IEEE P802.11
Wireless LANs

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| Proposed Draft TextMAC MLO Enhanced Multi-link Operation Mode |
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Abstract

This submission proposes draft text to be included in 802.11be Draft 0.1 for the following topic:

* MAC MLO Enhanced Multi-link operation mode
	+ Based on the following motion:

802.11be shall define a mechanism that in R1 a non-AP MLD indicates maximum number of spatial streams that it is capable of transmitting or receiving at a time, while operating in any of the links within the specified set of links in which the enhanced multi-link operation mode is applied.

* + - Each STA in the non-AP MLD operating in any of the links within the specified set of links shall support the indicated maximum number of spatial streams.
		- The enhanced multi-link operation mode is optional mechanism.
		- Note- The name of the enhanced multi-link operation mode can be changed.

[Motion 124, #SP187, [1] and [189]]

* + Further, based on the motion from Multi-link single-radio operation:

802.11be supports the multi-link operation for a non-AP MLD that is defined as follows to be included in R1.

* A non-AP MLD that can: 1) transmit or receive data/management frames to another MLD on one link at a time, and 2) listening on one or more links.
	+ The “listening” operation includes CCA as well as receiving initial control messages (e.g., RTS/MU-RTS).
	+ The initial control message may have one or more additional limitations: spatial stream, MCS (data rate), PPDU type, frame type.
	+ Link switch delay may be indicated by the non-AP MLD.

[Motion 119, #SP126, [3] and [181]]

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Deleted NSS and NSTS, and clarified frame exchange sequence based on review comments

***TGbe editor: Insert the new subclause title 33.x.z Enhanced multi-link multi-radio operation as follows:***

**33.x.z Enhanced multi-link multi-radio operation**

A non-AP MLD may operate in the enhanced multi-link multi-radio (EMLMR) mode on a specified set of the enabled links between the non-AP MLD and its associated AP MLD. (*name of the mode is TBD*) The specified set of the enabled links in which the EMLMR mode is applied is called EMLMR links.

An MLD with dot11EHTEMLMROptionImplemented equal to true shall set the EMLMR mode subfield of the TBD Capabilities element, which is an MLD level capabilities element, to 1; otherwise, the MLD shall set the EMLMR mode subfield to 0.

A non-AP MLD with dot11EHTEMLMROptionImplemented equal to true shall set the EMLMR Rx NSS subfield of TBD element to dot11SupportedEMLMRRxNSS.

A non-AP MLD with dot11EHTEMLMROptionImplemented equal to true shall set the EMLMR Tx NSTS subfield of TBD element to dot11SupportedEMLMRTxNSTS.

A non-AP MLD operates in the EMLMR mode by TBD signaling.

When a non-AP MLD operates in the EMLMR mode, after initial frame exchange on the EMLMR links, the non-AP MLD shall be able to support the following until the end of the frame exchange sequence initiated by the initial frame exchange:

* Receive PPDUs with a number of spatial streams as indicated in the EMLMR Rx NSS subfield of TBD element at a time on the link that initial frame exchange was made.
* Transmit PPDUs with a number of space-time streams as indicated in the EMLMR Tx NSTS subfield of TBD element at a time on the link that initial frame exchange was made.

After the end of the frame exchange sequence, each STA of the non-AP MLD in the EMLMR mode shall be able to receive PPDU, subject to its spatial stream capabilities (see 9.4.2.55.4 (Supported MCS Set field) and 9.4.2.157.3 (Supported VHTMCS and NSS Set field)) and operating mode (see 11.41 (Notification of operating mode changes)).