IEEE P802.11
Wireless LANs

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| CC36 Comment Resolution – EMLSR loss of medium sync  |
| Date: 2022-1-12 |
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Abstract

This submission proposes comment resolution(s) for the following CID(s) received in CC36 related to EMLSR operation for loss of medium synchronization issue:

* 5355, 6327, 6352, 6961, 7833, 4835

5103, 6136, 6657, 7869

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Updated based on offline discussions. CID 4835 added.
* Rev 2: Editorial change during the call on Jan. 27. Resolved a comment from Chunyu through offline discussion.
* Rev 3: Updated based on Ming’s feedback.
* Rev 4: Updated based on comments from Shubhodeep, Yongho, Liuming, Ming
* Rev 5: Updated based on comment from Gaurang and Yongho. Clarified the link switch delay and power state.

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| **CID** | **Commenter** | **Clause Number** | **Page.****Line** | **Comment** | **Proposed Change** | **Resolution** |
| 5355 | Jarkko Kneckt | 35.3.15 | 281.17 | The EMLSR says that after initiation frame, the STA may receive only in the link that transmitted the initiation frame. The wireless access recovery is set only if the UL transmission is longer than a threshold. It is clear whether any EMLSR transmission causes the non-AP MLD to have Access Recovery on the other link | The EMLSR STAs should use the Access Recovery in the same way as all other NSTR transmissions. This needs to be clarified in 802.11be. | Revised.Agree with the commenter. Added a paragraph in 35.3.15.7 (Medium access recovery procedure) for a non-AP MLD operating in the EMLSR mode.TGbe editor to make the changes with the CID tag (#5355) in doc.: IEEE 802.11-21/1484r6[https://mentor.ieee.org/802.11/dcn/21/11-21-1484-06-00be-cc36-cr-emlsr-medium-sync.docx] |
| 6327 | Ming Gan | 35.3.15 | 281.51 | For UL transmission, does it always need intial control frame exchange? If it is not, there is some issue about medium synchronization loss, please address this issue. | as in the comment | Revised.Agree with the commenter. Added a paragraph in 35.3.15.7 (Medium access recovery procedure) for a non-AP MLD operating in the EMLSR mode.TGbe editor to make the changes with the CID tag (#6327) in doc.: IEEE 802.11-21/1484r6[https://mentor.ieee.org/802.11/dcn/21/11-21-1484-06-00be-cc36-cr-emlsr-medium-sync.docx] |
| 6352 | Minyoung Park | 35.3.15 | 281.17 | When a STA of a non-AP MLD is exchanging frames with an AP of the AP MLD on one of the EMLSR links, the other STAs on the EMLSR links are blind. This is similar to the blindness problem of the NSTR non-AP MLD operation. Since there are procedures defined for the blindness for the NSTR operation, the same procedure should be applied for the EMLSR operation. Also when the STAs of the non-AP MLD performing the listening operation, it can only decode the non-HT PPDU format and thus may be limited to synchronizing to the medium. This could be resolved by using the L-SIG field fo a received frame to sync to the medium. | As in the comment. | Revised.Agree with the commenter. Added a paragraph in 35.3.15.7 (Medium access recovery procedure) for a non-AP MLD operating in the EMLSR mode.TGbe editor to make the changes with the CID tag (#6352) in doc.: IEEE 802.11-21/1484r6[https://mentor.ieee.org/802.11/dcn/21/11-21-1484-06-00be-cc36-cr-emlsr-medium-sync.docx] |
| 6961 | Sanghyun Kim | 35.3.15 | 281.51 | A STA of an MLD in EMLSR mode may lost medium sync during a frame exchange sequence of another STA affiliated with the same MLD. So, Medium access recovery procedure (35.3.14.7) should be applied to the STA of an MLD in EMLSR mode also. | As in the comment | Revised.Agree with the commenter. Added a paragraph in 35.3.15.7 (Medium access recovery procedure) for a non-AP MLD operating in the EMLSR mode.TGbe editor to make the changes with the CID tag (#6961) in doc.: IEEE 802.11-21/1484r6[https://mentor.ieee.org/802.11/dcn/21/11-21-1484-06-00be-cc36-cr-emlsr-medium-sync.docx] |
| 7833 | Yong Liu | 35.3.15 | 281.60 | "The non-AP MLD switches back to the listening operation on the enabled links immediately after the end of the frame exchange sequence." The EMLSR device is likely blind on other links during the frame exchange sequence. So the spec should clarify or point to the medium access recovery session to cover the link blindness case. | As commented. | Revised.Agree with the commenter. Added a paragraph in 35.3.15.7 (Medium access recovery procedure) for a non-AP MLD operating in the EMLSR mode.TGbe editor to make the changes with the CID tag (#7833) in doc.: IEEE 802.11-21/1484r6[https://mentor.ieee.org/802.11/dcn/21/11-21-1484-06-00be-cc36-cr-emlsr-medium-sync.docx] |
| 4835 | Dibakar Das | 35.3.14.7.1 | 279.41 | When a STA that is in EMLSR mode completes exchanging data frame on link 1 and returns to listen mode on link 2, it will have lost medium synchronization in a similar way as an NSTR STA. 11be should define a mechanism to protect any on-going transmission on that link | Extend the medium access rules defined for NSTR link pairs to the case of EMLSR operation. | Revised.Agree with the commenter. Added a paragraph in 35.3.15.7 (Medium access recovery procedure) for a non-AP MLD operating in the EMLSR mode.TGbe editor to make the changes with the CID tag (#4835) in doc.: IEEE 802.11-21/1484r6[https://mentor.ieee.org/802.11/dcn/21/11-21-1484-06-00be-cc36-cr-emlsr-medium-sync.docx] |

**Discussion:**

R0: When a non-AP MLD is operating in the EMLSR mode and one of the STAs affiliated with a non-AP MLD operating on the EMLSR links is exchanging frames with an AP affiliated with an AP MLD, the other STAs affiliated with the non-AP MLD operating on the EMLSR links lose medium synchronization because the STAs on the other links no longer have reception capability during the frame exchanges. This issue can be addressed by adopting the same procedure defined in 35.3.15.7 (Medium access recovery procedure) for a non-AP MLD operating in the EMLSR mode.

R1: The text is updated to cover the case when a non-AP MLD switches to a link on which it is expecting to receive beacon or group addressed frames before those frames are transmitted and has lost medium sync on the other link.

**35.3.16.8 Medium access recovery procedure
35.3.16.8.1 General**

**TGbe Editor to insert the following paragraph after the 3rd paragraph of Subclause 35.3.16.8.1 (General) in TGbe D1.4:**

(#5355, 6327, 6352, 6961, 7833, 4835) When a non-AP MLD is operating in the EMLSR mode, a STA affiliated with a non-AP MLD that is operating on one of the EMLSR links is considered to have lost medium synchronization if it is not able to perform CCA ~~on that link either while not transmitting nor receiving on that same link or~~ during frame exchanges that includes the link switch delays ~~that starts with the initial Control frame~~ between an AP affiliated with an AP MLD and one of the other STAs operating on the other EMLSR links, which are affiliated with the same non-AP MLD. The STA that has lost medium synchronization shall start a MediumSyncDelay timer immediately after returning to the listening operation if the duration of the loss of medium synchronization is longer than aMediumSyncThreshold; otherwise, the STA may not start the MediumSyncDelay timer.

NOTE – The link switch delays include the delay switching from the listening operation to the frame exchanges and the delay switching from the frame exchanges to the listening operation.

**TGbe Editor to insert the following subclause title as follows in Subclause 35.3.16.8 (Medium access recovery procedure) in TGbe D1.4:**

**35.3.16.8.2 MediumSyncDelay OFDM ED based recovery procedure**

(#7781)(#5745)The CCA-ED of a non-AP STA that is capable of obtaining a TXOP while the MediumSyncDelay timer has a nonzero value shall use dot11MSDOFDMEDthreshold instead of dot11OFDMEDThreshold in order to detect a channel busy condition (see 27.3.20.6.2 (CCA sensitivity for operating classes requiring CCA-ED)) if the MediumSyncDelay timer has a nonzero value.