IEEE P802.11
Wireless LANs

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| DCM in HE TB PPDUs |
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Abstract: This document addresses the following CIDs DCM in HE TB PPDUs:

 *CIDs* *6309, 8761, 8762, 9138*

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| 6309 | 9.3.1.23 | 47.03 | "A value of 1 indicates that the HE trigger-based PPDU shall use DCM as defined in 28.3.11.15". But DCM (as defined in 28.3.11.15) is an optional mode. Is the idea that the bit can only be set to 1 if the STA has indicated support for DCM? What is the expected behavior if the STA has not indicated support for DCM but this bit is set to 1 anyway? | Add text restricting the cases in which the bit can be set to 1, and providing error recovery if the bit is set incorrectly. | **Revised.**Change to as in doc IEEE802.11-17/1381r2. |
| 8761 | 28.2.2 | 219.50 | "HE extend range SU" should be "HE extended range SU" | Correct | **Revised.**Change to as in doc IEEE802.11-17/1381r2. |
| 8762 | 28.2.2 | 219.51 | The term SU RU is not clearly defined | Rename or provide definition | **Revised.**Change to as in doc IEEE802.11-17/1381r2.  |
| 9138 | 28.2.2 | 219.51 | SU RU in HE MU PPDU is not an accurate term to describe for DCM |  | **Revised.**Change to as in doc IEEE802.11-17/1381r2. |

**Discussions:**

In D1.4, there is some inconsistency regarding the usage of DCM in HE TB PPDUs: in **Table 28-1—TXVECTOR and RXVECTOR parameters,** under the TX/RXVECTOR primitive “DCM”, there is a sentence “*DCM is only applied to HE SU PPDU, HE extend range SU PPDU, and SU RUs in HE MU PPDU.*”, which follows the motion from the doc 16/0655r0 “On Modulation of MCS0 DCM and DCM Capability”. This means DCM is disallowed in HE TB PPDUs; meanwhile in **Figure 9-52f—User Info field** (of Trigger Frame), there is a DCM bit, meaning AP may ask the STA to transmit DCM in a HE TB PPDU.

Propose to allow DCM in HE TB PPDUs, but AP needs to set DCM bit according to the STA’s DCM Tx capability fields.

TGax editor: please make the following change in **Table 9-262aa—Subfields of the HE PHY Capabilities Information field** starting from P128L15

|  |  |  |
| --- | --- | --- |
| DCM Max Constellation Tx(#Ed) | Indicates the maximum supported constellation for DCM in ~~both~~ the Data field ~~and HE-SIG-B field~~ that the STA is capable of transmitting in an HE TB PPDU.(#5789, #9114, #Ed) | B0-B1 signals the maximum constellation: 00: Does not support DCM 01: BPSK 10: QPSK 11: 16-QAM |
| DCM Max NSS Tx(#Ed) | Indicates the maximum number of spatial streams supported for transmission when DCM is used in the Data field of an HE TB PPDU.(#5789, #9114, #Ed) | Set to 0 for 1 spatial stream. Set to 1 for 2 spatial streams |

TGax editor: please make the following change in Clause **21.15.3** starting from P284L54 of D1.4:

….

An HE STA may transmit an HE PPDU with DCM to a peer STA if it has received from the peer STA an HE Capabilities element with the DCM Rx subfield in the HE PHY Capabilities Information field(#Ed) greater than 0(#5512); otherwise the STA shall not transmit an HE PPDU with DCM to the peer STA. An HE STA transmits an HE TB PPDU with DCM as defined in 27.5.2.3 (STA behavior for UL MU operation(# 8151)). When sending a Trigger Frame, the HE AP shall not set the DCM subfield of User Info field in the Trigger Frame to 1 if the destination HE non-AP STA sets the DCM Max Constellation Tx field to 0 or sets the DCM Max NSS field to 0 in the HE PHY Capabilities Information field.

TGax editor: please make the following change in **Table 28-1—TXVECTOR and RXVECTOR parameters** starting from P302L10 of D1.4:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| DCM | FORMAT is HE\_SU, HE\_MU, HE\_EXT\_SU or HE\_TRIG | Set to 1 to indicate that dual carrier modulation is used for the HE-Data field. Set to 0 to indicate that dual carrier modulation is not used for the HE-Data field. NOTE—DCM is only applied to MCS0, MCS1, MCS3 and MCS4. DCM is only applied to 1 and 2 spatial streams. ~~DCM is only applied to HE SU PPDU, HE extend range SU PPDU, and SU RUs in HE MU PPDU.~~ DCM is not applied to MU-MIMO. DCM is not applied to STBC. | MU | MU |
| Otherwise | See corresponding entry in Table 21-1 (TXVECTOR and RXVECTOR parameters). |

TGax editor: please make the following change in Clause **28.3.7** starting from P349L26 of D1.4:

….

DCM is an optional modulation scheme used for the HE-SIG-B field and the Data field in an HE PPDU. The use of DCM for the HE-SIG-B field in an HE MU PPDU is indicated in the HE-SIG-A field. The use of DCM on the Data field of an HE SU PPDU, and HE ER SU PPDU ~~and HE TB PPDU(#6840)~~ is indicated in the HE-SIG-A field. The use of DCM in the Data field of an HE MU PPDU is indicated in the HE-SIG-B field. DCM is only applied for the HE-MCSs and HE-SIG-B-MCSs with indices 0, 1, 3 and 4.(#5300, #8862)

TGax editor: please make the following change in Clause **28.3.11.9** starting from P426L1 of D1.4:

……

Dual subcarrier modulation (DCM) is an optional modulation scheme for the HE-SIG-B and Data fields. DCM can be applied to an HE SU PPDU and an HE ER SU PPDU. In an HE MU PPDU or an HE TB PPDU, DCM can be applied only to RUs containing data for 1 user.