IEEE P802.11
Wireless LANs

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| 11be D2.0 CR for Miscellaneous CIDs |
| Date: 2022-10-05 |
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Abstract

This submission proposes resolutions for the following CIDs:

10987, 10606, 10308, 13151, 13150, 13139, 13140, 12376, 12234, 11946,

11865, 11736, 10627, 11179, 11087, 11088, 13876, 12617, 11598,

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Remove CID 11978. Revision based on comments from Abhi. Defer 10627 and 11179.
* Rev 2: Editorial revision.
* Rev 3: Add CID 13876 and 11598 related to 12617

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGbe D2.0 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGbe D2.0 Draft. (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGbe Editor: Editing instructions preceded by “TGbe Editor” are instructions to the TGbe editor to modify existing material in the TGbe draft. As a result of adopting the changes, the TGbe editor will execute the instructions rather than copy them to the TGbe Draft.***

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| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Clause** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 10987 | Yanjun Sun | 9.4.2.157.3 | 201.56 | It's ambiguous on the receiver's decoding behavior due to the "or" in the 2nd bullet. Please revise the text to clarify whether it's an exclusive "or" (e.g. if the EHT OM Control is present, always use the latter value in the 2nd bullet).The similar text occurred in multiple places in the rest of the spec (e.g. P208L40, P208L55) and please propagate the change. | As in comment | Revised – Agree in principle with the commenter. We revise the sentence to clarify.Note that the texts for HE Capabilities element and 9.4.2.313.4 Supported EHT-MCS And NSS Set field is fine. *The maximum supported NSS as indicated by the value of the Rx NSS field of the Operating ModeNotification frame or the Operating Mode Notification element if the value of Rx NSS Type is 0, orby the value of the Rx NSS field of the OM Control subfield if EHT OM Control subfield is notpresent in the same A-Control field, or by the value of the Rx NSS Extension field of the EHT OMControl subfield combined with the value of the Rx NSS field of the OM Control subfield.*TGbe editor to make the changes shown in 11-22/1690r3 under all headings that include CID 10987 |
| 10606 | Abhishek Patil | 35.3.3 | 413.18 | Add a sentence in this subclause that states that an AP MLD exposes the MLD MAC address of an associated non-AP MLD outside its BSS. Also provide a reference to clause 7.1. | As in comment | Rejected – We already have sentence aligned with what the commenter requests in 7.1.“The AP MLD will provide a mapping to its associated non-AP MLDs, by theirMLD MAC addresses.” |
| 10308 | Michael Montemurro | 35.3.3 | 413.21 | MLDs don't "have" anything, especially a MAC address. | Change "has an" to "is assigned a" | Revised – We change “has” to “uses”TGbe editor to make the changes shown in 11-22/1690r3 under all headings that include CID 10308 |
| 13151 | Mark RISON | 11.13 | 328.24 | Table 11-13a appears to have nothing to do with EHT, and any such changes should be done in REVme not 11be | Delete the table and the sentence above | Rejected – The intention of the table seems to help people understand baseline operation so people can understand MLD TDLS operation.  |
| 13150 | Mark RISON | 11.13 | 327.56 | "the SME may initiatethe SA Query procedure with the AP MLD" -- it's not the SME that does this, it's the MLDME. 11.3.1 is not in scope, however | Refer to the MLDME not the SME | Rejected – Whether we need additional MLDME has been discussed. The conclusion is not to have additional MLDME defined. As shown in Figure 4-30b of P802.11be D2.0 and the description below, SME is reused.An MLD supports multiple MAC sublayers, coordinated by an SME |
| 13139 | Mark RISON |   | 0.00 | The term "setup link" is used widely but not defined. You'd think it's a link used for setup, but actually it appears to be a link that has been set up. Since all links have to be set up in some way, it's not clear what the point is, but at the very least the term needs to be defined | Add a definition in 3.2: "setup link: A link that has been set up between two multi-link devices (MLDs)." | Revised – We add the definition as suggested by the commenter. TGbe editor to make the changes shown in 11-22/1690r3 under all headings that include CID 13139 |
| 13140 | Mark RISON |   | 0.00 | The term "setup link" is used widely but not defined. You'd think it's a link used for setup, but actually it appears to be a link that has been set up. Since all links have to be set up in some way, it's not clear what the point is, but at the very least the term needs to be defined | Delete "setup " in "setup link" throughout | Revised – We add the definition of setup link. TGbe editor to make the changes shown in 11-22/1690r3 under all headings that include CID 13139 |
| 12376 | Rojan Chitrakar | 35.3.3 | 413.46 | Exception to the RA setting rule in the case of single link TDLS direct link (i.e., that the RA may be set as the MLD MAC Address) should also be described. | Describe the exception to the RA setting rule in the case of single link TDLS direct link (i.e., that the RA may be set as the MLD MAC Address) | Rejected – The rule is about “For an individually addressed frame sent on a link between two MLDs,”. The referred change is between MLD and legacy. |
| 12234 | Stephen McCann | 9.4.1.9 | 180.42 | The status code description is not clear, as it could be discussing 2 spearate links, which I don't think is the intention. | Changed cited sentence to "Link not accepted because the transmitted (Re)Association Request frame is not accepted." Additionally the Name of the status code could be changed to "DENIED\_LINK\_DUE\_TO\_TRANSMITTED\_ (RE)ASSOCIATION\_FRAME\_NOT\_ACCEPTED". | Rejected – The description indeed talks about two different links. For example, if (Re)Association request is exchanged on link 1 and link 1 is not accepted, then link 2 can use this status code. |
| 11946 | Jarkko Kneckt | 35.3.5.1 | 421.01 | 802.11be STA should be able to send encrypted Re-association request and response signaling in post association state. This allows STA to add a link or remove a link while keeping the existing authentication, block ack setups, keys, SCS Streams and TWT flows. | Please allow a STA in post-assocition State 4 to send an encrypted association request frame to add a link, or delete a link. The AP sends a response that accepts or rejects the link addition. The request and response signaling carries the STA and AP parameters for the added link. | Rejected – (Re)Association request/response is for (Re)Association and does not maintain state like BA after the frame exchange.  |
| 11865 | Alfred Asterjadhi | 11.13 | 327.53 | The first sentence is long and somewhat confusing. Consider rephrasing it so that it is clearer. | As in comment. | Rejected – The first sentence follows the baseline description for non-MLO.*If a non-AP and non-PCP STA that has (#13149)a security association with its AP or PCP for anassociation that negotiated management frame protection receives an individually addressed unprotectedDeauthentication or Disassociation frame with reason code INVALID\_CLASS2\_FRAME orINVALID\_CLASS3\_FRAME from the AP or PCP, the non-AP and non-PCP STA may use this as anindication that there might be a mismatch in the association state between itself and the AP or PCP.**(#12901)If a non-AP STA affiliated with a non-AP MLD that has (#13149)a security association with its APMLD for an association that negotiated management frame protection receives an unprotectedDeauthentication or Disassociation frame with reason code INVALID\_CLASS2\_FRAME orINVALID\_CLASS3\_FRAME from the corresponding AP affiliated with the AP MLD in a setup link, thenon-AP MLD may use this as an indication that there might be a mismatch in the association state betweenitself and the AP MLD.*  |
| 11736 | Gaurav Patwardhan | 35.3.5.1 | 422.13 | Replace "nonoverlapping channels" with "nonoverlapping operating channels". | as in comment | Accepted -  |
| 10627 | Abhishek Patil | 35.3.5.1 | 422.12 | in the future, advances in Wi-Fi technology would make it possible for an AP MLD to setup more than one link on the same channel. Therefore, TGbe should not put an artificial bound on what can be achieved by future Wi-Fi generations. | Either delete this paragraph or tie it to dot11EHTBaselineFeatureOnly set to true. | Revised – Agree in principle with the commenter. We tie the requirement with dot11EHTBaselineFeatureOnly set to true.TGbe editor to make the changes shown in 11-22/1690r3 under all headings that include CID 10627 |
| 11179 | Joseph Levy | 35.3.5.1 | 422.12 | Stating that an MLD "ensures that" is not a requirement, the specification should state that the MLD "shall ensure that". | Replace: "An MLD that requests or accepts multi-link (re)setup for any two links ensures that each link is located on different nonoverlapping channels."With: "An MLD that sends a (Re)Association Request or Response frame containing a Basic Multi-Link element shall ensure that all the links in the Basic Multi-Link element are on channels that do not have any overlap." | Revised – Agree in principle with the commenter. We add “shall” to the requirement. TGbe editor to make the changes shown in 11-22/1690r3 under all headings that include CID 11179 |
| 11087 | Po-Kai Huang | 11.3.6.1 | 313.26 | Need to have a similar sentence of the following for MLD. "If non-DMG STA A in an infrastructure BSS receives a Class 3 frame from STA B that is authenticated but not associated with STA A (i.e., the state for STA B is State 2), STA A shall discard the frame. If the frame has anindividual address in the Address 1 field, the MLME of STA A shall send a Disassociation frame to STA B." | Add the following. "If any affiliated STA of MLD A receives a Class 3 frame from a STA that can not be identified to be affiliated with a associated MLD, MLD A shall discard the frame. If the frame has an individual address in the Address 1 field, the MLME of MLD A shall send a Disassociation frame through the affiliated STA of MLD A that receives the class 3 frame to the individual address identified in the Address 1 field of the class 3 frame." ." | Revised – Agree in principle with the commenter. TGbe editor to make the changes shown in 11-22/1690r3 under all headings that include CID 11087 |
| 11088 | Po-Kai Huang | 11.3.5.1 | 310.04 | Need to have a similar sentence of the following for MLD "If STA A in an infrastructure BSS receives a Class 2 or Class 3 frame from STA B that is not authenticatedwith STA A (i.e., the state for STA B is State 1), STA A shall discard the frame. If the frame has an individualaddress in the Address 1 field, the MLME of STA A shall send a Deauthentication frame to STA B." Note that we should not add class 3 frame the the rule because if it is possible that the MLD B thinks MLD A is in state 3 or 4 and MLD A thinks MLD B is in state 2. In this case, a class 3 frame like data frame from MLD B to MLD A can not be mapped to MLD B due to no link setup. Directly deauthentication may not be useful. A separate rule to send disassociation frame is enough. Also note that, disassociation frame currently does not include MLD MAC address. Suggest that basic multi-link element is included in individually addressed disassociation frame to identify the MLD. | Add Basic multi-link element to disassocaition frame with the following note "The Basic Multi-Link element is present if dot11MultiLinkActivated is true and the disassociation frame is individually addressed to a peer STA that isaffiliated with an MLD. Otherwise it is not present.". Add the following. "If any affiliated STA of MLD A receives a Class 2 frame from a STA affiliated with an MLD B that is not authenticatedwith MLD A (i.e., the state for MLD B is State 1), MLD A shall discard the frame. If the frame has an individual address in the Address 1 field, the MLME of MLD A shall send a Deauthentication frame through the affiliated STA of MLD A that receives the class 2 frame to the individual address identified in the Address 1 field of the class 2 frame." | Revised – Agree in principle with the commenter. TGbe editor to make the changes shown in 11-22/1690r3 under all headings that include CID 11088 |
| 13876 | Ming Gan | 35.3.5.1 | 422.24 | Change this note to be normative text since this is related to multiple links and not mentioned in other places | please change the note to be normative text | Revised – Agree in principle with the commenter. TGbe editor to make the changes shown in 11-22/1690r3 under all headings that include CID 13876 |
| 12617 | Arik Klein | 35.3.5.1 | 422.25 | There is a mismatch between the requirement to assign an AID to a non-AP MLD between the sentence in P422L20, where the AP MLD shall assign the AID and the following Note 3 on P422L25, which says that "AP affiliated with AP MLD does not assign AID to non-AP MLD...." Please align the conflict, as proposed. | In Note 3, Please replace the "an AP affiliated with an AP MLD does not assign, to a non-AP MLD an AID value that is less than..." with "an AP MLD does not assign..." so it will be aligned with the language in the preceding paragraph which says that "An AP MLD shall assign a single AID.." | Revised – Agree in principle with the commenter. TGbe editor to make the changes shown in 11-22/1690r3 under all headings that include CID 13876 |
| 11598 | Vishnu Ratnam | 35.3.5.1 | 422.24 | Note 3: Doesn't this note have to be updated given that the group-addressed traffic for other links of the AP MLD are also indicated? | As in comment | Revised – We combine the note with the requirement in baseline. TGbe editor to make the changes shown in 11-22/1690r3 under all headings that include CID 13876 |

**Discussion: None**

***TGbe editor: Insert the following definition to 3.2 Definitions specific to IEEE 802.11 as follows (track change on):***

**3.2 Definitions specific to IEEE 802.11
*Change the following definitions:***

**setup link:** Between the AP MLD and the associated non-AP MLD, a link that is requested by the non-AP MLD in the (Re)Association Request frame and is accepted by the AP MLD in the (Re)Association Response frame (See 35.3.5 (Multi-link (re)setup)). (#13139)

***TGbe editor: Change 9.4.2.157 VHT Capabilities element as follows (track change on):***

**9.4.2.157** **VHT Capabilities element**

**9.4.2.157.3** **Supported VHT-MCS and NSS Set field**

***Change the second last paragraph as follows:***

The value of Max VHT NSS for a given MCS is equal to the smaller of

The maximum value of *n* for which the Max VHT-MCS for *n* SS has a value that indicates support for that MCS or

The maximum supported *NSS* as indicated in by the value of the Rx NSS field of the OM Control subfield if EHT OM Control subfield is not present in the same A-Control field (#10987) or by the value of the Rx NSS Extension field of the EHT OM Control subfield combined with the value of the Rx NSS field of the OM Control subfield (and further defined in the Table 26- 9 (Setting of VHT Channel Width and VHT NSS at an HE STA transmitting the OM Control sub- field))

*TGbe editor: Change 35.3.2 Multi-link device addressing as follows (track change on):*

**35.3.2 Multi-link device addressing(#12991)**

An MLD uses an MLD MAC address that singly identifies the MLD.(#10308)

(#13621)STAs affiliated with an MLD shall use different MAC addresses.(#10308)

*TGbe editor: Change 35.3.5.1 Multi-link (re)setup procedure as follows (track change on):*

 **35.3.5.1 Multi-link (re)setup procedure**

(..existing texts…)

(#13876)

(..existing texts…)

An MLD that has dot11EHTBaseLineFeaturesImplementedOnly equal to true and(#10627) requests or accepts multi-link (re)setup for any two links shall ensure(#11179) that each link is located on different nonoverlapping operating channels.(#11736)

(..existing texts…)

*TGbe editor: Change 9.4.2.5.1 General as follows (track change on):*

**11.1.3.8.5 Traffic advertisement in a multiple BSSID set(11ax)**

The Partial Virtual Bitmap field of the TIM element carried in the Beacon, S1G Beacon, or TIM frame shall
indicate the presence or absence of traffic to be delivered to all stations associated (11ax)with an AP
corresponding to a transmitted or nontransmitted BSSID. The first 2n bits of the bitmap are reserved for the
indication of group addressed frame for the transmitted and all nontransmitted BSSIDs (see 9.4.2.5.1
(General)). (#133)See Annex L for examples of traffic indication (including that for group addressed frames)
in a multiple BSSID set. The AID space is shared by all BSSs. For non-MLO, the lowest AID value that shall be assigned
to a non-S1G STA is 2n (see 9.4.2.5 (TIM element)). For MLO, AIDs less than 2n shall not be allocated to a non-AP MLD. (#13876) The value of the 11 LSBs of the AID assigned to an S1G STA shall be greater than 2n. The Encoded Blocks that contain these first 2n AIDs (if any) shall precede the Encoded Blocks that contain AIDs for the S1G STAs in the S1G Partial Virtual Bitmap field of each page. (11ax)Each BSS of the Multiple BSSID set may have a different DTIM interval, which is signaled in the DTIM
Period and DTIM Count fields that are present in the Multiple BSSID-Index element carried in the
nontransmitted BSSID profile for that BSS.

(..existing texts…)

*TGbe editor: Change 11.3.6.1 General as follows (track change on):*

**11.3.6.1 General**

(…existing texts….)

If non-DMG STA A in an infrastructure BSS receives a Class 3 frame from STA B that is authenticated but not
associated with STA A (i.e., the state for STA B is State 2), STA A shall discard the frame. If the frame has an
individual address in the Address 1 field, the MLME of STA A shall send a Disassociation frame to STA B.

If any affiliated STA A of an MLD receives a Class 3 frame from STA B that can not be identified to be affiliated with an associated MLD, the MLD shall discard the frame. If the frame has an individual address in the Address 1 field, the MLME of the MLD shall send a Disassociation frame through the affiliated STA A of the MLD to STA B.(#11087)

(…existing texts….)

*TGbe editor: Change 11.3.5.1 General as follows (track change on):*

**11.3.6.1 General**

(…existing texts….)

If STA A in an infrastructure BSS receives a Class 2 or Class 3 frame from STA B that is not authenticated
with STA A (i.e., the state for STA B is State 1), STA A shall discard the frame. If the frame has an individual
address in the Address 1 field, the MLME of STA A shall send a Deauthentication frame to STA B.

If any affiliated STA A of an MLD A receives a (Re)Association Request/Response frame from STA B affiliated with an MLD B that is not authenticated with MLD A (i.e., the state for MLD B is State 1), MLD A shall discard the frame. If the frame has an individual address in the Address 1 field, the MLME of MLD A shall send a Deauthentication frame through the affiliated STA A of MLD A to STA B. (#11088)