IEEE P802.11  
Wireless LANs

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| 11be D2.0 CR for 10.3.14.2 and 10.3.14.3 | | | | |
| Date: 2022-07-07 | | | | |
| Author(s): | | | | |
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| Po-Kai Huang | Intel |  |  |  |

Abstract

This submission proposes resolutions for the following CIDs:

10289, 10290, 10291, 13494, 11529, 11923, 11924, 11981, 11982, 11983, 12265, 12266, 13119, 13495, 13496, 14042, 14043, 14044, 14045

Revisions:

* Rev 0: Initial version of the document.

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** |
| 10289 | Michael Montemurro | 10.3.2.14.2 | 282.25 | The cited sentence is confusing | Change "An MLD with dot11QMFActivated equal to false maintains a single sequence number space that is used when a STA affiliated with the MLD transmits an individually addressed Management frame (except the frames that are excluded in 35.3.14 (Multi-link device individually addressed Management frame delivery)) to a STA affiliated with another MLD to determine the sequence number for the frame." to "An MLD with dot11QMFActivated equal to false maintains a single sequence number space that is used when the MLD sends an individually addressed Management frame (except the frames that are excluded in 35.3.14 (Multi-link device individually addressed Management frame delivery)) to a peer MLD." | Revised –  Agree in principle with the commenter. Proposed resolution is inline with the proposed change.  TGbe editor to make the changes shown in 11-22/0997r0 under all headings that include CID 10289 |
| 10290 | Michael Montemurro | 10.3.2.14.2 | 282.43 | The use of affiliated STA in this case is confusing. Duplicate detection and recovery is done at the MLD level. Re-word the requirement to clearly cover MLDs. | Change "A STA affiliated with an MLD shall support SNS9 maintained by the MLD instead of SNS2 in Table 10-5 (Transmitter sequence number spaces) to determine the sequence number of an individually addressed QoS Data frame that is transmitted to a STA affiliated with the associated MLD. A STA affiliated with an MLD shall support SNS10 maintained by the MLD instead of SNS1 in Table 10-5 (Transmitter sequence number spaces) to determine the sequence number of an individually addressed Management frame (except the frames that are excluded in 35.3.14 (Multi-link device individually addressed Management frame delivery)) that is transmitted to a STA affiliated with another MLD. An AP affiliated with an AP MLD shall support SNS11 maintained at the MLD level, instead of SNS1 maintained at the link level, in Table 10-5 (Transmitter sequence number spaces) to determine the sequence number of a group addressed Data frame that is transmitted to a STA associated to the AP, where the same group addressed Data frame transmitted over multiple links of the AP MLD shall use the same sequence number for transmission on each link." to "An MLD shall support SNS9 in Table 10-5 (Transmitter sequence number spaces) to determine the sequence number of an individually addressed QoS Data frame that is sent to an associated MLD. An MLD shall support SNS10 in Table 10-5 (Transmitter sequence number spaces) to determine the sequence number of an individually addressed Management frame that is sent to another MLD. An AP MLD shall support SNS11 in Table 10-5 (Transmitter sequence number spaces) to determine the sequence number of a group addressed Data frame that is sent to a STA associated to the AP or an non-AP MLD associated with an AP MLD, where the same group addressed Data frame transmitted over multiple links of the AP MLD shall use the same sequence number for transmission on each link." | Revised –  Agree in principle with the commenter.  We simplify the sentence and use the table to clarify what is used and not used by MLD.  TGbe editor to make the changes shown in 11-22/0997r0 under all headings that include CID 10290 |
| 10291 | Michael Montemurro | 10.3.2.14.2 | 284.05 | The use of affiliated STA in this case is confusing. Duplicate detection and recovery is done at the MLD level. Re-word the requirement to clearly cover MLDs. | Change "An MLD shall implement the applicable receiver requirements defined in Table 10-6 (Receiver caches) with Status indicated as Mandatory. All STAs affiliated with an MLD shall implement RC14, where the duplicate detection cache is maintained by the MLD, instead of RC2 in Table 10-6 (Receiver caches) to assist the MLD in discarding duplicate individually addressed QoS Data frames belonging to a TID without BA negotiation that are transmitted from the STAs affiliated with the associated MLD. All STAs affiliated with an MLD with dot11QMFActivated equal to false shall implement RC15, where the duplicate detection cache is maintained by the MLD, instead of RC1 in Table 10-6 (Receiver caches) to assist the MLD in discarding duplicate individually addressed Management frame (except the frames that are excluded in 35.3.14 (Multi-link device individually addressed Management frame delivery)) that are transmitted from the STAs affiliated with the associated MLD. An MLD shall implement RC16 maintained at the MLD level, instead of RC1 maintained at the link level, in Table 10-6 (Receiver caches) to discard duplicate group addressed Data that are delivered from the associated MLD. A group addressed Data frame received on any link shall be discarded using an implementation specific duplicate detention mechanism." to "An MLD shall implement the applicable receiver requirements defined in Table 10-6 (Receiver caches) with Status indicated as Mandatory. An MLD shall maintain RC14 in Table 10-6 (Receiver caches) to assist in discarding duplicate individually addressed QoS Data frames belonging to a TID without BA negotiation. An MLD with dot11QMFActivated equal to false shall maintain RC15 in Table 10-6 (Receiver caches) to assist in discarding duplicate individually addressed Management frames. An MLD shall maintain RC16 in Table 10-6 (Receiver caches) to discard duplicate group addressed Data that are delivered from the associated MLD. A group addressed Data frame received on any link shall be discarded using an implementation specific duplicate detention mechanism." | Revised –  Agree in principle with the commenter.  We simplify the sentence and use the table to clarify what is used and not used by MLD.  TGbe editor to make the changes shown in 11-22/0997r0 under all headings that include CID 10291 |
| 13494 | Liwen Chu | 10.3.2.14.2 | 282.43 | Change "A STA affiliated with an MLD shall support..." to "an MLD shall support...". The similar changes should be applied to the other sentences in the paragraph. | As in comment | Revised –  Agree in principle with the commenter. Proposed resolution is inline with the proposed change, while accounting for changes needed to address other comments in the same sentence.  TGbe editor to make the changes shown in 11-22/0997r0 under all headings that include CID 10290 and 10291 |
| 11529 | Xiaofei Wang | 10.3.2.14.2 | 283.01 | three rows instead of two rows are added to Table 10-5 | as in comment | Revised –  Agree in principle with the commenter. Proposed resolution fixes the editorial issue.  TGbe editor to make the changes shown in 11-22/0997r0 under all headings that include CID 11529 |
| 11923 | Alfred Asterjadhi | 10.3.2.14.3 | 284.21 | It is detection rather than detention. Please replace with detection. | As in comment. | Revised –  Agree in principle with the commenter. Proposed resolution fixes the issue.  TGbe editor to make the changes shown in 11-22/0997r0 under all headings that include CID 11923 |
| 11924 | Alfred Asterjadhi | 10.3.2.14.3 | 284.34 | Insert two new footnotes rahter than one and three new rows. See end of table. | As in comment. | Revised –  Agree in principle with the commenter. Proposed resolution fixes the editorial issues.  TGbe editor to make the changes shown in 11-22/0997r0 under all headings that include CID 11924 |
| 11981 | Albert Petrick | 10.3.2.14.2 | 283.13 | Add entry in PICS for SNS9 (Transmitter sequence number space identifier 9) for Individually addressed QoS Data frame (See table 10-5) mandatory requirement. | Add PIC entry to P806L59 FR.76.8 QoS Data Frame 10.3.2.14.2 EHTMLD10.1:M | Revised –  Agree in principle with the commenter .  In the baseline,  duplicate detection and recovery is simply added in the extended amendment like B.4.22 QMF extensions and B.4.24.1 DMG MAC features. We modify EHTM9.5 to have a similar entry for MLD under B.4.40.2 EHT MAC features  TGbe editor to make the changes shown in 11-22/0997r0 under all headings that include CID 11981 |
| 11982 | Albert Petrick | 10.3.2.14.2 | 283.22 | Add entry in PICS for SNS10 (Transmitter sequence number space identifier 10) for Individually addressed Management frames. (See table 10-5) mandatory Tx requirement. | Add PIC entry to P806L60 FR.76.9 Management frames 10.3.2.14.2 EHTMLD10.2:M | Revised –  Agree in principle with the commenter .  In the baseline,  duplicate detection and recovery is simply added in the extended amendment like B.4.22 QMF extensions and B.4.24.1 DMG MAC features. We modify EHTM9.5 to have a similar entry for MLD under B.4.40.2 EHT MAC features  TGbe editor to make the changes shown in 11-22/0997r0 under all headings that include CID 11981 |
| 11983 | Albert Petrick | 10.3.2.14.2 | 283.38 | Add entry in PICS for SNS11 (Transmitter sequence number space identifier 11) for Group address data.(See table 10-5) mandatory Tx requirement. | Add PIC entry to P806L61 FR.76.10 Group Address data 10.3.2.14.2 EHTMLD10.3:M | Revised –  Agree in principle with the commenter .  In the baseline,  duplicate detection and recovery is simply added in the extended amendment like B.4.22 QMF extensions and B.4.24.1 DMG MAC features. We modify EHTM9.5 to have a similar entry for MLD under B.4.40.2 EHT MAC features  TGbe editor to make the changes shown in 11-22/0997r0 under all headings that include CID 11981 |
| 12265 | Stephen McCann | 10.3.2.14.3 | 283.50 | This sentence can be shortened. | Change the first sentence to "A STA and an MLD maintains one or more duplicate detection caches." | Revised –  Agree with the commenter. Proposed resolution accounts for the suggested changes.  TGbe editor to make the changes shown in 11-22/0997r0 under all headings that include CID 12265. |
| 12266 | Stephen McCann | 10.3.2.14.3 | 284.05 | Missing articles in this clause | Change "with Status" to "with the Status". Make the same change at P284L6, P284L22 and P284L23. | Accepted - |
| 13119 | Mark RISON | 10.3.2.14.2 | 283.12 | "Any STA affiliated with an MLD transmitting an individ- ually addressed QoS Data frame that is not a QoS(+) Null frame to a STA affiliated with the associated MLD." -- what does the last bit mean? How can the remote STA be affiliated with the local MLD? Ditto at 285.13 | Change to "affiliated with another MLD" as in the next row" | Revised –  We revise the description as suggested by the commenter.  TGbe editor to make the changes shown in 11-22/0997r0 under all headings that include CID 13119. |
| 13495 | Liwen Chu | 10.3.2.14.2 | 283.12 | Change "Any STA affiliated with an MLD transmitting" to "an MLD transmitting through any STA affiliated with it". similar changes should be applied to the table | As in comment | Revised –  Agree in principle with the commenter. Proposed resolution accounts for the suggested changes.  TGbe editor to make the changes shown in 11-22/0997r0 under all headings that include CID 13495 |
| 13496 | Liwen Chu | 10.3.2.14.3 | 285.08 | change "Any STA affiliated with an MLD receiving" to " an MLD receiving through any STA affiliated with it" | As in comment | Revised –  Agree in principle with the commenter. Proposed resolution accounts for the suggested changes.  TGbe editor to make the changes shown in 11-22/0997r0 under all headings that include CID 13496 |
| 14042 | kaiying Lu | 10.3.2.14.2 | 282.43 | Some places use "maintained by the MLD" and some use "maintained at the MLD level". Make the desciption consistent in this paragraph. | As in comment. | Revised –  We unify the texts to say maintained by the MLD.  TGbe editor to make the changes shown in 11-22/0997r0 under all headings that include CID 14042 |
| 14043 | kaiying Lu | 10.3.2.14.2 | 282.43 | Some places use "maintained at the link level", but some not. Make the desciption consistent in this paragraph. | As in comment. | Revised –  We unify the texts to say maintained by the MLD.  TGbe editor to make the changes shown in 11-22/0997r0 under all headings that include CID 14042 |
| 14044 | kaiying Lu | 10.3.2.14.3 | 284.17 | Some places use "maintained at the link level", but some not. Make the desciption consistent in this paragraph. | As in comment. | Revised –  We unify the texts to say maintained by the MLD.  TGbe editor to make the changes shown in 11-22/0997r0 under all headings that include CID 14042 |
| 14045 | kaiying Lu | 10.3.2.14.3 | 284.17 | Some places use "maintained by the MLD" and some use "maintained at the MLD level". Make the desciption consistent in this paragraph. | As in comment. | Revised –  We unify the texts to say maintained by the MLD.  TGbe editor to make the changes shown in 11-22/0997r0 under all headings that include CID 14042 |

**Discussion: None**

**Proposed:**

***TGbe editor: Change 10.3.2.14 Duplicate detection and recovery as follows (track change on):***

**10.3.2.14 Duplicate detection and recovery**

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16 **10.3.2.14.2 Transmitter requirements**

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18 ***Change the first paragraph as follows:***

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1. A STA maintains one or more sequence number spaces that are used when transmitting a frame to determine
2. the sequence number for the frame. An MLD maintains one or more sequence number spaces that are used
3. when a STA affiliated with the MLD transmits an individually addressed QoS Data frame to a STA affiliated
4. with an associated MLD to determine the sequence number for the frame. An MLD with dot11QMFActivated

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1. equal to false maintains a single sequence number space that is used when the MLD transmits through a STA affiliated with the MLD an individually addressed Management frame (except for a frame that is excluded as defined in in 35.3.14 (Multi-link device individually addressed Management frame delivery)) to a STA affiliated with another MLD to determine the sequence number for the frame.(#10289) When multiple sequence number spaces are supported, the appropriate sequence number space is determined by information from the MAC control fields of the frame to be transmitted. Except as noted below, each sequence number space is represented by a modulo 4096 counter, starting at 0 and incrementing by 1, for each MSDU or MMPDU transmitted using that sequence number space. If dot11MACPrivacyActivated is true, the counter in each sequence number space shall be set to a random number modulo 4096 when the STA’s MAC address is changed.

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38 ***Change the fourth paragraph as follows:***

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40 A transmitting STA shall support the applicable sequence number spaces defined in [Table 10-5 (Transmitter](#bookmark3)

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[sequence number spaces)](#bookmark3). An MLD shall support the applicable sequence number spaces defined in [Table 10-5 (Transmitter sequence number spaces)](#bookmark3) with the Status indicated as Mandatory (#10290). A STA affiliated with an MLD shall use(#10290) SNS9 in [Table 10-5 (Transmitter sequence number spaces](#bookmark3)) maintained by the MLD to determine the sequence number of an individually addressed QoS Data frame that is transmitted to a STA affiliated with another MLD.(#13119) A STA affiliated with an MLD shall use (#10290) SNS10 in [Table 10-5 (Transmitter sequence number spaces](#bookmark3)) maintained by the MLD to determine the sequence number of an individually addressed Management frame (except for a frame that is excluded as defined in 35.3.14 (Multi-link device individually addressed Management frame delivery)) that is transmitted to a STA affiliated with another MLD. (#10290) An AP MLD shall use(#10290) SNS11 in [Table 10-5 (Transmitter sequence number spaces](#bookmark3)) maintained by the MLD (#14042) (#10290) (#14042) to determine the sequence number of a group addressed Data frame that is transmitted by an an AP affiliated with the AP MLD, so that the same group addressed Data frame transmitted over multiple links by the AP MLD uses(#10290) the same sequence number for transmission on each link. Applicability is defined by the Applies to column. The Status column indicates the level of support that is required if the Applies to column matches the transmission. The Multiplicity column indicates whether the sequence number space contains a single counter, or multiple counters and in the latter case identifies any indexes. The Transmitter requirements column identifies requirements for the operation of this sequence number space. The referenced requirements are defined at the end of the table.

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1 ***Change the existing rows SNS2,(#10291) insert three new rows to*** [***Table 10-5 (Transmitter sequence number spaces)***](#bookmark3)***:***. ***(##11529)***

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4 **Table 10-5—Transmitter sequence number spaces**

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| **Sequence number space identifier** | **Sequence number space** | **Applies to** | **Status** | **Multiplicity** | **Transmitter requirements** |
| SNS1 | Baseline | A STA transmitting a frame that is not covered by any of the other sequence number spaces. | Mandatory | Single Instance | TR1 |
| SNS2 | Individually addressed QoS Data | A STA transmitting an individually addressed QoS Data frame , excluding SNS5 and SNS9. (#10290) | Mandatory | Indexed by <Address 1, TID> |  |
| …… | | | | | |
| SNS9 | Individually addressed QoS Data | An MLD transmitting through any STA affiliated with the MLD .(#13495)an individ- ually addressed QoS Data frame that is not a QoS(+) Null frame to a STA affiliated with another (#13119)MLD | Mandatory | Indexed by  <MLD MAC  Address that the STA iden- tified by Address 1 is affiliated with, TID> per MLD |  |
| SNS10 | Individually addressed Management frame (except the frames that are excluded in 35.3.14  (Multi-link device indi- vidually addressed Management frame deliv- ery)) | An MLD transmitting through any STA affiliated with the MLD an individ- ually addressed Management frame (except the frames that are excluded in 35.3.14 (Multi-link device individu- ally addressed Management frame delivery)) to a STA affiliated with another MLD. (#13495) | Mandatory | Indexed by  <MLD MAC  Address that the STA iden- tified by Address 1 is affiliated with> per MLD |  |
| SNS11 | Group addressed data | An AP MLD transmitting through any AP affiliated with the AP MLD a group addressed Data frame.(#13495) | Mandatory | Single instance per AP MLD |  |

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**10.3.2.14.3 Receiver requirements**

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47 ***Change the first paragraph as follows:***

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1. A STA and an MLD maintains one or more duplicate detection caches. ((#12265)[Table 10-6 (Receiver caches)](#bookmark4) defines the conditions under which a duplication detection cache is sup ported and the rules followed by the receiver for the cache. When a Data, Management or Extension frame is
2. received, a record of that frame is inserted in an appropriate cache. That record is identified by a sequence num-

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1. ber and possibly other information from the MAC control fields of the frame. When a Data, Management or
2. Extension frame is received in which the Retry subfield of the Frame Control field is equal to 1, the appropriate
3. cache, if any, is searched for a matching frame. In DMG, when a group addressed frame is received the appro-
4. priate cache is searched for a matching frame. When a PV1 Data frame or PV1 Management frame is
5. received, the appropriate cache is searched for a matching frame, regardless of the presence of the Retry sub-

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1. field of the Frame Control field. If the search is successful, the frame is considered to be a duplicate. Duplicate
2. frames are discarded.

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1 ***Change the third paragraph as follows:***

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1. A receiving STA shall implement the applicable receiver requirements defined in [Table 10-6 (Receiver](#bookmark4)
2. [caches)](#bookmark4) with the Status(#12266) indicated as Mandatory. An MLD shall implement the applicable receiver requirements defined in [Table 10-6 (Receiver caches](#bookmark4)) with the Status (#12266) indicated as Mandatory. All STAs affiliated with an MLD shall use RC14 in [Table 10-6 (Receiver caches](#bookmark4)), where the duplicate detection cache is maintained by the MLD (#10291) to assist the MLD in discarding duplicate individually addressed QoS Data frames belonging to a TID without BA negotiation that are transmitted from the STAs affiliated with another(#13119) MLD. All STAs affiliated with an MLD with dot11QMFActivated equal to false shall use RC15(#10291) in [Table 10-6](#bookmark4) [(Receiver caches](#bookmark4)), where the duplicate detection cache is maintained by the MLD, (#10291) to assist the MLD in discarding duplicate individually addressed Management frame (except the frames that are excluded in 35.3.14 (Multi-link device individually addressed Management frame delivery)) that are transmitted from the STAs affiliated with another MLD.(#13119) An MLD shall implement RC16 in [Table 10-6](#bookmark4) [(Receiver caches](#bookmark4)) (#10291) maintained by the MLD (#14042)(#10291) (#14042) (#10291) to discard duplicate group addressed Data that are delivered from the associated MLD. A group addressed Data frame received on any link shall be discarded using an implementation specific duplicate detection mechanism.(#11923) A receiving STA should implement the applicable receiver requirements defined

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1. in [Table 10-6 (Receiver caches)](#bookmark4) with the Status (#12266) indicated as Recommended. A receiving STA and a receiving MLD may implement the applicable receiver requirements defined in [Table 10-6 (Receiver caches)](#bookmark4) with Status indicated as Optional. Applicability is defined by the Applies to column. The Status column indicates the level of support that is required if the Applies to column matches the received frame. The Multiplicity /Cache size column indicates the indexes that identify a cache entry and the number of entries that shall be supported. The Receiver requirements column identifies requirements for the operation of this cache. The referenced requirements are defined at the end of the table. The requirements relate to caching information that identifies a cache entry and discarding duplicate MPDUs.

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1. ***Change the existing rows RC1 and RC2, insert three (##11529) new rows and two new footnotes (#11924) after RR6 to*** [***Table 10-6 (Receiver caches)***](#bookmark4)***:***

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38 **Table 10-6—Receiver caches**

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| --- | --- | --- | --- | --- | --- |
| **Receiver cache identifier** | **Cache name** | **Applies to** | **Status** | **Multiplicity / Cache size** | **Receiver requirements** |
| RC1 | Not QoS Data | A STA receiving frames (individually or group addressed) that are not QoS Data, excluding if supported:  RC4 RC5 RC6 RC7 RC8 RC10 RC15,  RC16(#10291) | Mandatory | Indexed by: <Address 2, sequence number, frag- ment number>.  At least the most recent cache entry per  <Address 2>. | RR1 RR2 RR5 |
| RC2 | QoS Data | A STA receiving an (indi- vidually or group addressed) QoS Data frame, excluding RC3, and if supported:  RC7, RC8, RC9, ~~and~~ RC10, and RC14 | Mandatory | Indexed by: <Address 2, TID, sequence number, fragment number>.  At least the most recent cache entry per  <Address 2, TID> pair in this cache. | RR1 RR5 |

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1 **Table 10-6—Receiver caches *(continued)***

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| **Receiver cache identifier** | **Cache name** | **Applies to** | **Status** | **Multiplicity / Cache size** | **Receiver requirements** |
| RC14 | Individu ally addresse d QoS Data | An MLD receiving through any STA affiliated with the MLD an individually addressed QoS Data frame that is not a QoS(+) Null frame from a STA affiliated with another MLD.(#13496, 13119) | Mandatory | Indexed by <MLD MAC address that the STA identified by Address 2 is affiliated with, TID, sequence number> per MLD.  At least the most recent cache entry per <MLD MAC address that the STA identified by Address 2 is affiliated with, TID> pair in this cache. | RR7 |
| RC15 | Individ- ually addresse d Man- age- ment frame (except the frames that are exclude d in 35.3.14  (Multi- link device individ- ually addresse d Man- age- ment frame deliv- ery)) | An MLD receiving through any STA affiliated with the MLD with dot11QMFActivated equal to false an individually addressed Management frame (except the frames that are excluded in 35.3.14 (Multi-link device individually addressed Management frame delivery)) from a STA affiliated with another MLD. (#13496) | Mandatory | Indexed by <MLD MAC address that the STA identified by Address 2 is affiliated with, sequence number> per MLD. At least the most recent cache entry per MLD MAC address that the STA identified by Address 2 is affiliated with in this cache. | RR7 |
| RC16 | Group addresse d Data | An MLD receiving through any STA affiliated with the MLD a group addressed Data frame.(#13496) | Mandatory | Indexed by <MLD MAC Address that the STA identified by Address 2 is affiliated with, sequence number> per MLD. At least the most recent cache entry per MLD MAC address that the STA identified by Address 2 is affiliated with in this cache. | RR8 |
| RR7: The MLD shall discard the frame if the Retry subfield of the Frame Control field is 1 and it matches an entry in the cache.  RR8: The MLD shall discard the frame based on an implementation specific duplicate detection mechanism.(#11923) | | | | | |

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*TGbe editor: Change B.4.40.2 EHT MAC features as follows (track change on):*

**B.4.40.2 EHT MAC features**

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| **EHTM9** | **EHT MLD features** |  |  |  |
| EHTM9.1 | Multi-link discovery procedures | 35.3.4 | CFEHTMLD: M | Yes  No  N/A  |
| EHTM9.2 | Multi-link (re)setup procedure | 35.3.5 | CFEHTMLD: M | Yes  No  N/A  |
| EHTM9.3 | Block ack procedures in multi-link operation | 35.3.8 | CFEHTMLD: M | Yes  No  N/A  |
| EHTM9.4 | Link management procedure with default TID-to-link mapping | 35.3.7 | CFEHTMLD: M | Yes  No  N/A  |
| EHTM9.5 | Multi-link sequence number spaces, duplicate detection and recovery (#11981) | 10.3.2.14 | CFEHTMLD: M | Yes  No  N/A  |
| EHTM9.6 | BSS parameter critical update proce- dure | 35.3.10 | CFEHTMLD: M | Yes  No  N/A  |
| EHTM9.7 | Multi-link power management | 35.3.12 | CFEHTMLD: M | Yes  No  N/A  |
| EHTM9.7.1 | Dynamic link transitions | 35.3.7.2 | CFEHTMLDAP: M  CFEHTMLD-  nonAP: O CFEHTMLDN-  STRmobileAP: M | Yes  No  N/A  |
| EHTM9.7.2 | MLD max idle period management | 35.3.12.3 | CFEHTMLD: M | Yes  No  N/A  |
| EHTM9.7.3 | WNM sleep mode in multi-link opera- tion | 35.3.12.5 | CFEHTMLD-  nonAP: O | Yes  No  N/A  |
| \*EHTM9.8 | NSTR operation | 35.3.16.4 | CFEHTMLDN-  STRmobileAP:M CFEHTMLD-  nonAP: O | Yes  No  N/A  |
| EHTM9.8.1 | PPDU end time alignment | 35.3.16.5 | EHTM9.8: M CFEHTM- LDAP:M | Yes  No  N/A  |
| EHTM9.8.2 | Start time sync PPDUs medium access | 35.3.16.6 | EHTM9.8: O | Yes  No  N/A  |
| EHTM9.8.3 | Medium access recovery procedure | 35.3.16.8 | EHTM9.8: M EHTM9.10: M EHTM9.11: M | Yes  No  N/A  |
| EHTM9.9 | Multi-link group addressed frame delivery | 35.3.15 | CFEHTMLD: M | Yes  No  N/A  |
| \*EHTM9.10 | EMLSR mode | 35.3.17 | CFEHTMLD: O | Yes  No  N/A  |
| EHTM9.10.1 | EMLSR configuration | 35.3.17 | EHTM9.10: M | Yes  No  N/A  |
| \*EHTM9.11 | EMLMR mode | 35.3.18 | CFEHTMLD: O | Yes  No  N/A  |
| Item | Protocol capability | References | Status | Support |
| EHTM9.12 | STR operation | 35.3.16.3 | CFEHTMLDAP: M  CFEHTMLD-  nonAP: O | Yes  No  N/A  |
| EHTM9.13 | NSTR mobile AP MLD operation | 35.3.19 | CFEHTNSTRMo-  bileAP: M | Yes  No  N/A  |
| \*EHTM9.14 | TID-to-link mapping | 35.3.7.1 | CFEHTMLD: O | Yes  No  N/A  |
| EHTM9.15 | TDLS procedure in multi-link opera- tion | 35.3.21 | CFEHTMLD-  nonAP: O | Yes  No  N/A  |
| EHTM9.16 | Multi-link SCS procedure | 35.3.22 | CFEHTMLD: O | Yes  No  N/A  |
| EHTM9.17 | Proxy ARP service in AP MLDs | 35.3.24 | CFEHTMLDAP: O CFEHTNSTRMo-  bileAP: O | Yes  No  N/A  |
| EHTM9.18 | Multi-link MSCS procedure | 35.3.23 | CFEHTMLD: O | Yes  No  N/A  |
| EHTM9.19 | Multi-link procedures for channel switching, extended channel switch- ing, and channel quieting | 35.3.11 | CFEHTMLDAP: M CFEHTNSTRMo-  bileAP: O CFEHTMLD-  nonAP: M | Yes  No  N/A  |