IEEE P802.11
Wireless LANs

|  |
| --- |
| Proposed Draft Text (PDT-PHY): MU-MIMO |
| Date: 2020-07-30 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Sameer Vermani | Qualcomm |  |  | svverman@qti.qualcomm.com |
| Bin Tian | Qualcomm |  |  | btian@qti.qualcomm.com |

Abstract

This submission proposes the draft text on MU-MIMO for TGbe D0.1

* + 1. MU-MIMO
			1. DL MU-MIMO
				1. Supported RU sizes in DL MU-MIMO

A STA that sets the Partial Bandwidth DL MU-MIMO subfield of the EHT PHY Capabilities Information field in the EHT Capabilities element that it transmits to 1 shall support receiving an RU in an EHT PPDU where MU-MIMO is employed in the RU, the RU size being greater than or equal to 242-tones, and where the RU does not span the entire PPDU bandwidth.

* + - * 1. Maximum number of spatial streams in an EHT MU PPDU

An EHT STA shall support the reception of DL MU-MIMO transmissions on full bandwidth with a maximum number of space-time streams (per user) that is the minimum of 4 and the maximum number of space-time streams supported for reception of an EHT PPDU that is sent to that STA as an SU transmission. The maximum number of space-time streams supported for reception of an EHT PPDU when sent to a STA as part of an SU transmission is indicated for various bandwidths in the Supported EHT-MCS and NSS Set field in the EHT Capabilities element.

An EHT AP that is capable of transmitting 4 or more space-time streams shall support DL MU-MIMO transmissions on full bandwidth.

All of the aforementioned requirements in this subclause on the per user and total number of space-time-streams are also applicable to an MU-MIMO transmission on an RU in an EHT PPDU where the RU does not span the entire PPDU bandwidth.

* + - 1. UL MU-MIMO
				1. Introduction

UL MU-MIMO is a technique to allow multiple STAs to transmit simultaneously over the same frequency resource to the receiver. The concept is very similar to SU-MIMO where multiple space-time streams are transmitted simultaneously over the same frequency resource utilizing spatial multiplexing through multiple antennas at the transmitter and receiver. The key difference from SU-MIMO is that in UL MU-MIMO, the transmitted streams originate from multiple STAs.

* + - * 1. Supported RU sizes in UL MU-MIMO

An AP that sets the Partial Bandwidth UL MU-MIMO subfield of the EHT PHY Capabilities Information field in the EHT Capabilities element that it transmits to 1 shall support receiving an RU in an EHT TB PPDU where MU-MIMO is employed in the RU, the RU size being greater than or equal to 242-tones, and where the RU does not span the entire PPDU bandwidth.

A non-AP STA that sets the Partial Bandwidth UL MU-MIMO subfield of the EHT PHY Capabilities Information field in the EHT Capabilities element that it transmits to 1 shall support transmitting an RU in an EHT TB PPDU where UL MU-MIMO is employed in the RU, the RU size being greater than or equal to 242-tones, and where the RU does not span the entire PPDU bandwidth.

A STA that sets the Partial Bandwidth UL MU-MIMO subfield to 1 shall set the Full Bandwidth UL MU-MIMO subfield in the EHT PHY Capabilities Information field to 1.

* + - * 1. UL MU-MIMO EHT-LTF Mode

Single stream pilot is the only EHT-LTF mode for the transmission of an EHT TB PPDU where MU-MIMO is employed on an RU, both when the MU-MIMO RU does or does not span the entire PPDU BW, except when 1x EHT-LTF is used for non-OFDMA UL MU-MIMO, in which case no pilots are present whenever the number of 1x EHT-LTFs is less than or equal to 8.

* + - * 1. Maximum number of spatial streams in UL MU-MIMO

A non-AP STA that supports UL MU-MIMO shall support transmitting an EHT TB PPDU using MU-MIMO where:

* The number of spatial streams allocated to the non-AP STA ranges from 1 to *N*, where *N* is the smaller of 4 and the maximum number of spatial streams supported by the non-AP STA for SU transmissions.
* The number of total spatial streams (summed over all users) is less than or equal to 16.

The maximum number of spatial streams supported by a STA for SU transmissions is indicated in the Supported EHT-MCS And NSS Set field in the EHT Capabilities element.

All the requirements in this subclause on the per user and total number of spatial streams are applicable to both full bandwidth and partial bandwidth UL MU-MIMO.

**34.3.3.3 Maximum number of users in MU-MIMO**

The maximum number of EHT STAs that can be multiplexed using MU-MIMO on an RU or an aggregated RU or on the full bandwidth is 8, both for DL and UL.