IEEE P802.11
Wireless LANs

|  |
| --- |
| Comment Resolution on TDLS |
| Date: June 20th, 2023 |
| Author(s): |
| Name | Affiliation | Address | Phone | Email |
| Rubayet Shafin | Samsung Research America | 6625 Excellence Way., Plano, TX, 75023 |  | r.shafin@samsung.com |
| Boon Loong Ng |  |  |
| Peshal Nayak |  |  |
| Vishnu Ratnam |  |  |
| Yue Qi |  |  |
| Elliot Jen |  |  |

 Abstract

This submission proposes resolutions for the following 1 comment received for TGbe LB271:

* 10 CID: 18206, 18228, 18225, 18226, 18209, 16337, 18210, 18211, 18224, 18227

SP: Do you agree to the resolutions provided in doc 11-23/1124r2 for the following CIDs for inclusion in the latest 11be draft?

18206, 18228, 18225, 18226, 18209, 16337, 18210, 18211, 18224, 18227

Revisions:

* Rev 0: Initial version.
* Rev 1: Added some references to prior work as per the suggestion from Alfred.
* Rev 2: Added CID 18227

***TGbe editor: Please note Baseline is 11be D3.2***

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.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Pg/Ln** | **Comment** | **Proposed Change** | **Resolution** |
| 18206 | Rubayet Shafin | 576.44 | For the scenario where there is a peer-to-peer link (e.g. TDLS link) between any pair of STAs affiliated with a pair of non-AP MLDs over one link, and if any of the non-AP MLDs is not STR capable over any of the links, the other NSTR link(s) become essentially ineffective. Consider the following scenario that illustrates this situation--Assume that MLD\_S and MLD\_R are two non-AP MLDs and MLD\_A is an AP MLD. STA1 and STA2 are two non-AP STAs affiliated with the non-AP MLD, MLD\_S; STA3 and STA4 are two non-AP STAs affiliated with non-AP MLD, MLD\_R; and AP1 and AP2 are two APs affiliated with AP MLD, MLD\_A. Two links have been set up between MLD\_S and MLD\_A--- one between STA1 and AP1 over Link 1, and the other between STA2 and AP2 over Link 2. Moreover, two links have been set up between MLD\_R and MLD\_A--- one between STA3 and AP1 over Link 1, and the other between STA4 and AP2 over Link 2. STA3 and STA4, operating on Link 1 and Link 2, respectively, form an NSTR link pair. Now, a TDLS link has been established between STA1 and STA3. When STA3 is communicating to STA1 over the TDLS direct link, AP MLD, MLD\_A, usually is not aware of the communication over the TDLS link. MLD\_A is aware of MLD\_R' s NSTR capability; so without the TDLS link as long as STA3 is not transmitting to AP1 over Link 1, AP2 can perform downlink transmission to STA4 over Link 2. However, over the TDLS direct link, if STA3 is transmitting to STA1, then STA4 would not be able to receive packets from AP2 over Link2. | Spec needs to provide solution/guideline for handling NSTR issue when one or more non-AP STAs, affiliated with a non-AP MLD and forming NSTR link pair(s), establish TDLS direct link with one or more non-AP STAs affiliated with another non-AP MLD. | **Revised.**Agree in principle. Necessary text on mechanism to handle the issue with TDLS operation with a non-AP MLD is included.**TGbe editor, please make change as shown in this doc 11-23/1124r2 tagged by #18206.** |
| 18228 | Rubayet Shafin | 576.43 | An AP-MLD can intend to enable a setup link that may form an NSTR link pair to the off-channel TDLS direct link, as the AP MLD is not involved in TDLS channel switch and is unaware of the off-channel TDLS direct link. The potential NSTR link pair between the off-channel TDLS direct link and any link that is intended to be enabled in TID-to-link mapping negotiation should be avoided. If TID-to-link mapping negotiation is unsuccessful, default mapping will be applied, which will cause the NSTR link pair or congestion. | Please provide rules/mechanisms related to TDLS channel switch for non-AP MLD with NSTR constraints. | **Revised.**Agree in principle. **TGbe editor, please make change as shown in this doc 11-23/1124r2 tagged by #18206.** |
| 18225 | Rubayet Shafin | 576.43 | The current single TDLS link discovery/setup process in the spec is broken for EMLSR or single radio devices. For example, when the MLD in the EMLSR mode (or a single radio non-AP MLD) is the TDLS initiator and a TDLS responding device is a legacy device, the TDLS discovery response can be sent over a link but the EMLSR device may not be operating on that link when the response frame is sent by the TDLS responder (EMLSR device at that time may have the radio on another link). Note that the response frame is not sent through the AP MLD. | Please provide text illustrating the mechanism to handle the issue related to TDLS discovery/setup process with device in EMLSR mode. | **Revised.**Agree in principle. Corresponding text for handling the TDLS coexistence issue with EMLSR operation is provided.**TGbe editor, please make change as shown in this doc 11-23/1124r2 tagged by #18225.** |
| 18226 | Rubayet Shafin | 576.43 | The current single TDLS link discovery/setup process in the spec is broken for EMLMR devices. For example, when the non-AP MLD in the EMLMR mode is the TDLS initiator and a TDLS responding device is a legacy device, the TDLS discovery response can be sent over a link that is included in the EMLMR links and the EMLMR device is involved in EMLMR frame exchange on another link. The EMLMR device may not have any radio left on the link on which the response frame is sent by the TDLS responder. | Please provide text illustrating the mechanism to handle the issue related to TDLS discovery/setup process with device in EMLMR mode. | **Revised.**Agree in principle. Corresponding text for handling the TDLS coexistence issue with EMLMR operation is provided.**TGbe editor, please make change as shown in this doc 11-23/1124r2 tagged by #18225.** |
| 18209 | Rubayet Shafin | 563.41 | While a non-AP MLD is communicating with its associated AP MLD and is operating under the EMLSR mode, how it is possible for the non-AP MLD to establish one or multiple peer-to-peer links with another peer non-AP MLD is not clear based on the latest IEEE 802.11be specification. Also, the P2P setup procedure, while operating in the EMLSR mode, is currently missing in the spec. | Please provide text on the procedures to transition into P2P mode when the non-AP MLD has been in EMLSR mode with its associated AP MLD. | **Revised.**Agree in principle. Corresponding text for handling the TDLS coexistence issue with EMLSR operation is provided.**TGbe editor, please make change as shown in this doc 11-23/1124r2 tagged by #18225.** |
| 16337  | Yongho Kim | 576.44 | There is no clear description of the behavior of the AP MLD and other peer non-AP MLDs (or non-AP STAs) when the EMLSR non-AP MLD performs P2P operations, such as TDLS or other direct communications. If the EMLSR non-AP MLD stops performing EMLSR operation and performs as a normal STA, then such period should be informed to the AP in order for the AP not to transmit a packet during the P2P period. | Please clarify the behavior of the AP MLD and Peer MLD for P2P communications with EMLSR non-AP MLD. | **Revised.**Agree in principle. Corresponding text for handling the TDLS coexistence issue with EMLSR operation is provided.**TGbe editor, please make change as shown in this doc 11-23/1124r2 tagged by #18225.** |
| 18227 | Rubayet Shafin | 576.43 | When an NSTR non-AP MLD is the TDLS initiator, the TDLS responder can send the TDLS discovery response over a first link (direct link) while the NSTR non-AP MLD is transmitting frames to the AP MLD on a second link, where the first link forms an NSTR link pair with the second link. Accordingly, the NSTR non-AP MLD would not be able to receive the response frame from the TDLS responder.. | Please provide text specifying rules for TDLS discovery/setup for the NSTR non-AP MLDs. | **Revised.**Agree in principle. Corresponding text for handling the TDLS coexistence issue with EMLSR operation is provided.**TGbe editor, please make change as shown in this doc 11-23/1124r2 tagged by #18206.** |
| 18224 | Rubayet Shafin | 576.43 | Two non-AP MLDs should be able to establish multiple TDLS links between them to reap the MLO benefits for P2P communication. However, an MLD-level procedure for setting up multiple TDLS links between two non-AP MLDs is currently missing in the spec. | Please describe the mechanism for setting up multiple TDLS direct links between two non-AP MLDs. | **Rejected**This topic was discussed in the TGbe group multiple times in the past. However, the group could not reach a consensus to allow and add a procedure to enable the establishment of multiple TDLS direct links. See doc 11-22/1796r0 for prior discussion. |
| 18210 | Rubayet Shafin | 563.41 | Assuming two non-AP MLDs have already set up peer-to-peer link(s) over one or multiple links between the two non-AP MLDs, the procedure for turning on the EMLSR mode for the P2P communication between the two non-AP MLDs is not defined. Moreover, the procedure for EMLSR operation for P2P communication between two non-AP MLDs is currently missing in the spec. | Procedures for turning on EMLSR mode and EMLSR operation between two non-AP MLDs communicating over the P2P links needs to be described in the spec. | **Rejected**This topic was discussed in the TGbe group in the past. However, the group could not reach a consensus on this. See doc 11-22/1796r0 for prior discussion. |
| 18211 | Rubayet Shafin | 617.44 | For the scenario where multiple TWT agreements/schedules or restricted TWT schedules are established on multiple links between an AP MLD and a non-AP MLD, and if those links are also included in the EMLSR links and if the TWT service periods (SPs) on those links are overlapping in time or nearly overlapping in time, then, due to the nature of EMLSR operation, the r-TWT frame exchanges on either of the links may not be successful. | The spec needs to provide text to address the issue EMLSR operation with multiple overlapping r-TWT SPs on multiple links. | **Rejected** This topic was discussed in the TGbe group in the past. However, the group could not reach a consensus on this. Moreover, a prerequisite for the suggested changes is to enable the establishment of multiple TDLS direct links. However, this procedure is currently not defined in the current spec. See doc 11-22/1796r0 for prior discussion. |

**Discussion:**

Whenever there is a peer-to-peer link (e.g. TDLS link) between any pair of STAs affiliated with a pair of non-AP MLDs over one link, and if any of the non-AP MLDs is not STR capable over any of the links, the other NSTR link(s) become essentially ineffective.

The above problem can be explained with the illustration in Figure D-5. In Figure D-5, $MLD\_{S}$ and $MLD\_{R}$ are two non-AP MLDs and $MLD\_{A}$ is an AP MLD. STA1 and STA2 are two STAs affiliated with $MLD\_{S};$ STA3 and STA4 are two STAs affiliated with $MLD\_{R};$ AP1 and AP2 are two APs affiliated with $MLD\_{A}.$ Two links have been set up between $MLD\_{S}$ and $MLD\_{A}$--- one between STA1 and AP1, and the other between STA2 and AP2. Moreover, two links have been set up between $MLD\_{R}$ and $MLD\_{A}$--- one between STA3 and AP1, and the other between STA4 and AP2. STA3 and STA4, operating on Link 1 and Link 2, respectively, form an NSTR link pair. Now, a TDLS direct link has been established between STA1 and STA3. When STA3 is communicating to STA1 over the TDLS direct link, AP MLD, $MLD\_{A}$, usually is not aware of the communication over the TDLS link (AP1 may not always monitor the TDLS direct link. In order for the TDLS to be used, “*the AP does not need to be direct-link aware, nor does it have to support the same set of capabilities that are used on the direct link*). $MLD\_{A}$ is aware of $MLD\_{R}^{'}s$ NSTR capability; so, without the TDLS link, as long as STA3 is not transmitting to AP1 over Link 1, AP2 may perform downlink transmission to STA4 over Link 2. However, over the TDLS direct link, if STA3 is transmitting to STA1, then STA4 would not be able to receive the packets from AP2 over Link2.



*Figure D-5: Illustration of problem with NSTR MLD in peer-to-peer communications.*

In another example scenario, referring again to Figure D-5, if STA3 has some pending latency-sensitive traffic for its TDLS peer STA, STA1, then $MLD\_{R}$ needs a mechanism to notify the AP MLD about the impending TDLS transmission by STA3 so that AP2 can terminate any ongoing downlink transmission to STA4 before the transmission starts over the TDLS direct link.

In general, a mechanism is needed to notify the AP MLD about an impending transmission over the TDLS direct link so that the AP MLD can manage its downlink transmission to avoid any NSTR interference to either the non-AP MLD that hosts the transmitting TDLS peer STA and the non-AP MLD that hosts the receiving TDLS peer STA at the other end of the TDLS direct link in the case that the receiving TDLS peer STA is also affiliated with a non-AP MLD with NSTR constraints with the TDLS direct link.

A similar issue also arises if the non-AP MLD is operating on EMLSR/EMLMR mode and one of the STA affiliated with the non-AP MLD and operating on one of the EMLSR/EMLMR Links intends to either initiate a TDLS discovery/setup process or initiate transmission over an already established TDLS direct link.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* *End of discussion section*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* *Start of resolution for CID #18206*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

***TGbe editor: Please update Table 9-628c (Protected EHT Action field values) as follows:***

**Table 9-628c—Protected EHT Action field values**

|  |  |  |
| --- | --- | --- |
| **Value** | **Meaning** | **Time priority** |
| 0 | TID-To-Link Mapping Request | No |
| 1 | TID-To-Link Mapping Response | No |
| 2 | TID-To-Link Mapping Teardown | No |
| 3 | EPCS Priority Access Enable Request | No |
| 4 | EPCS Priority Access Enable Response | No |
| 5 | EPCS Priority Access Teardown | No |
| 6 | EML Operating Mode Notification | No |
| 7 | Link Recommendation | No |
| 8 | Multi-Link Operation Update Request | No |
| 9 | Multi-Link Operation Update Response | No |
| 10 | Link Reconfiguration Notify | No |
| 11 | Link Reconfiguration Request | No |
| 12 | Link Reconfiguration Response | No |
| 13 | ML TDLS Transmission Notification | No |
| 14 | ML TDLS Transmission Acknowledgement | No |
| 15–255 | Reserved |  |

***TGbe editor: Please insert the following subclause (9.6.35.xx1 ML TDLS Transmission Notification frame format) including the Table (9-628xx2—ML TDLS Transmission Notification frame Action field format) under clause 9.6.35 (Protected EHT Action frame details)*:**

**9.6.35.xx1 ML TDLS Transmission Notification frame format**

The ML TDLS Transmission Notification frame is sent by a STA affiliated with a non-AP MLD to notify the associated AP MLD about a transmission over a TDLS direct link by a STA affiliated with the non-AP MLD. The Action field of the ML TDLS Transmission Notification frame contains the information shown in Table 9-628xx2 (ML TDLS Transmission Notification frame Action field format).

**Table** **9-628xx2—ML TDLS Transmission Notification frame Action field format**

|  |  |
| --- | --- |
| **Order** | **Information** |
| 1 | Category |
| 2 | Protected EHT Action |
| 3 | Dialog Token |
| 4 | ML TDLS Control (see 9.4.1.xx3 ML TDLS Control field) |
| 5 | Link Identifier (see 9.4.2.60 (Link Identifier element)) |

The Category field is defined in [9.4.1.11 (Action field)](#_bookmark105).

The Protected EHT Action field is defined in [9.6.35.1 (Protected EHT Action field)](#_bookmark296).

The Dialog Token field is defined in 9.4.1.12 (Dialog Token field) and is set to a nonzero value chosen by the non-AP MLD sending the ML TDLS Transmission Request frame to identify the notification/acknowledgement transaction.

The ML TDLS Control field is defined in 9.4.1.xx3 (ML TDLS Control field).

The Link Identifier field contains a Link Identifier element as specified in 9.4.2.60 (Link Identifier element) in order to identify the TDLS direct link that corresponds to the transmission for which the ML TDLS Transmission Notification frame is used to notify the AP MLD.

***TGbe editor: Please insert the following subclause (9.4.1.xx3 (ML TDLS Control field format)) under clause 9.4.1 (Fields that are not elements)***

**9.4.1.xx3 ML TDLS Control field**

The ML TDLS Control field is defined in Figure 9-189xx4 (ML TDLS Control field format).



Figure 9-189xx4: ML TDLS Control field format

The Transmission Start/End Indication subfield indicates whether the ML TDLS Transmission Notification frame indicates the start or the end of a TDLS frame transmission over a TDLS direct link identified by the Link Identifier element in the ML TDLS Transmission Notification frame. If the subfield is set to 1, then the ML TDLS Transmission Notification frame indicates the start of an impending TDLS transmission by a TDLS peer STA affiliated with a non-AP MLD. If the subfield is set to 0, then the TDLS Transmission Notification frame indicates the end of an ongoing TDLS frame transmission by the STA affiliated with the non-AP MLD.

The Transmission Avoidance Link ID Bitmap Present subfield indicates the presence of the Transmission Avoidance Link ID Bitmap subfield in the ML TDLS Control field. The Transmission Avoidance Link ID Bitmap Present subfield is set to 1 if the Transmission Avoidance Link ID Bitmap subfield is present in the ML TDLS Control field; otherwise, it is set to 0.

The Transmission Avoidance Link ID Bitmap subfield, if present, indicates the links for which the non-AP MLD that transmits the ML TDLS Transmission frame requests the associated AP MLD to suspend any downlink transmission to the non-AP MLD. If the non-AP MLD requests the AP MLD to suspend any downlink transmission on link $i$ between the AP MLD and the non-AP MLD, then the $i$-th bit in the Transmission Avoidance Link ID Bitmap subfield is set to 1; otherwise, it is set to 0.

***TGbe editor: Please insert the following subclause (9.6.35.xx5 ML TDLS Transmission Acknowledgement frame format) including the Table (9-628xx6—ML TDLS Transmission Acknowledgement frame Action field format) under clause 9.6.35 (Protected EHT Action frame details)*:**

**9.6.35.xx1 ML TDLS Transmission Acknowledgement frame format**

The ML TDLS Transmission Acknowledgement frame is sent by an AP affiliated with an AP MLD in response to an ML TDLS Transmission Notification frame received from a STA affiliated with a non-AP MLD that is associated with the AP MLD. The Action field of the ML TDLS Transmission Acknowledgement frame contains the information shown in Table 9-628xx2 (ML TDLS Transmission Notification frame Action field format).

**Table 9-628xx2—ML TDLS Transmission Acknowledgement frame Action field format**

|  |  |
| --- | --- |
| **Order** | **Information** |
| 1 | Category |
| 2 | Protected EHT Action |
| 3 | Dialog Token |
| 4 | Status Code |

The Category field is defined in [9.4.1.11 (Action field)](#_bookmark105).

The Protected EHT Action field is defined in [9.6.35.1 (Protected EHT Action field)](#_bookmark296).

The Dialog Token field is defined in 9.4.1.12 (Dialog Token field) and is set to a nonzero value chosen by the non-AP MLD sending the ML TDLS Transmission Request frame to identify the notification/acknowledgement transaction.

The Status Code field is defined in 9.4.1.9 (Status Code field)

***TGbe editor: Please update Table 9-78 (Status codes) as follows:***

**Table 9-78—Status codes**

|  |  |  |
| --- | --- | --- |
| **Status code** | **Name** | **Meaning** |
| … | … | … |
| 18 | REFUSED\_BASIC\_RATES\_MIS- MATCH | Association denied due to requesting STA not supporting all of the data rates in the BSSBasicRateSet parameter, the Basic HT-MCS Set field of the HT Operation param- eter, the Basic VHT-MCS And NSS Set field in the VHT Operation parameter, ~~or~~ the Basic HE-MCS And NSS Set field in the HE Operation parameter, or the Basic EHT-MCS And NSS Set field in the EHT Operation parameter. |
| … | … | … |
| 39 | REJECTED\_WITH\_SUGGEST- ED\_CHANGES | The allocation or TS or SCS stream has not been created because the request cannot be honored; however, a suggested TSPEC/DMG TSPEC or QoS Characteristics element is provided so that the initiating STA can attempt to set another allocation or TS or SCS stream with the suggested changes to the TSPEC/DMG TSPEC or QoS Characteristics element. |
| … | … | … |
| 130 | DENIED\_STA\_AFFILIAT- ED\_WITH\_MLD\_WITH\_EXIST- ING\_MLD\_ASSOCIATION | Association denied because the requesting STA is affili- ated with a non-AP MLD that is associated with the AP MLD. |
| 131 | EPCS\_DENIED\_UNAUTHORIZED | EPCS priority access denied because the non-AP MLD is not authorized to use the service.  |
| 132 | EPCS\_DENIED | EPCS priority access denied due to a reason outside the scope of this standard. |
| 133 | DENIED\_TID\_TO\_LINK\_MAPPING | Request denied because the requested TID-to-link map- ping is unacceptable. |
| 134 | PREFERRED\_TID\_TO\_LINK\_MAP- PING\_SUGGESTED | Preferred TID-to-link mapping suggested. |
| 135 | DENIED\_EHT\_NOT\_SUPPORTED | Association denied because the requesting STA does not support EHT features. |
| … |  |  |
| 139 | DENIED\_LINK\_ON\_WHICH\_THE\_ (RE)ASSOCIATION\_REQUEST\_ FRAME\_IS\_ TRANSMIT- TED\_NOT\_ACCEPTED | Link not accepted because the link on which the (Re)Association Request frame is transmitted is not accepted. |
| 140 | EPCS\_DENIED\_VERIFICATION\_- FAILURE | EPCS priority access is temporarily denied because the receiving AP MLD is unable to verify that the non-AP MLD is authorized for an unspecified reason. |
| 141 | DENIED\_OPERATION\_PARAME- TER\_UPDATE | Operation parameter update denied because the requested operation parameters or capabilities are not acceptable. |
| 142 | DENIED\_TDLS\_TRANSMISSION\_REQUEST | The downlink transmission suspension request made by the ML TDLS Transmission Notification frame is declined. |

**35.3.21 TDLS procedure in multi-link operation**

***TGbe editor: Please insert the following subclause 35.3.21.3 (TDLS Channel Access) under clause 35.3.21 (TDLS procedure in multi-link operation)***

**35.3.21.3 TDLS Channel Access**

If a TDLS peer STA affiliated with a non-AP MLD forms one or more NSTR link pair(s) with other STA(s) affiliated with the same non-AP MLD, then before the TDLS peer STA starts transmitting the first frame within an obtained TXOP over the TDLS direct link, the non-AP MLD, through any enabled link, shall send an ML TDLS Transmission Notification frame with Transmission Start/End Indication subfield set to 1 to the AP MLD notifying about the impending transmission over the TDLS direct link identified by the Link Identifier element of the ML TDLS Transmission Notification frame. Upon reception of the ML TDLS Transmission Notification frame, the AP MLD should send an ML TDLS Transmission Acknowledgement frame to the non-AP MLD over any enabled link and should end any downlink transmission to any STA affiliated with the non-AP MLD and operating on a link indicated by the Transmission Avoidance Link ID Bitmap subfield of the ML TDLS Control field. The AP MLD should not initiate transmission of any PPDU to the non-AP MLD on any of the links identified by the Transmission Avoidance Link ID Bitmap subfield until the AP MLD receives an ML TDLS Transmission Notification frame from the non-AP MLD with the Transmission Start/End Indication subfield set to 0. Upon reception of the ML TDLS Transmission Acknowledgement frame by the non-AP MLD with the Status Code SUCCESS, the TDLS peer STA affiliated with the non-AP MLD may start transmission over the TDLS direct link. Once the TDLS peer STA ends its transmission over the TDLS direct link, the non-AP MLD, through any enabled link, shall send an ML TDLS Transmission Notification frame with Transmission Start/End Indication subfield set to 0 to the AP MLD notifying about the end of the ongoing transmission over the TDLS direct link by the TDLS peer STA operating on the TDLS direct link identified by the Link Identifier element included in the ML TDLS Transmission Notification frame.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* *End of resolution for CID #18206*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

(#18225) If a non-AP MLD is operating in EMLSR/EMLMR mode, and a STA affiliated with the non-AP MLD and operating on one of the EMLSR/EMLMR Links intends to initiate a TDLS discovery/setup process (see 35.3.21.1 (General) and 35.3.21.2 (TDLS direct link over a single link)) or intends to transmit a frame over a TDLS direct link, then before the STA initiates the TDLS discovery/setup process or before the STA starts transmission over the TDLS direct link, the non-AP MLD, through any enabled link between the AP MLD and the non-AP MLD, shall send an ML TDLS Transmission Notification frame with Transmission Start/End Indication subfield set to 1 to the AP MLD notifying about the impending initiation of the TDLS discovery/setup process or impending transmission over the TDLS direct link identified by the Link Identifier element of the ML TDLS Transmission Notification frame. In the ML TDLS Transmission Notification frame, the Transmission Avoidance Link ID Bitmap Present subfield shall be set to 0. Upon reception of the ML TDLS Transmission Notification frame, the AP MLD should send an ML TDLS Transmission Acknowledgement frame to the non-AP MLD over any enabled link and should end any downlink transmission to any STA affiliated with the non-AP MLD and operating on one of the EMLSR/EMLMR Links. The AP MLD should not initiate transmission of any PPDU to the non-AP MLD on any of the EMLSR/EMLMR Links until the AP MLD receives an ML TDLS Transmission Notification frame from the non-AP MLD with the Transmission Start/End Indication subfield set to 0. Upon reception of the ML TDLS Transmission Acknowledgement frame by the non-AP MLD with the Status Code SUCCESS, the TDLS peer STA affiliated with the non-AP MLD may start transmission over the TDLS direct link. Once the TDLS peer STA completes setting up the TDLS direct link or ends its transmission over the TDLS direct link, the non-AP MLD, through any enabled link, shall send an ML TDLS Transmission Notification frame with Transmission Start/End Indication subfield set to 0 to the AP MLD notifying about the completion of the TDLS setup process or end of the ongoing transmission over the TDLS direct link by the TDLS peer STA operating on the TDLS direct link identified by the Link Identifier element included in the ML TDLS Transmission Notification frame.