in CID 16190 | Revised  The changes proposed in CID 16190 are: Add references to HE ER PPDUs after the reference to HE SU PPDUs in 27.4.5, 27.15.3, 28.3.11.2, 27.4.4.2, Table 28-15, 28.3.11.5.1 – The reference draft must be draft D3.0.  Clause 27.4.5 doesn’t include any reference to HE SU PPDU.  Clause 27.15.3 referes explicitly to HE SU PPDU and HE ER SU PPDU – no logical place to make the changes suggested by the proposed resolution.  Cluase 38.3.11.2 doesn’t include any reference to HE SU PPDU.  Clause 27.4.4.2 refers explicitly to HE SU PPDU and HE ER SU PPDU and no changes are needed.  Clause 28.3.11.5.1 is on BCC and puncturing and doesn’t refer explicitly to any PPDU type. No changes are needed.  Table 28-15 (Table 27-16 in draft D4.0) –  TGax Editor to make the changes in <this document> related to CID 20762.  Need to have input from the PHY |
| 20766 |  |  | Re CID 16224: the rejection does not address the comment's point, which is that it's confusing to use something called Multi-STA for a single STA (I'm assuming that when the resolution said "user" it meant "STA") | Change "Multi-STA BlockAck" to "Extended BlockAck" throughout | Rejected.  Unlike the proposed name, the term “multi-STA” BlockAck describes better the function of this block ack variant which is to acknowledge the transmissions of one or more STA.  multi-user includes one or more users. Therefore the term “single user” is a subset of multi-users. |
| ~~20792~~ |  |  | ~~Re CID 16378: for Management frames, if in MU PPDU, then since no Ack Policy Indicator field, only respond if got TF/TRS. So could apply same rule for Data frames. The benefit of being able to get an SU response to Data frames sent in MU PPDU is rather limited (only one STA can respond)~~ | ~~Delete the references to HTP Ack throughout the draft and instead state that the rules previously described as pertaining to that ack policy instead pertain to frames received by a non-AP STA in an HE MU PPDU~~ |  |
| 21012 |  |  | Re CID 16192: examples of the contradiction are 667.9 "HE-MCSs for 242-tone RU and non-OFDMA 20 MHz", which implies a full-bandwidth 20M transmission is not an RU and 322.19 "an RU that is narrower than the PPDU bandwidth", which implies a full-bandwidth transmission is an RU | State that a full-width transmission is an RU, and then simplify things like "HE-MCSs for 242-tone RU and non-OFDMA 20 MHz, NSS = 1" to "HE-MCSs for 242-tone RU, NSS = 1" | Rejected.  The current table headings in Clause 27.5 are unambigiously clear, henece it is preferable to keep the current language. |
| 21027 |  |  | Re CID 16354: no, the baseline explicitly does not allow EOF=0 MPDUs after EOF=1 MPDUs. 10.13.6 in D2.1: "An A-MPDU subframe with EOF set to 0 shall not be added after any A-MPDU subframe with EOF set to 1." | Soften the baseline to allow this in PPDUs exchanged between HE STAs | Revised.  Note: The proposed resolution is not good since it breaks existing devices.  Agree with the commnenter. The comment points to a one place in the baseline where EOF=0 MPDUs are not allowed after EOF=1 MPDUs.  TGax to make the changes related to CID 21027 in <this document> |

**~~CID 20742~~**

**~~Discussion:~~**

~~CID 16117 (on draft D3.0) was rejected because the commenter was not specific enough on where the chages need to be made. CID 20742 identifies few places where the the binary codes need to be replaced with decimal value.~~

***~~Instructuins to the Editor: please make the changes shown below.~~***

~~P410L53~~

~~The RU\_ALLOCATION are set to 113 (20742) for the 242-tone RU that is most closely aligned in frequency with the 20 MHz subchannel that is indicated as disallowed by the value 1 in the INACTIVE\_- SUBCHANNELS parameter. Each 8 bits of the RU\_ALLOCATION are set to 192 (20742) for the 242-tone RU that is most closely aligned in frequency with the 20 MHz subchannel that is indicated as not disallowed by the value 0 in the INACTIVE\_SUBCHANNELS parameter.~~

~~P548L8~~

~~If the RU size is 996 tones, for each HE-SIG-B content channel, the first 8-bit RU Allocation subfield used to signal that 996-tones RU may use entry 11010y2y1y0 as in Table 27-25 (RU Allocation subfield) with y2y1y0 indicating the number of User fields signaled in the corresponding content channel, while the second 8-bit RU Allocation subfield used to signal that 996-tones RU shall be set to 115 (20742).~~

~~P607L24~~

~~For each non-HT duplicate PPDU transmission that is a preamble punctured PPDU, each punctured 20 MHz subchannel is indicated as punctured by including the value of 113 (20742) in the 8 bits of the TXVECTOR parameter RU\_ALLOCATION corresponding to the 242-tone RU that is most closely aligned with the punctured 20 MHz subchannel. Each 20 MHz subchannel that is not punctured is indicated as such by including the value of 192 (20742) in the 8 bits of the TXVECTOR parameter RU\_ALLOCATION corresponding to the 242-tone RU that is most closely aligned with that 20 MHz subchannel.~~

**CID 20765**

**Discussion:**

The current definition in draft D4.0

**aggregate medium access control (MAC) service data unit (A-MSDU):** A structure that contains one or more MSDUs and is ~~transported within~~ treated as a single ~~(unfragmented)~~ MSDU when constructing one or more data ~~medium access control (MAC)~~ MAC protocol data units (MPDUs).

The group discussed the definition and agreed to make the following changes.

***TGax Editoe: Please make the changes to the definition***

**aggregate medium access control (MAC) service data unit (A-MSDU):** A structure that contains one or more MSDUs transmitted under the same sequence number in ~~transported within~~ one or more data ~~medium access control (MAC)~~ MAC protocol data units (MPDUs).

**CID 20762**

***TGax Editoe: Please make the changes to pp 440 of draft 4.3 as shown below***.

An HE STA that sends a Control frame in response to a frame carried in an HE SU PPDU or an HE ER SU PPDU or an HE MU PPDU that carries an MPDU with the Normal Ack or Implicit BAR ack policy(#20545)shall set the TXVECTOR parameter CH\_BANDWIDTH to indicate a channel width that is the same as the channel width indicated by the RXVECTOR parameter CH\_BANDWIDTH of the frame eliciting the response. If the most recently received(#20724) PPDU sent by the responding STA to the soliciting STA after association was an HE ER SU PPDU, the soliciting STA that sends an HE SU PPDU or HE ER SU PPDU shall set the TXVECTOR parameter CH\_BANDWIDTH to CBW20.

NOTE—A preamble punctured HE MU PPDU can't carry an MPDU with Normal Ack or Implicit BAR ack pol­icy(#20545) if the solicited PPDU containing a control response occupies one ore more punctured 20 MHz channels of the preamble punctured HE MU PPDU (see 26.4.4.3 (Responding to an HE MU PPDU with an SU PPDU)).

If a control response frame is to be transmitted within an HE SU PPDU, HE MU PPDU, or an HE ER SU PPDU, the channel width (CH\_BANDWIDTH parameter of the TXVECTOR) shall be selected first according to 10.7.6.6 (Channel Width selection for Control frames), and then the <HE-MCS, NSS> tuple shall be selected from a set of <HE-MCS, NSS> tuples called the *CandidateMCSSet*. The *CandidateMCSSet* is defined in 10.7.6.5.3 (Con­trol response frame MCS computation) except that the set additionally contains the <HE-MCS, NSS> tuples for an HE STA.

***TGax Editoe: Please make the changes to pp 608 of draft 4.3 as shown below***

In an HE SU PPDU or HE SU PPDU transmission, the transmitter first computes the number of bits left in the last OFDM symbol(s) based on Equation (27-60).

***TGax Editoe: Please make the changes to pp 609 of draft 4.3 as shown below***

For an HE SU PPDU or HE ER SU PPDU, the number of pre-FEC pad bits is calculated using Equation (27-63).

***TGax Editoe: Please make the changes to pp 610 of draft 4.3 as shown below***

For an HE SU PPDU or HE ER SU PPDU with BCC encoding,

***TGax Editoe: Please make the changes to Table 27-16 as shown below***.

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| * Frequently used parameters | |
| Symbol | Explanation |
| *NRU* | For pre-HE modulated fields, *NRU* = 1.  For HE modulated fields, *NRU* represents the number of occupied RUs in the transmission. |
| *Nuser,r* | For pre-HE modulated fields, *Nuser,r* = 1. For HE modulated fields, *Nuser,r* represents the total number of users in the *r*-th occupied RU(#16796) of the transmission. |
| *Nuser,total* | Total number of users in all occupied RUs of an HE transmission, i.e., (#16795) |
| *NCBPS, NCBPS,u* | Number of coded bits per symbol for user *u*, *u* = 0, ..., *Nuser,total* – 1(#16795)  For an HE SU PPDU and HE ER SU PPDU (#20762), *NCBPS* = *NCBPS,0*  For an HE MU PPDU, *NCBPS* is undefined |
| *NCBPSS, NCBPSS,u* | Number of coded bits per symbol per spatial stream for user *u*, *u* = 0, ..., *Nuser,total* – 1. (#15567)  For the Data field of an HE SU PPDU and HE ER SU PPDU (#20762), *NCBPSS = NCBPSS,0*  For the Data field of an HE MU PPDU, *NCBPSS* is undefined |
| *NDBPS, NDBPS,u* | Number of data bits per symbol for user *u*, *u* = 0, ..., *Nuser,total* – 1.  For an HE SU PPDU and HE ER SU PPDU (#20762), *NDBPS* = *NDBPS,0*  For an HE MU PPDU, *NDBPS* is undefined |
| *NBPSCS, NBPSCS,u* | Number of coded bits per subcarrier per spatial stream for user *u*, *u* = 0, ..., *Nuser,total* – 1.  For an HE SU PPDU and HE ER SU PPDU (#20762), *NBPSCS* = *NBPSCS,0*  For an HE MU PPDU, *NBPSCS* is undefined |
| *NRX* | Number of receive chains |
| *NSTS*, *NSTS,r,u* | For pre-HE modulated fields, *NSTS,r,u* = 1 (see NOTE).  For HE modulated fields, *NSTS,r,u* represents the number of space-time streams in the *r*-th RU for user *u*, *u* = 0, ..., *Nuser,r* – 1. For STBC, *NSTS,r,u* = 2.  For an HE SU PPDU and HE ER SU PPDU, *NSTS* = *NSTS,0,0* |
| *NSTS,r,total* | For HE modulated fields, *NSTS,r,total* is the total number of space-time streams over all the users in the *r*-th RU.    For pre-HE modulated fields, *NSTS,r,total* is undefined if(#15478) the TXVECTOR parameter BEAM\_CHANGE is 1 or not present, and *NSTS,r,total* = *NSTS* if(#15479) BEAM\_CHANGE is 0.  Note that *NSTS,r,total* = *NSTS* for an HE SU PPDU and HE ER SU PPDU (#20762). |
| *NSS*, *NSS,r,u*, *NSS,u* | Number of spatial streams. For the Data field, *NSS,r,u* is the number of spatial streams at *r*-th RU for user *u*, *u* = 0, ..., *Nuser,r* – 1 and *NSS,u* is the number of spatial streams for user *u*, *u* = 0, ..., *Nuser,total* – 1.  For the Data field of an HE SU PPDU and HE ER SU PPDU (#20762), *NSS* = *NSS,0,0*  For the Data field of an HE MU PPDU, |
| *NSS,r,total* | For HE modulated fields, *NSS,r,total* is the total number of spatial streams at *r*-th RU in a PPDU.    For pre-HE modulated fields, *NSS,r,total* is undefined.  Note that *NSS,r,total* = *NSS* for an HE SU PPDU and HE ER SU PPDU (#20762). |
| *NTX* | Number of transmit chains |
| *NHE-LTF* | The number of OFDM symbols in the HE-LTF field (see 27.3.10.10 (HE-LTF)) |
| *NHE-SIG-B* | The number of OFDM symbols in the HE-SIG-B field (see 27.3.10.8 (HE-SIG-B)) |
| *Kr* | Set of used subcarrier indices in the *r*-th RU |
| *R, Ru* | *Ru* is the coding rate for user *u*, *u* = 0, ..., *Nuser,total* – 1.  For an HE SU PPDU and HE ER SU PPDU (#20762), *R = R0*  For an HE MU PPDU, *R* is undefined |
| *Mr,u* | The sum of the number of space-time streams of users prior to user *u* in RU *r*. For pre-HE modulated fields, *Mr,u* = 0. For HE modulated fields, *Mr,0* = 0 for *u* = 0 and  for *u* = 1, ..., *Nuser,r* – 1. |
| NOTE—For pre-HE modulated fields, *u* and *r* are zeros only since *Nuser,r* = 1 and *NRU* = 1. | |

**CID 20766**

CID 16224 was submitted on draft D3.0 and the resolution was rejected as below..

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| 16224 | Multi-STA BlockAcks are very badly named, as they are also used in single-STA contexts | Change "Multi-STA BlockAck" to "Extended BlockAck" throughout | REJECTED (EDITOR: 2019-01-14 23:20:15Z) - multi-user includes one or more users. Therefore the term “single user” is a subset of multi-users. |

Proposed Resolution: Rejected

Unlike the proposed name, the term “multi-STA” BlockAck describes better the function of this block ack variant which is to acknowledge the transmissions of one or more STA.

**CID 21027**

***TGax Editor: Please make the chanes shown below. The changes are related to the baseline D2.1 Clause 10.13.6.***

Padding is then added for each user such that the resulting A-MPDU contains exactly PSDU\_LENGTH

octets for that user as follows:

— First, while A-MPDU\_Length[n] < PSDU\_LENGTH[n] and A-MPDU\_Length[n] mod 4  0, add

an octet to the final A-MPDU subframe’s Padding subfield and increment A-MPDU\_Length[n] by 1.

— Then, while A-MPDU\_Length[n] + 4  PSDU\_LENGTH[n], add an EOF padding subframe to the

EOF Padding Subframes field and increment A-MPDU\_Length[n] by 4.

— Finally, while A-MPDU\_Length[n] < PSDU\_LENGTH[n], add an octet to the EOF Padding Octets

subfield and increment A-MPDU\_Length[n] by 1.

Within a non-HE PPDU, an A-MPDU subframe with EOF set to 0 shall not be added after any A-MPDU subframe with EOF set to 1.

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| 21037 | 5.3 | In the coexistence assurance document: Isn't HE-SIG-A missing in the Preamble Puncturing section? "The L-STF, L-LTF, L-SIG, RL-SIG, and HE-SIG-B preamble fields are transmitted in legacy mode and utilize the technique termed Preamble Puncturing to not transmit preamble fields in the corresponding 20 MHz sub-channels." | Add HE-SIG-A, e.g. "The L-STF, L-LTF, L-SIG, RL-SIG, HE-SIG-A and HE-SIG-B preamble fields are transmitted in legacy mode and utilize the technique termed Preamble Puncturing to not transmit preamble fields in the corresponding 20 MHz sub-channels." | Rejected.  The comment is related to the CAD and doesn’t raise any issues related to the draft. |

**References:**