IEEE P802.11
Wireless LANs

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| LB266 Comment Resolution Clause 35.3.17 EMLSR Part2 |
| Date: 2022-8-4 |
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Abstract

This submission proposes comment resolution(s) for the following 33 CID(s) received in LB266 on TGbe D2.0 related to 35.3.17 EMLSR Operation:

CIDs:

13810, 12674, 13409, 10156, 10157, 10158, 14077, 12675, 11678, 11679

11456, 11582, ~~13414, 13412, 13811~~, 14001, 13415, 12677, 13417, 10130

11457, 10479, 12425, 13858, 14078, 12430, 10134, 13418, 12451, 11458

13812, 14079, 10163, 13814, 12679, 10927

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: modified resolutions for CID 11582, 11678, 11679 based on the discussion with Xiaofei and CID 11456 based on discussion with Xiaofei and Gaurang
* Rev 2: updated based on additional feedback from Gaurang; CID 13414, 13412, 13811 removed and will be discussed later.
* Rev 3: updated based on feedback from Arik on CID 12677; adding Green tags

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| **CID** | **Commenter** | **Clause Number** | **Page.****Line** | **Comment** | **Proposed Change** | **Resolution** |
| 13810 | Yuchen Guo | 35.3.17 | 462.18 | It should be the STA to set the EML Capabilities Present subfield to 1 | Change "An MLD" to "An EHT STA affiliated with an MLD" | Rejected.The EMLSR mode is an MLD capability so an MLD setting the present subfield is correct. |
| 12674 | Arik Klein | 35.3.17 | 462.22 | According to P271L19 "For a non-AP MLD, the EMLSR Support subfield is set to 0 if the EMLMR Support subfield is set to 1". Thus, need to add the requirement for the setting of the EMLMR support subfield in the following sentence: "An MLD with dot11EHTEMLSROptionImplemented equal to false and dot11EHTEMLMROptionImplemented equal to true (see 35.3.18 (Enhanced multi-link multi-radio operation)) shall set the EML Capabilities Present subfield to 1 and shall set the EMLSR Support subfield of the EML Capabilities subfield to 0" | Revise the sentence as follows: "An MLD with dot11EHTEMLSROptionImplemented equal to false and dot11EHTEMLMROptionImplemented equal to true (see 35.3.18 (Enhanced multi-link multi-radio operation)) shall set the EML Capabilities Present subfield to 1 and shall set the EMLSR Support subfield to 0 and the EMLMR Support subfield to 1 in the EML Capabilities subfield" | Rejected.This subclause defines normative behavior of the EMLSR operation. The setting of the EMLMR Support subfield is defined in 35.3.18 (EMLMR operation) as follows:“An MLD with dot11EHTEMLMROptionImplemented equal to true shall set the EML Capabilities Presentsubfield to 1 and shall set the EMLMR Support subfield of the Common Info field of transmitted Basic Multi-Link elements to 1; otherwise, the MLD shall set the EMLMR Support subfield to 0.” |
| 13409 | Liwen Chu | 35.3.17 | 462.30 | Dynamic SM power save is not a MLD level feature. | Fix the issues mentioned in the comment | Revised.Agree with the commenter.TGbe editor to make the changes with the CID tag (#13409) in doc.: IEEE 802.11-22/1204r4[https://mentor.ieee.org/802.11/dcn/22/11-22-1204-04-00be-lb266-cr-cl35-emlsr-part2.docx] |

**35.3.17 Enhanced multi-link single radio operation**

**…**

When a non-AP MLD is operating in EMLSR mode on the EMLSR links, the (#13409)STAs operating on the EMLSR links and affiliated with the non-AP MLD shall not operate in dynamic SM power save mode (11.2.6 (SM power save)) on the EMLSR links.

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| **CID** | **Commenter** | **Clause Number** | **Page.****Line** | **Comment** | **Proposed Change** | **Resolution** |
| 10156 | Julien Sevin | 35.3.17 | 462.33 | An AP MLD has not the possibility to propose different EMLSR links that the EMLSR links specified by the non-AP MLD in the EML Operating Mode Notification frame | Specify a procedure allowing an AP MLD to propose other EMLSR links that the EMLSR links specified by the non-AP MLD in the EML Operating Mode Notification frame | Rejected.An AP MLD supports frame delivery on any enabled link that is setup with a non-AP MLD. Therefore, there is no reason why an AP MLD cannot support EMLSR on an enabled link that is setup with a non-AP MLD. |
| 10157 | Julien Sevin | 35.3.17 | 462.33 | An AP MLD has not the possibility to propose/initiate to a non-AP MLD to operate in EMLSR mode | Specify a procedure allowing an AP to transmit an EML Operating Mode Notification frame for proposing to a non-AP STA to initiate its EMLSR mode. | Rejected.It is not clear from the comment why an AP MLD needs to force a non-AP MLD to enable/disable the EMLSR mode. It is a non-AP MLD’s choice whether to enable or disable the EMLSR mode.  |
| 10158 | Julien Sevin | 35.3.17 | 462.57 | An AP MLD has not the possibility to propose to a non-AP MLD to disabled the EMLSR mode | Specify a procedure allowing an AP to transmit an EML Operating Mode Notification frame for proposing to a non-AP STA to disable its EMLSR mode. | Rejected.It is not clear from the comment why an AP MLD needs to force a non-AP MLD to enable/disable the EMLSR mode. It is a non-AP MLD’s choice whether to enable or disable the EMLSR mode. |
| 14077 | Ming Gan | 35.3.17 | 462.34 | It is straight forward to allow AP to initiate and send an EML Operating Mode Notification frame | add the case that AP initiates and sends an EML Operating Mode Notification frame | Rejected.It is not clear from the comment why an AP MLD needs to force a non-AP MLD to enable/disable the EMLSR mode. It is a non-AP MLD’s choice whether to enable or disable the EMLSR mode. |
| 12675 | Arik Klein | 35.3.17 | 462.33 | Use unified terminology with respect to the EMLSR mode : enabled/disabled (used in 35.3.17) vs. operated/non-operated (used in 9.4.1.74).Please revise the following sentence and align it with the terminology used in the equivalent sentence in P462L56, as proposed: "When a non-AP MLD with dot11EHTEMLSROptionImplemented equal to true intends to operate in the EMLSR mode on the EMLSR links..." | the sentence should be revised as follows: "When a non-AP MLD with dot11EHTEMLSROptionImplemented equal to true intends to \*enable\* the EMLSR mode on the EMLSR links..." | Revised.Agree with the commenter.TGbe editor to make the changes with the CID tag (#12675) in doc.: IEEE 802.11-22/1204r4[https://mentor.ieee.org/802.11/dcn/22/11-22-1204-04-00be-lb266-cr-cl35-emlsr-part2.docx] |
| 11678 | Zinan Lin | 35.3.17 | 462.37 | P462L37:"An AP affiliated with the AP MLD that received the EML Operating Mode Notification frame from the STA affiliated with the non-AP MLD should transmit an EML Operating Mode Notification frame to one of the STAs affiliated with the non-AP MLD within the timeout interval indicated in the Transition Timeout subfield in the EML Capabilities subfield of the Basic Multi-Link element starting at the end of the PPDU transmitted by the AP affiliated with the AP MLD as an acknowledgement to the EML Operating Mode Notification frame transmitted by the STA affiliated with the non-AP MLD." How an AP transmit and EML Operation Mode Notification frame to one of the STAs within the timeout interval starting at the end of the PPDU transmitted by the AP? It is very unclear. | An AP affiliated with the AP MLD that received the EML Operating Mode Notification frame from the STA affiliated with the non-AP MLD should transmit an EML Operating Mode Notification frame to one of the STAs affiliated with the non-AP MLD within the timeout interval indicated in the Transition Timeout subfield in the EML Capabilities subfield of the Basic Multi-Link element starting at the end of the PPDU transmitted by the STA affiliated with the non-AP MLD as an acknowledgement to the EML Operating Mode Notification frame transmitted by the STA affiliated with the non-AP MLD | Revised.The proposed change is incorrect. The timeout interval starts at the end of **the** **PPDU** **transmitted** by an AP affiliated with the AP MLD **as a response** to the received EML OMN frame, not at the end of the EML OMN frame transmitted by the STA affiliated with the non-AP MLD. However, after discussion with the commenter of CID 11582, there was a suggestion to improve the text to remove the ambiguity by replacing ‘as an acknowledgement’ to ‘carrying the immediate acknowledgement” so that the acknowledgement is not the EML OMN frame sent by the AP MLD but an immediate acknowledgement from the AP MLD after receiving the EML OMN frame from the non-AP MLD. |
| 11679 | Zinan Lin | 35.3.17 | 462.60 | P462L60:"An AP affiliated with the AP MLD that received the EML Operating Mode Notification frame from the STA affiliated with the non-AP MLD should transmit an EML Operating Mode Notification frame to one of the STAs affiliated with the non-AP MLD within the timeout interval indicated in the Transition Timeout subfield in the EML Capabilities subfield of the Basic Multi-Link element starting at the end of the PPDU transmitted by the AP affiliated with the AP MLD as an acknowledgement to the EML Operating Mode Notification frame transmitted by the STA affiliated with the non-AP MLD." How an AP transmit and EML Operation Mode Notification frame to one of the STAs within the timeout interval starting at the end of the PPDU transmitted by the AP? | An AP affiliated with the AP MLD that received the EML Operating Mode Notification frame from the STA affiliated with the non-AP MLD should transmit an EML Operating Mode Notification frame to one of the STAs affiliated with the non-AP MLD within the timeout interval indicated in the Transition Timeout subfield in the EML Capabilities subfield of the Basic Multi-Link element starting at the end of the PPDU transmitted by the STA affiliated with the non-AP MLD as an acknowledgement to the EML Operating Mode Notification frame transmitted by the STA affiliated with the non-AP MLD. | Revised.The proposed change is incorrect. The timeout interval starts at the end of **the** **PPDU** **transmitted** by an AP affiliated with the AP MLD **as a response** to the received EML OMN frame, not at the end of the EML OMN frame transmitted by the STA affiliated with the non-AP MLD.However, after discussion with the commenter of CID 11582, there was a suggestion to improve the text to remove the ambiguity by replacing ‘as an acknowledgement’ to ‘carrying the immediate acknowledgement” so that the acknowledgement is not the EML OMN frame sent by the AP MLD but an immediate acknowledgement from the AP MLD after receiving the EML OMN frame from the non-AP MLD. |
| 11456 | Gaurang Naik | 35.3.17 | 462.39 | The contents of the response frame from the AP MLD is not clear. The response EML OMN frame must carry the EML Control field that is identical in value to the EML Control field received from the non-AP MLD. Same comment for the paragraph on disabling EMLSR mode (P462L62) | On L39, replace '...should transmit an EML Operating Mode Notification frame to...' with '...should transmit an EML Operating Mode Notification frame \*with the EML Control field set to the same value as EML Control field in the received EML Operating Mode Notification frame from the non-AP MLD\* to...'Same change on L62. | Revised.Agree with the commenter.Also based on the discussion in CID 11582, a clarification was made that an AP MLD transmits another EML OMN frame after the AP MLD is ready to serve the non-AP MLD in the EMLSR mode or no longer serving the non-AP MLD.TGbe editor to make the changes with the CID tag (#11456) in doc.: IEEE 802.11-22/1204r4[https://mentor.ieee.org/802.11/dcn/22/11-22-1204-04-00be-lb266-cr-cl35-emlsr-part2.docx] |
| 11582 | Xiaofei Wang | 35.3.17 | 462.44 | How is "successfully transmission of the EML Operating Mode Notification frame" defined? Is it considered successful only after a response frame is received from the AP MLD? If so, it is better to clearly state that. It is more prudent to enter EMLSR mode after the acknowledgement is received from the AP MLD.For example, when transition expires, but no acknowledgement is received from the AP MLD. It is not certain that the AP MLD has received the initial frame. | as in comment | Revised.The current baseline standard defines “successful transmission” as follows, therefore there is no ambiguity:“**successful transmission:** A transmission and the reception of its expected immediate response or atransmission for which no immediate response is expected.”However, after discussion with the commenter, there was a suggestion to improve the text to remove the ambiguity by replacing ‘as an acknowledgement’ to ‘carrying the immediate acknowledgement” so that the acknowledgement is not the EML OMN frame sent by the AP MLD but an immediate acknowledgement from the AP MLD after receiving the EML OMN frame from the non-AP MLD. |
| 14001 | Geonjung Ko | 35.3.17 | 462.48 | The STAs on other EMLSR links transition to active mode after transition delay, but transition delay may be long. Therefore, the AP MLD should not transmit the initial Control frame to those STAs during transition delay. | The AP MLD needs a restriction on its transmission during transition delay for STAs not in active mode. | Rejected.The current spec already defines that a non-AP MLD enables the EMLSR mode when the transition delay timer expires or if the EML OMN frame was received before the timer expires. Unless either condition is met, a non-AP MLD doesn’t enable the EMLSR mode and therefore the initial control frame is not transmitted by an AP MLD.  |
| 13415 | Liwen Chu | 35.3.17 | 462.51 | Calrify whether "the AP" in the last sentence of the paragraph is the AP that "a STA" associate with. The AP should be the AP transmitting the notification frame. A STA should be the STA that doesn't transmit the notification frame. Make it clear. | As in comment. | Revised.Updated the paragraph as follows:“the AP affiliated with the AP MLD” to “one of the APs operating on the EMLSR links and affiliated with the AP MLD”TGbe editor to make the changes with the CID tag (#13415) in doc.: IEEE 802.11-22/1204r4[https://mentor.ieee.org/802.11/dcn/22/11-22-1204-04-00be-lb266-cr-cl35-emlsr-part2.docx] |
| 12677 | Arik Klein | 35.3.17 | 462.52 | According to the following sentence "A STA on one of the other links of the EMLSR links shall not transmit a frame with the Power Management subfield set to 1 before receiving the EML Operating Mode Notification frame from the AP affiliated with the AP MLD or before the end of the timeout interval".Add a note that a non-AP STA affiliated with non-AP MLD operating in EMLSR mode which enters into PS mode has to in awake state as required in the P463L21:"The non-AP MLD shall be able to listen on the EMLSR links, by having its affiliated STA(s) corresponding to those links in awake state" | Add the following note: "a non-AP STA affiliated with non-AP MLD operating in EMLSR mode which enters into PS mode has to in awake state " | Revised.As a clarification, a STA operating on one of the EMLSR links listens on the link when it is in awake state. When the STA is in PS mode and in doze state, it is not able to receive or transmit a non-WUR PPDUs as defined in 11.2 (Power management) in the baseline standard and the TGbe is not changing that behavior. This has been clarified by adding a note.TGbe editor to make the changes with the CID tag (#12677) in doc.: IEEE 802.11-22/1204r4[https://mentor.ieee.org/802.11/dcn/22/11-22-1204-04-00be-lb266-cr-cl35-emlsr-part2.docx] |
| 13417 | Liwen Chu | 35.3.17 | 463.06 | It is ok to transmit to power ave mode before the transition delay indicated in the Transition Timeout or before receiving the notification frame | As in comment. | Rejected.This may result in a race condition: an EML OMN frame indicating that the STAs on the other links of the EMLSR links transitioning to active mode and while the AP MLD preparing to serve the non-AP MLD in the EMLSR mode (before the timeout or transmission of the EML OMN frame as a response) assuming that the STAs of the other links of the EMLSR links are in active mode, one of the APs on the other links of the EMLSR links receive that a STA is transitioning to PS mode. The AP MLD will need to deal with two opposite indications. |
| 10130 | Jay Yang | 35.3.17 | 463.14 | the baseline in 11.2.3.2 say there is a complete frame exchange between AP and STA if the STA intends to change the PM mode,but the Note1 doesn't consider the ACK from AP, which conflict with the baseline. | add the ACK/BA from the AP. | Rejected.The current baseline standard defines “successful transmission” as follows, therefore there the current text is correct:“**successful transmission:** A transmission and the reception of its expected immediate response or atransmission for which no immediate response is expected.” |
| 11457 | Gaurang Naik | 35.3.17 | 463.20 | Add a parenthesis around s in links. That is, change 'EMLSR links' to 'EMLSR link(s)' | As in comment | Accepted. |
| 10479 | Minyoung Park | 35.3.17 | 462.04 | It is not clear whether the EMLSR Link Bitmap subfield can be used to update the EMLSR links after the EMLSR mode is enabled. Allowing a non-AP MLD to update the EMLSR links would be useful for a non-AP MLD to change operation without disabling and enabling EMLSR mode again simply to update the EMLSR links. | Add a normative behavior that allows a non-AP MLD to update the EMLSR links by transmitting an EML Operating Mode Notification frame with a new bitmap value in the EMLSR Link Bitmap subfield after the EMLSR mode is enabled without disabling the EMLSR mode. | Revised.Agree with the comment. When a non-AP MLD is in EMLSR mode, an EML OMN frame may be transmitted with a different set of EMLSR links.TGbe editor to make the changes with the CID tag (#10479) in doc.: IEEE 802.11-22/1204r4[https://mentor.ieee.org/802.11/dcn/22/11-22-1204-04-00be-lb266-cr-cl35-emlsr-part2.docx] |

**TGbe Editor to make the following changes in the paragraph in P462L33 in Subclause 35.3.17 (Enhanced multi-link single radio operation) in TGbe D2.0:**

When a non-AP MLD with dot11EHTEMLSROptionImplemented equal to true intends to (#12675)enable the EMLSR mode on the EMLSR links, a STA affiliated with the non-AP MLD shall transmit an EML Operating Mode Notification frame with the EMLSR Mode subfield of the EML Control field of the frame set to 1 to an AP affiliated with an AP MLD with dot11EHTEMLSROptionImplemented equal to true. An AP affiliated with the AP MLD that received the EML Operating Mode Notification frame from the STA affiliated with the non-AP MLD should transmit an EML Operating Mode Notification frame (#11456)with the EML Control field set to the same value as the EML Control field in the received EML Operation Mode Notification frame, after the AP MLD is ready to serve the non-AP MLD in the EMLSR mode operation, to one of the STAs affiliated with the non-AP MLD within the timeout interval indicated in the Transition Timeout subfield in the EML Capabilities subfield of the Basic Multi-Link element starting at the end of the PPDU transmitted by the AP affiliated with the AP MLD (#11582, 11678, 11679)carrying the immediate acknowledgement to the EML Operating Mode Notification frame transmitted by the STA affiliated with the non-AP MLD. After the successful transmission of the EML Operating Mode Notification frame on one of the EMLSR links by the STA affiliated with the non-AP MLD, the non-AP MLD shall operate in the EMLSR mode and the STAs on the other links of the EMLSR links shall transition to active mode after the transition delay indicated in the Transition Timeout subfield in the EML Capabilities subfield of the Basic Multi-Link element or immediately after receiving an EML Operating Mode Notification frame from one of the APs operating on the EMLSR links and affiliated with the AP MLD. A STA on one of the other links of the EMLSR links shall not transmit a frame with the Power Management subfield set to 1 before receiving the EML Operating Mode Notification frame from (#13415)one of the APs operating on the EMLSR links and affiliated with the AP MLD or before the end of the timeout interval. (#10479)The non-AP MLD that enabled the EMLSR mode may update the EMLSR links by transmitting an EML Operation Mode Notification frame with the EMLSR Mode subfield set to 1 and updated EMLSR links indicated in the EMLSR Link Bitmap subfield, and the AP MLD and the non-AP MLD follow the same rules that are defined for enabling the EMLSR mode.

(10479)NOTE - The non-AP MLD that enabled the EMLSR mode can update the EMLSR links by transmitting an EML Operation Mode Notification frame with the EMLSR Mode subfield set to 1 and updated EMLSR links indicated in the EMLSR Link Bitmap subfield.

When a non-AP MLD with dot11EHTEMLSROptionImplemented equal to true intends to disable the EMLSR mode, a STA affiliated with the non-AP MLD shall transmit an EML Operating Mode Notification frame with the EMLSR Mode subfield of the EML Control field of the frame set to 0 to an AP affiliated with an AP MLD with dot11EHTEMLSROptionImplemented equal to true. An AP affiliated with the AP MLD that received the EML Operating Mode Notification frame from the STA affiliated with the non-AP MLD should transmit an EML Operating Mode Notification frame (#11456)with the EML Control field set to the same value as the EML Control field in the received EML Operation Mode Notification frame, after the AP MLD is no longer serving the non-AP MLD in the EMLSR mode operation, to one of the STAs affiliated with the non-AP MLD within the timeout interval indicated in the Transition Timeout subfield in the EML Capabilities subfield of the Basic Multi-Link element starting at the end of the PPDU transmitted by the AP affiliated with the AP MLD (#11582, 11678, 11679)carrying the immediate acknowledgement to the EML Operating Mode Notification frame transmitted by the STA affiliated with the non-AP MLD. After the successful transmission of the EML Operating Mode Notification frame on one of the EMLSR links by the STA affiliated with the non-AP MLD, the non-AP MLD shall disable the EMLSR mode and the STAs on the other links of the EMLSR links shall transition to power save mode after the transition delay indicated in the Transition Timeout subfield in the EML Capabilities subfield of the Basic Multi-Link element or immediately after receiving an EML Operating Mode Notification frame from one of the APs operating on the EMLSR links and affiliated with the AP MLD. A STA on one of the other links of the EMLSR links shall not transmit a frame with the Power Management subfield set to 0 before receiving the EML Operating Mode Notification frame from (#13415)one of the APs operating on the EMLSR links and affiliated with the AP MLD or before the end of the timeout interval.

NOTE 1—Each of the STAs on the other links of the EMLSR links can transmit a frame with the Power Management subfield set to 1 and transition to power save mode immediately after successful transmission of the frame. (see 11.2.3.2 (Non-AP STA power management modes)).

When a non-AP MLD is operating in the EMLSR mode with an AP MLD supporting the EMLSR mode, the following applies:
— The non-AP MLD shall be able to listen on the (#11457)EMLSR link(s), by having its affiliated STA(s) corresponding to those links in awake state. The listening operation includes CCA and receiving the initial Control frame of frame exchanges that is initiated by the AP MLD.

(#12677)NOTE – A STA operating on one of the EMLSR links can change its power management mode and follows the procedure in 11.2 (Power management). A STA can listen on one of the EMSLR links in active mode or in PS mode when it is in awake state.

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| **CID** | **Commenter** | **Clause Number** | **Page.****Line** | **Comment** | **Proposed Change** | **Resolution** |
| 12425 | Yongho Kim | 35.3.17 | 463.17 | If a link with good channel condition is selected among EMLSR links, EMLSR performance can be improved.AP MLD may transmit multiple initial control frames to STA MLD over multiple EMLSR links simultaneously. STA MLD can select a link that has good channel condition and response to the initial control frame on the selected link. In some implementation, EMLSR STA MLD may not be able to decode multiple initial control frame simultaneously. However, EMLSR STA MLD can choose a link to decode initial control frame among EMLSR links which detects energy at the same time. | Plesae define a link selection method explained in the comment. | Rejected.The current spec defines an AP affiliated with an AP MLD initiates frame exchanges with a STA affiliated with a non-AP MLD and which link to initiate a frame is left for implementation. The described method is limited to the case when both links are idle and injects unnecessary frames to the network increasing traffic in the network whereas the EMLSR operation is more beneficial when the network load is mid-high. |
| 13858 | Sanghyun Kim | 35.3.17 | 463.18 | An AP shall not transmit the Initial Control frame to a non-AP STA operating on a EMLSR link if another non-AP STA operating on the same EMLSR link pair performing radio measurement. | As in comment. | Rejected.This is an invalid comment. It fails to locate and identify the issue. Fails to identify changes in sufficient detail so that the specific wording of the changes can be determined. |
| 14078 | Ming Gan | 35.3.17 | 463.22 | It is not clear whether each affiliated STA in the EMLSR mode can receive the non-HT format frame or not, like Beacon | add "non-HT (duplicate) PPDUs" at the end of this bullet | Rejected.The current spec clearly defines that during the listening operation, a STA affiliated with a non-AP MLD is able to receive the initial control frame and do CCA:“The listening operation includes CCA and receiving theinitial Control frame of frame exchanges that is initiated by the AP MLD.”As receiving a beacon frame is not listed in the listening operation in TGbe draft D2.1, receiving a beacon frame during the listening operation is not a requirement.  |
| 12430 | Yongho Kim | 35.3.17 | 463.24 | When an AP schedules UL OFDMA of STAs including EMLSR STAs, the AP shall transmit Initial control frame to the EMLSR STAs before the transmission of TF. This procedure is not clearly specified in the draft 2.0. | Please clarify as in comment, when AP schedules MU OFDMA. | Rejected.The following sentence and throughout the subclause use “frame exchanges” to include one or more frame changes after the initial control frame exchange.“An AP affiliated with the AP MLD that initiates frame exchanges with the non-AP MLD on one ofthe EMLSR links shall begin the frame exchanges by transmitting the initial Control frame to thenon-AP MLD with the limitations specified below.”Figure 35-24 and 35-25 also shows multiple frame exchanges happening after the initial control frame. |
| 10134 | Ulrich Sinn | 35.3.17 | 463.30 | "Mbps" is not conforming to ANSI standards. | change to "Mbit/s" | Revised.Mb/s is the correct term. TGbe editor to make the changes with the CID tag (#10134) in doc.: IEEE 802.11-22/1204r4[https://mentor.ieee.org/802.11/dcn/22/11-22-1204-04-00be-lb266-cr-cl35-emlsr-part2.docx] |
| 13418 | Liwen Chu | 35.3.17 | 463.30 | This "shall" requirement should be that the AP "shall" do the padding per the requirement announced by the non-AP MLD. | As in comment. | Revised.Added a sentence to clarify that the AP shall set the padding duration of the Padding field of the initial control frame to be greater than or equal to the duration in the EMLSR Padding Delay.TGbe editor to make the changes with the CID tag (#13418) in doc.: IEEE 802.11-22/1204r4[https://mentor.ieee.org/802.11/dcn/22/11-22-1204-04-00be-lb266-cr-cl35-emlsr-part2.docx] |
| 12451 | Ryuichi Hirata | 35.3.17 | 463.31 | Required time for non-AP MLD in listening operation to be able to transmit or receive frames on the link depends on operating channels of each EMLSR links, etc. Therefore, the non-AP STA may not be capable of receiving a PPDU that is sent using more than one spatial stream within the specified time, if the non-AP MLD indicates only minimum padding duration in common info field. | Add indication of EMLSR delay for each link pairs. | Rejected.The minimum padding duration indicates the minimum time a non-AP MLD needs in the Padding field of the initial control frame to switch from the listening operation to transmit/receive operation. A non-AP MLD can choose a value that works for the EMLSR operation across the EMLSR links. |
| 11458 | Gaurang Naik | 35.3.17 | 463.33 | Specify the frame that carries the Basic Multi-Link element. | Revise as follows 'in the Common Info field of the Basic Multi-Link element \*carried in (Re)Association Request frames it transmits\*.' | Revised.Added the following “carried in a (Re)Association Request frame it transmits.”TGbe editor to make the changes with the CID tag (#11458) in doc.: IEEE 802.11-22/1204r4[https://mentor.ieee.org/802.11/dcn/22/11-22-1204-04-00be-lb266-cr-cl35-emlsr-part2.docx] |
| 13812 | Yuchen Guo | 35.3.17 | 463.37 | 35.5.2.2 is AP's behavior, however, this sentence is talking about non-AP MLD's behavior | change 35.5.2.2 to 35.5.2.3 and the corresponding title of the subclause for referencce | Revised.Agree with the comment.TGbe editor to make the changes with the CID tag (#13812) in doc.: IEEE 802.11-22/1204r4[https://mentor.ieee.org/802.11/dcn/22/11-22-1204-04-00be-lb266-cr-cl35-emlsr-part2.docx] |
| 14079 | Ming Gan | 35.3.17 | 463.41 | Is there any limitation on the # of ss for the response to MU-RTS Trigger frame | add "or MU-RTS Trigger frame" | Rejected.The response to the MU-RTS Trigger frame is the CTS frame and it is transmitted in non-HT PPDU format. Therefore no need to add MU-RTS. |
| 10163 | Julien Sevin | 35.3.17 | 463.47 | When a non-AP MLD received on one of its EMLSR link an initial Control frame for which it is not intended, it can't initiate directly (without initial control frame) a sequence frame exchange on its other EMLSR link | Indicate that a non-AP MLD may initiate a sequence frame exchange on an EMLSR link without receiving initial Control frame if it has already received an initial Control frame on its other EMLSR link not intended to it | Rejected.The following defines a non-AP MLD initiating frame exchanges and clarifies that it doesn’t need initial control frame:“— When a STA of the non-AP MLD initiates a TXOP the following applies:• The non-AP MLD shall switch back to the listening operation on the EMLSR links after the timeduration indicated in the EMLSR Transition Delay subfield after the end of the TXOP.— Only one STA affiliated with the non-AP MLD that is operating on one of the EMLSR links mayinitiate frame exchanges with the AP MLD.NOTE 3—A STA affiliated with a non-AP MLD operating in the EMLSR mode does not need to transmit aninitial Control frame to initiate frame exchanges with the AP MLD and follows the rules defined in10.3.2.4 (Setting and resetting the NAV) and in 10.23.2 (HCF contention based channel access (EDCA)) toaccess the WM.” |
| 13814 | Yuchen Guo | 35.3.17 | 463.49 | "in which" should be "on which" or "where", same for Line 54 of this page | As in the comment | Revised.TGbe editor to make the changes with the CID tag (#13814) in doc.: IEEE 802.11-22/1204r4[https://mentor.ieee.org/802.11/dcn/22/11-22-1204-04-00be-lb266-cr-cl35-emlsr-part2.docx] |

**TGbe Editor to make the following changes in the paragraphs in P463L25 in Subclause 35.3.17 (Enhanced multi-link single radio operation) in TGbe D2.0:**

— An AP affiliated with the AP MLD that initiates frame exchanges with the non-AP MLD on one of the EMLSR links shall begin the frame exchanges by transmitting the initial Control frame to the non-AP MLD with the limitations specified below.
• The initial Control frame of frame exchanges shall be sent in the non-HT PPDU or non-HT duplicate PPDU format using a rate of (#10134)6 Mb/s, 12 Mb/s, or 24 Mb/s.

• The non-AP MLD shall indicate the minimum MAC padding duration of the Padding field of the initial Control frame in the EMLSR Padding Delay subfield of the EML Capabilities subfield in the Common Info field of the Basic Multi-Link element (#11458)carried in a (Re)Association Request frame that it transmits. (#13418)The AP affiliated with the AP MLD shall set the MAC padding duration of the Padding field of the initial Control frame to be greater than or equal to the MAC padding duration in the EMLSR Padding Delay subfield.

• The initial Control frame shall be an MU-RTS Trigger frame or a BSRP Trigger frame. A STA affiliated with a non-AP MLD that is in the listening operation and that receives an MU-RTS Trigger Frame or BSRP Trigger frame addressed to it shall respond as defined in (#13812)35.5.2.3 (Non-AP STA behavior for UL MU operation) except when the frame exchanges initiated by the initial Control frame on one of the EMLSR links overlaps with group addressed frame transmissions on the other EMLSR link where the non-AP STA intends to receive the group addressed frames. The number of spatial streams for the response to the BSRP Trigger frame shall be limited to one.

NOTE 2—Whether to use the MU-RTS Trigger frame or the BSRP Trigger frame as the initial Control frame to initiate the frame exchanges is implementation specific and out of scope of this standard.

— After receiving the initial Control frame of frame exchanges and transmitting an immediate response frame as a response to the initial Control frame, a STA affiliated with the non-AP MLD that was listening on the corresponding link shall be able to transmit or receive frames on the link (#13814)on which the initial Control frame was received and shall not transmit or receive on the other EMLSR link(s) until the end of the frame exchanges, and subject to its spatial stream capabilities, operation mode, and link switch delay, the STA affiliated with the non-AP MLD shall be capable of receiving a PPDU that is sent using more than one spatial stream on the link (#13814)on which the initial Control frame was received a SIFS after the end of its response frame transmission solicited by the initial Control frame. During the frame exchanges, the other AP(s) affiliated with the AP MLD shall not transmit frames to the other STA(s) affiliated with the non-AP MLD on the other EMLSR link(s).

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| **CID** | **Commenter** | **Clause Number** | **Page.****Line** | **Comment** | **Proposed Change** | **Resolution** |
| 12679 | Arik Klein | 35.3.17 | 463.34 | According to 26.2.6.3, the MU-RTS Trigger frame can be responded with CTS frame by more than a single STA (following the rules stated in 26.2.6.3). However, according to figures 35-21, 35-23, 35-24 it seems that the MU-RTS is used only to trigger a single STA affiliated with non-AP MLD that is operating in EMLSR mode, while the BSRP trigger frame is used to trigger multiple STA affiliated with non-AP MLDs that are operating in EMLSR mode. Is this the correct distinction? If yes - please clarify it specifically in the text. If not - need to add a note following the figures explaining that MU-RTS can be used to trigger multiple STA affiliated with non-AP MLDs that are operating in EMLSR mode | Please clarify whether the MU-RTS is used only to trigger a single STA affiliated with non-AP MLD that is operating in EMLSR mode, while the BSRP trigger frame is used to trigger multiple STA affiliated with non-AP MLDs that are operating in EMLSR mode.If yes - add this specifically to the text (i.e. starting at P463L34)If no - please add a note following the exemplary figures 35-21, 35-22, 35-24 that not only MU-RTS is used to trigger a single STA affiliated with non-AP MLD that is operating in EMLSR mode | Revised.Clarified by adding a note. TGbe editor to make the changes with the CID tag (#12679) in doc.: IEEE 802.11-22/1204r4[https://mentor.ieee.org/802.11/dcn/22/11-22-1204-04-00be-lb266-cr-cl35-emlsr-part2.docx] |
| 10927 | Thomas Handte | 35.3.17 | 465.01 | The frame exchange sequences shown in Figs 35-21 to 35-25 show just one link (the one that is selected by AP via MU-RTS or BSRP) | Suggest to add the following text: "The following examples show the frame exchange on one link of the EMLSR links namely the link in which the initial control frame is sent." | Revised.Agree with the commenter. TGbe editor to make the changes with the CID tag (#10927) in doc.: IEEE 802.11-22/1204r4[https://mentor.ieee.org/802.11/dcn/22/11-22-1204-04-00be-lb266-cr-cl35-emlsr-part2.docx] |

**TGbe Editor to insert the following sentence before the paragraph in P465L1 in Subclause 35.3.17 (Enhanced multi-link single radio operation) in TGbe D2.0:**

(#10927)The following examples in Figure 35-21, Figure 35-22, Figure 35-23, Figure 35-24, and Figure 35-25 show the frame exchanges on one link of the EMLSR links namely the link on which the initial control frame is sent.

**TGbe Editor to insert the NOTE after the paragraph in P465L1 in Subclause 35.3.17 (Enhanced multi-link single radio operation) in TGbe D2.0:**

An example of a frame exchange sequence that starts with the MU-RTS Trigger frame between an AP
affiliated with an AP MLD and a STA affiliated with a non-AP MLD that is in the EMLSR mode is shown in
Figure 35-21 (An example of a frame exchange sequence between an AP affiliated with an AP MLD and a
STA affiliated with a non-AP MLD that is in the EMLSR mode). An example of a frame exchange sequence
that starts with the BSRP Trigger frame between an AP (AP 1) affiliated with an AP MLD and *n* STAs
affiliated with *n* different non-AP MLDs that are in the EMLSR mode is shown in Figure 35-22 (An
example of a frame exchange sequence between an AP (AP 1) affiliated with an AP MLD and n STAs
affiliated with n different non-AP MLDs that are in the EMLSR mode).

(#12679)NOTE – The MU-RTS Trigger frame can be used to initiate frame exchanges with one or more STAs affiliated with non-AP MLDs in the EMLSR mode.