IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CR for CIDs related to EMLSR in Clause 9 | | | | |
| Date: October 12, 2021 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Gaurang Naik | Qualcomm Inc. |  |  | gnaik@qti.qualcomm.com |
| Abhishek Patil | Qualcomm Inc. |  |  | appatil@qti.qualcomm.com |
| Alfred Asterjadhi | Qualcomm Inc. |  |  | aasterja@qti.qualcomm.com |
| George Cherian | Qualcomm Inc. |  |  | gcherian@qti.qualcomm.com |
| Duncan Ho | Qualcomm Inc. |  |  | dho@qti.qualcomm.com |
| Yanjun Sun | Qualcomm Inc. |  |  | yanjuns@qti.qualcomm.com |
| Abdel Karim Ajami | Qualcomm Inc. |  |  | aajami@qti.qualcomm.com |
| Minyoung Park | Intel |  |  |  |

Abstract

This submission proposes resolutions for 13 CIDs received for TGbe CC36:

SP: Do you agree to the resolutions provided in doc 11-21/1703r1 for the following CIDs for inclusion in the latest 11be draft?

7843, 4008, 7563, 7842, 6563, 7564, 6564, 7699, 6664, 8162, 7578, 7335, 8168

**Revisions:**

* Rev 0: Initial version of the document.
* Rev 1: Changes during TGbe MAC call on 11/04/2021

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 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGbe 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.***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Section** | **Pg.Ln** | **Comment** | **Proposed Change** | **Resolution** |
| 7843 | Yonggang Fang | 9.4.1.67e | 0.00 | Please clarify whether setting EMLSR = 1 and EMLMR = 1 at same time is allowed or not. | Please add a rule of setting EML Control field for this case | **Revised**  Agree with the commenter. Since the support for the two modes are mutually exclusive for a non-AP MLD, when one mode is set to 1 the other is set to 0. This is clarified in the text.  **TGbe editor: Please implement all changes tagged as 7843 as shown in doc 11-21/1703r1.** |
| 4008 | Abhishek Patil | 9.4.1.67e | 118.30 | Clarify that any given time, only one bit (amongst EMLSR and EMLMR Mode) can be set to 1. | As in comment | **Revised**  Agree with the commenter. Since the support for the two modes are mutually exclusive for a non-AP MLD, when one mode is set to 1 the other is set to 0. This is clarified in the text.  **TGbe editor: Please implement all changes tagged as 7843 as shown in doc 11-21/1703r1.** |
| 7563 | Tomoko Adachi | 9.4.1.67e | 118.48 | "The EMLSR Mode subfield is set to 0 for all non-AP MLDs that do not support enhanced multi-link single radio operation, for all non-AP MLDs that have set the EMLMR Mode subfield to 1." It can be more readable by saying "A non-AP MLD that does not support enhanced multi-link single radio operation shall set the EMLSR Mode subfield to 0. The settings of the EMLSR Mode subfield and the EMLMR Mode subfield shall be exclusive." This will also solve the chiken and egg problem between the settings of the EMLSR Mode subfield and the EMLMR Mode subfield. | As in comment. | **Revised**  Agree with the comment. The statement is revised to make it more readable. Furthermore, since the support for the two modes are mutually exclusive, when one mode is set to 1 the other is set to 0. This is clarified in the text as a resolution for CID 7843.  **TGbe editor: Please implement all changes tagged as 7563 as shown in doc 11-21/1703r1.** |
| 7842 | Yonggang Fang | 9.4.1.67e | 118.48 | "The EMLSR Mode subfield is set to 0 for all non-AP MLDs that do not support enhanced multi-link single radio operation, for all non-AP MLDs that have set the EMLMR Mode subfield to 1" is confused and conflicted with the sentence before. | Suggest to clarify it. | **Revised**  Agree with the comment. The statement is revised to make it more readable. Furthermore, since the support for the two modes are mutually exclusive, when one mode is set to 1 the other is set to 0. This is clarified in the text as a resolution for CID 7843.  **TGbe editor: Please implement all changes tagged as 7563 as shown in doc 11-21/1703r1.** |
| 6563 | Payam Torab Jahromi | 9.4.1.67e | 118.50 | Incomplete sentence: "The EMLSR Mode subfield is set to 0 for all non-AP MLDs that do not support enhanced multi-link single radio operation, for all non-AP MLDs that have set the EMLMR Mode subfield to 1." | Add "and" between the two parts, after comma. | **Revised**  Agree with the comment. The statement is revised to make it more readable. Furthermore, since the support for the two modes are mutually exclusive, when one mode is set to 1 the other is set to 0. This is clarified in the text as a resolution for CID 7843.  **TGbe editor: Please implement all changes tagged as 7563 as shown in doc 11-21/1703r1.** |
| 7564 | Tomoko Adachi | 9.4.1.67e | 118.57 | "The EMLMR Mode subfield is set to 0 for all non-AP MLDs that do not support enhanced multi-link multi-radio operation, for all non-AP MLDs that have set the EMLSR Mode subfield to 1." It can be more readable by saying "A non-AP MLD that does not support enhanced multi-link multi-radio operation shall set the EMLMR Mode subfield to 0." For the chiken and egg problem between the settings of the EMLSR Mode subfield and the EMLMR Mode subfield, expecting that a sentence "The settings of the EMLSR Mode subfield and the EMLMR Mode subfield shall be exclusive." is accepted by the comment to pp.ll 118.48. | As in comment. | **Revised**  Agree with the comment. The statement is revised to make it more readable. Furthermore, since the support for the two modes are mutually exclusive, when one mode is set to 1 the other is set to 0. This is clarified in the text as a resolution for CID 7843.  **TGbe editor: Please implement all changes tagged as 7564 as shown in doc 11-21/1703r1.** |
| 6564 | Payam Torab Jahromi | 9.4.1.67e | 118.60 | Incomplete sentence: "The EMLMR Mode subfield is set to 0 for all non-AP MLDs that do not support enhanced multi-link multi-radio operation, for all non-AP MLDs that have set the EMLSR Mode subfield to 1." | Add "and" between the two parts, after comma. | **Revised**  Agree with the comment. The statement is revised to make it more readable. Furthermore, since the support for the two modes are mutually exclusive, when one mode is set to 1 the other is set to 0. This is clarified in the text as a resolution for CID 7843.  **TGbe editor: Please implement all changes tagged as 7564 as shown in doc 11-21/1703r1.** |
| 7699 | Xiaofei Wang | 9.4.1.67e | 118.51 | Is it mandatory for AP MLDs to support EMLSR and EMLMR? Please clarify. The two sentences "An AP MLD sets the EMLSR Mode subfield to the value obtained from the corresponding received EML Operating Mode Notification frame." and "An AP MLD sets the EMLMR Mode subfield to the value obtained from the corresponding received EML Operating Mode Notification frame." seem to imply that an AP MLD is mandatory to support EMLSR and EMLMR operations, even including SoftAP MLDs. If such operations are not mandatory for the AP MLDs, conditions need to be added to these two sentences.If such operations are mandatory, then that should made clear in the spec text. | as in comment | **Revised**  Agree with the comment. Support for EMLSR and EMLMR modes is optional at the AP MLD. The conditions are specified in terms of their corresponding MIB variables.  **TGbe editor: Please implement all changes tagged as 7699 as shown in doc 11-21/1703r1.** |
| 6664 | Raja Banerjea | 9.4.1.67e | 118.30 | EMLSR and EMLMR support is repeated in two capabilities element. One of them could be redundent. Page 118 (Figure 9-144c) and Page 131 (Fig 9-788). | EMLSR Mode and EMLSR Support seems to be redundent. Similarly EMLMR Mode and EMLMR support seems to be redundent. | **Revised**  The EMLSR Mode and the EMLMR Mode subfields in Page 118 (Figure 9-144c) are used for enabling and disabling the modes. The EMLSR Support and EMLMR Support subfields in the EML Capabilities subfield in Page 131 (Fig 9-788) are used for indicating an MLD’s capability. A note is added to clarify the purpose of the EMLSR Mode and EMLMR Mode subfields. It is also clarified that the fields are applicable only when the corresponding support bit is set to 1 in the Basic Multi-Link element.  **TGbe editor: Please implement all changes tagged as 6644 as shown in doc 11-21/1703r1.** |
| 8162 | Yunbo Li | 9.4.1.67e | 118.51 | "An AP MLD sets the EMLSR Mode subfield to the value obtained from the corresponding received EML Operating Mode Notification frame". Since AP always set the value same as non-AP MLD, why need to carry these Mode indication? | as in comment | **Rejected**  Since the format of the EML Notification frame sent by the AP and non-AP is the same, the value of the EMLSR mode/EMLMR mode subfields must be set to some value within the frame. EMLSR Mode subfield set to 0 indicates that the mode is disabled. Therefore, if the non-AP sets the subfield to 1, a response frame with the subfield set to 0 is ambiguous. Consequently, the AP MLD sets the same value as the received value. |
| 7578 | Tomoko Adachi | 9.4.2.295b.2 | 131.19 | Shouldn't the settings of the EMLSR Support subfield and the EMLMR Support subfield be exclusive? Add such description in 9.4.2.295b.2. | As in comment. | **Revised**  An AP MLD can support both EMLSR and EMLSR modes. A non-AP MLD cannot support both EMLSR and EMLMR modes simultaneously. A statement for clarification was added in 9.4.2.295b.2.  **TGbe editor: Please implement all changes tagged as 7578 as shown in doc 11-21/1703r1.** |
| 7335 | stephane baron | 35.3.15 | 131.23 | Is it a minimum padding duration like for EMLMR Delay ? Please clarify. | As in comment | **Revised**  The statement was revised to indicate that the value indicates the minimum padding duration in the initial Control frame.  **TGbe editor: Please implement all changes tagged as 7355 as shown in doc 11-21/1703r1.** |
| 8168 | Yunbo Li | 9.4.2.295b.2 | 131.40 | "When the EMLMR Delay subfield is included in a frame sent by an AP affiliated with an AP MLD, the EMLMR Delay subfield is set to 0." Similar requirement should be added for EMLSR. | as in comment | **Revised**  Agree with the comment. A similar statement was added.  **TGbe editor: Please implement all changes tagged as 8168 as shown in doc 11-21/1703r1.** |

***TGbe editor: Please note Baseline is 11be D1.2***

**9.4.1.67e EML Control field**

A non-AP MLD that supports enhanced multi-link single radio operation (see 35.3.16 (Enhanced multi-link single radio operation)) sets the EMLSR Mode subfield to 1 to indicate that the non-AP MLD operates in EMLSR mode and to 0 to indicate that the non-AP MLD does not operate in EMLSR mode. A non-AP MLD that does not support enhanced multi-link single radio operation (see 35.3.16 (Enhanced multi-link single radio operation)) sets the EMLSR Mode subfield to 0 (#7563). The EMLSR Mode subfield is set to 0 if the EMLMR Mode subfield is set to 1 (#7843). An AP MLD with dot11EHTEMLSROptionImplemented equal to true that receives an EML Operating Mode Notification frame from a STA affiliated with a non-AP MLD sets the EMLSR Mode subfield of the EML Operating Mode Notification frame that is sent in response to the value obtained from the received EML Operating Mode Notification frame (#7699).

A non-AP MLD that supports enhanced multi-link multi-radio operation (see 35.3.17 (Enhanced multi-link multi-radio operation)) sets the EMLMR Mode subfield to 1 to indicate that the non-AP MLD operates in EMLMR mode and to 0 to indicate that the non-AP MLD does not operate in EMLMR mode. A non-AP MLD that does not support enhanced multi-link multi-radio operation (see 35.3.17 (Enhanced multi-link multi-radio operation)) sets the EMLMR Mode subfield to 0 (#7564). The EMLMR Mode subfield is set to 0 if the EMLSR Mode subfield is set to 1 (#7843). An AP MLD with dot11EHTEMLMROptionImplemented equal to true that receives an EML Operating Mode Notification frame from a STA affiliated with a non-AP MLD sets the EMLMR Mode subfield of the EML Operating Mode Notification frame that is sent in response to the value obtained from the received EML Operating Mode Notification frame (#7699).

NOTE – The EMLSR Mode and EMLMR Mode subfields are used to enable or disable the EMLSR and EMLMR modes, respectively. An EML Operating Mode Notification frame sets either of these subfields to a nonzero value only when the corresponding mode is supported by the receiving MLD. An MLD indicates which mode(s) it supports in the EML Capabilities field of the Basic Multi-Link element that it transmits (see 9.4.2.295b.2 (Basic Multi-Link element)) (#6664).

**9.4.2.295b Multi-link element**

**9.4.2.295b.2 Basic Multi-link element**

…

The EMLSR Support subfield indicates support of the EMLSR operation for an MLD. The EMLSR Support subfield is set to 1 if the MLD supports the EMLSR operation; otherwise it is set to 0. For a non-AP MLD, the EMLSR Support subfield is set to 0 if the EMLMR Support subfield is set to 1 (#7578).

The EMLSR Padding Delay subfield indicates the minimum (#7335) MAC padding duration of the Padding field of the initial Control frame requested by the non-AP MLD as (#7335) defined in 35.3.16 (Enhanced multi-link single radio operation). When the EMLSR Padding Delay subfield is included in a frame sent by an AP affiliated with an AP MLD, the EMLSR Padding Delay subfield is set to 0 (#8168). The EMLSR Padding Delay subfield includes 3 bits and is set as defined in Table 9-322ap (Encoding of the EMLSR Padding Delay subfield) (#7335).

**Table 9-322ap—** **Encoding of the EMLSR Padding Delay subfield (#7335)**

|  |  |
| --- | --- |
| **EMLSR Padding Delay subfield value** | **EMLSR Padding Delay** |
| 0 | 0 μs |
| 1 | 32 μs |
| 2 | 64 μs |
| 3 | 128 μs |
| 4 | 256 μs |
| 5-7 | Reserved |

The EMLMR Support subfield indicates support of the EMLMR operation for an MLD. The EMLMR Sup­port subfield is set to 1 if the MLD supports the EMLMR operation; otherwise it is set to 0. For a non-AP MLD, the EMLMR Support subfield is set to 0 if the EMLSR Support subfield is set to 1 (#7578).