IEEE P802.11  
Wireless LANs

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| LB231 CID Resolutions | | | | |
| Date: 2018-04-10 | | | | |
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|  |  |  |  |  |

Abstract

Proposed resolutions to LB231 CIDs 1120, 1203 1204, 1207, 1272, 1386, 1971, 2234, and 2279.

Comments from LB231 -

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Clause** | **Comment** | **Proposed Change** |
| 1120 | Oren Kedem | 9.4.2.250 | The Maximum PHY Rate subfield contains the maximum PHY data rate, in units of 100 Mbps, that the STA supports in receive mode, over all supported channel bandwidths and number of spatial streams"    there is no usage for this field | Consider to remove field from Core capability |

Resolution: Reject

Discussion: Implementations may have rate limitations, for example due to a data bus that place an upper limit on total PHY rate regardless of MCS.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1203 | Adrian Stephens | 9.4.2.250.1 | "non-AP or non-PCP EDMG STA"    This is inherently ambiguous as it combines (or) and (and) operations and there is no clear operator precedence. In this case, is the non-AP STA also an EDMG STA?  I suspect it is also incorrect, because AP and PCP EDMG STAs also transmit this element. | Replace all such use with the expanded term "non-AP EDMG STA or non-PCP EDMG STA". |

Resolution: Revise

Discussion: Text is ambiguous and should be changed throughout 802.11ay. It is true that AP EDMG STAs and PCP EDMG STAs transmit this element, however these STAs also declare they are EDMG STAs through the DMG Parameters field that is transmitted in Beacons.

*Instruct the Editor to make a global change in the 802.11ay draft from* "non-AP or non-PCP EDMG STA" *to* "non-AP EDMG STA or non-PCP EDMG STA"

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1204 | Adrian Stephens | 9.4.2.250.1 | "Each Extended Capabilities field is structured as defined in Figure 28."  Congratulations on re-inventing the subelement.  However, if you do use the sub-element, you avoid creating a novel concept, you re-use the existing concepts about extensibility, and what happens if you encounter an unknown subelement. | Replace these fields with "subelements" following the model of the baseline, e.g. in 9.4.2.22.14. |
| 1207 | Adrian Stephens | 9.4.2.250.4 | "PHY Capability field" - this is an over-general field name, as it is specific to EDMG STAs | Insert "EDMG" in the name of the field. Ditto for all the subfields of the EDMG capabilities element. |

Resolution: Accept

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1272 | Yan Xin | 9.4.2.250.2 | DL MU-MIMO is indicated for data trasnmission when MU-MIMO Supported subfield in Beamforming Capability filed is set to one. It is not clear why UL MU-MIMO Supported subfield is defined. UL MU-MIMO phase is optionally a part of MU-MIMO beamforming. | clarify the definition of UL MU-MIMO Supported |

Resolution: Reject

Discussion: The current text is clear. The UL MU-MIMO bit indicates support for an optional feature.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1386 | Assaf Kasher | 9.4.2.250.1 | The TRN parameters should be moved to the beamforming capabilities field | Move the TRN parameters to the Beamforming capability |
| 1971 | Assaf Kasher | 9.4.2.250.2 | Beamforming Capabiity field format - no field for requested OFDM Symbols - similar to requested BRP SC blocks | Consdier adding the field for OFDM as TRN fields can be added to OFDM frames |

Resolution: Revise

Discussion: All devices will employ TRN, so the TRN capabilities should remain in the core capabilities. Instead, we should move essential beamforming capabilities to core, and rename the Beamforming subelement as "MIMO", since that is more representative of the group. Requested OFDM symbols will be incorporated into core.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2234 | Li-Hsiang Sun | 9.4.2.250.3 | Value of the subfield should be the combined total number of RX and TX antennas of an EDMG STA minus 1 | change to the value of the Number of DMG Antenna subfield plus 1 defines ... |
| 2279 | Li-Hsiang Sun | 9.4.2.250.1 | The definition of Max A-MPDU Length Exponent should be different from that of 11ad because 11ay A-MPDU may have EOF padding | Change to "Indicates the maximum length of A-MPDU pre-EOF padding that the STA can receive"    Change the baseline 9.7.1, 7th paragraph as follows:  "An A-MPDU pre-EOF padding refers to the contents of the A-MPDU up to, but not including, the EOF Padding field or the first A-MPDU subframe carrying a Block Ack Schedule frame with EOF subfield set to 1" |

Resolution: Accept

*Instruct the Editor to modify Section 9.4.2.250 as shown below:*

9.4.2.250.1 General

A non-AP or non-PCP EDMG STA declares that it is an EDMG STA by transmitting the EDMG Capabilities element.

The format of the EDMG Capabilities element is shown in Figure 28. The EDMG Capabilities element contains a fixed length Core Capabilities field, which may be followed by one or more variable length Extended Capabilities subelements.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Element ID | Length | Element ID Extension | Core Capabilities | Extended Capabilities subelement 1 | … | Extended Capabilities subelement N |
| Octets: | 1 | 1 | 1 | 6 | Variable | … | Variable |

1. —EDMG Capabilities element format

The Element ID, Length and Element ID Extension fields are defined in 9.4.2.1.

The Core Capabilities field is defined in Figure 29.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0 B6 | B7 B18 | B19 B42 | B43 B47 |  | B9 | B10 | B43 B47 |
|  | A-MPDU Parameters | TRN Parameters | Supported MCS | Requested BRP SC Blocks | Requested BRP OFDM Symbols | DMG TRN RX Only Capable | First Path Training Supported | Reserved |
| Bits: | 7 | 12 | 24 | 5 | 5 | 1 | 1 | 5 |

1. —Core Capabilities field format

The A-MPDU Parameters field is defined in Figure 30. The definition of the subfields of the A-MPDU Parameters field is shown in Table 5.

|  |  |  |
| --- | --- | --- |
|  | B0 B3 | B4 B6 |
|  | Maximum A-MPDU  Length Exponent | Minimum MPDU  Start Spacing |
| Bits: | 4 | 3 |

1. —A-MPDU Parameters field format
2. —A-MPDU Parameters field definition

|  |  |  |
| --- | --- | --- |
| Subfield | Definition | Encoding |
| Maximum A-MPDU Length Exponent | Indicates the maximum length of A-MPDU pre-EOF padding that the STA can receive. | This subfield is an integer in the range 0 to 9.  The length defined by this subfield is equal to:  2(13 + Maximum A-MPDU Length Exponent) – 1 octets. |
| Minimum MPDU Start Spacing | Determines the minimum time between the start of adjacent MPDUs within an A-MPDU that the STA can receive, measured at the PHY SAP. | Set to 0 for no restriction  Set to 1 for 8 ns  Set to 2 for 16 ns  Set to 3 for 32 ns  Set to 4 for 64 ns  Set to 5 for 128 ns  Set to 6 for 256 ns  Set to 7 for 512 ns |

The TRN Parameters field is defined in Figure 31.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 | B10 | B11 |
|  | TP1 | TP4 | TN2 | TN4 | TN8 | RP1 | RP4 | RN2 | RN4 | RN8 | Short TRN | Long TRN |
| Bits: | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

1. —TRN Parameters field format

The TP1 subfield indicates that the STA is capable of transmitting an EDMG PPDU with TXVECTOR parameter EDMG\_TRN\_P equal to 1.

The TP4 subfield indicates that the STA is capable of transmitting an EDMG PPDU with TXVECTOR parameter EDMG\_TRN\_P equal to 4.

The TN2 subfield indicates that the STA is capable of transmitting an EDMG PPDU with TXVECTOR parameter EDMG\_TRN\_N equal to 2.

The TN4 subfield indicates that the STA is capable of transmitting an EDMG PPDU with TXVECTOR parameter EDMG\_TRN\_N equal to 4.

The TN8 subfield indicates that the STA is capable of transmitting an EDMG PPDU with TXVECTOR parameter EDMG\_TRN\_N equal to 8.

The RP1 subfield indicates that the STA is capable of receiving an EDMG PPDU with RXVECTOR parameter EDMG\_TRN\_P equal to 1.

The RP4 subfield indicates that the STA is capable of receiving an EDMG PPDU with RXVECTOR parameter EDMG\_TRN\_P equal to 4.

The RN2 subfield indicates that the STA is capable of receiving an EDMG PPDU with RXVECTOR parameter EDMG\_TRN\_N equal to 2.

The RN4 subfield indicates that the STA is capable of receiving an EDMG PPDU with RXVECTOR parameter EDMG\_TRN\_N equal to 4.

The RN8 subfield indicates that the STA is capable of receiving an EDMG PPDU with RXVECTOR parameter EDMG\_TRN\_N equal to 8.

The Short TRN subfield is set to one to indicate that the STA is capable of receiving TRN subfields based on short Golay sequences (see 30.9.2.2.6) in SC mode or short TRN subfields (see 30.9.2.2.7) in OFDM mode, otherwise it is set to 0.

The Long TRN subfield is set to one to indicate that the STA is capable of receiving TRN subfields based on long Golay sequences (see 30.9.2.2.6) in SC mode or long TRN subfields (see 30.9.2.2.7) in OFDM mode, otherwise it is set to 0.

The Supported MCS field is defined in Figure 32.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | B0 B4 | B5 B9 | B10 B21 | B22 | B23 |
|  | Maximum SC MCS | Maximum OFDM MCS | Maximum PHY Rate | MCS-5-6 Support | Reserved |
| Bits: | 5 | 5 | 12 | 1 | 1 |

1. —Supported MCS field format

The Maximum SC MCS subfield contains the index of the highest supported receive EDMG SC mode MCS. The mandatory EDMG SC mode MCSs are not impacted by the value of this subfield.

The Maximum OFDM MCS subfield contains the index of the highest supported receive EDMG OFDM mode MCS. A value of zero indicates that EDMG OFDM is not supported.

The Maximum PHY Rate subfield contains the maximum PHY data rate, in units of 100 Mbps, that the STA supports in receive mode, over all supported channel bandwidths and number of spatial streams. This PHY data rate may be lower than the data rate provided by the maximum supported MCS when used with a combination of the largest supported channel bandwidth and the maximum number of supported spatial streams.

The MCS-5-6 Capability subfield is set to one to indicate that MCS 5 and MCS 6 are supported in SISO mode. Otherwise, this subfield is set to zero.

The Requested BRP SC Blocks field indicates the minimum number of data SC blocks that the STA requests be included in an SC PPDU carrying a TRN field and transmitted to the STA. The value of this field ranges from 0 through aBRPminSCblocks inclusive.

The Requested BRP OFDM Symbols field indicates the minimum number of data OFDM symbols that the STA requests be included in an OFDM PPDU carrying a TRN field and transmitted to the STA. The value of this field ranges from 0 through aBRPminOFDMSymbols inclusive.

The DMG TRN RX Only Capable field is set to one to indicate that the STA is capable of receiving only DMG TRNs as defined in 20.10.2.2.2, even when such TRNs are appended to an EDMG PPDU (see 30.9.2.2.3). Otherwise, this field is set to zero.

The First Path Training Supported field is set to 1 to indicate that the STA supports the first path beamforming training procedure defined in 10.39.9.6. This field is set to 0 otherwise.

Each Extended Capabilities subelement is structured as defined in Figure 33. The Extended Capabilities subelement is identified by the contents of the Extended Capabilities subelement ID field. The Extended Capabilities subelement Length field specifies the number of octets in the Extended Capabilities subelement Payload field that follows the Extended Capabilities subelementLength field.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Extended Capabilities subelement ID | Extended Capabilities subelement Length | Extended Capabilities subelement Payload |
| Octets: | 1 | 1 | Variable |

1. —Extended Capabilities field format

The set of valid extended capabilities subelements is defined in Table 6. An Extended Capabilities subelement corresponding to an Extended Capabilities subelement ID can appear in any order, and does not appear more than once, in the EDMG Capabilities element. If an Extended Capabilities subelement corresponding to an Extended Capabilities subelement ID is not present in a transmitted EDMG Capabilities element, the transmitting STA does not support any of the mechanisms defined for the Extended Capability subelementID.

1. —Extended Capabilities subelement IDs

|  |  |
| --- | --- |
| Capability | Extended Capabilities subelement ID |
| MIMO Capability | 0 |
| Antenna Polarization Capability | 1 |
| EDMG PHY Capability | 2 |
| Supported Channels | 3 |
| MAC Capability | 4 |
| Segmentation and Reassembly Capability | 5 |

9.4.2.250.2 MIMO Capability subelement

The MIMO Capability subelement is defined in Figure 34.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | B0 | B1 | B2 | B3 |
|  |  | MU-MIMO Supported | Reciprocal MU-MIMO Supported | SU-MIMO Supported | Grant Required |
| Bits: |  | 1 | 1 | 1 | 1 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  | B4 | B5 | B6 B7 |
|  |  |  | Hybrid Beamforming and MU-MIMO Supported | Hybrid Beamforming and SU-MIMO Supported | Reserved |
| Bits: |  |  | 1 | 1 | 2 |

1. —MIMO Capability sublement format

The MU-MIMO Supported subfield is set to one to indicate that the STA supports the DL MU-MIMO protocol including the MU-MIMO beamforming protocol described in 10.39.9.2.3. The field is set to zero otherwise.

The Reciprocal MU-MIMO Supported field is set to one to indicate that the STA supports the reciprocal MU-MIMO protocol specified in 10.39.9.2.3.3.3. The field is set to zero otherwise. This field is reserved if the MU-MIMO Supported field is zero. CID1148

The SU-MIMO Supported field is set to one to indicate that the STA supports the SU-MIMO protocol including the SU-MIMO beamforming protocol described in 10.39.9.2.2. The field is set to zero otherwise.

The Grant Required field is set to one to indicate that the STA requires reception of a Grant frame to set up a MIMO configuration. The field is set to zero if a Grant frame is not necessary to set up a MIMO configuration. The Grant Required field is reserved if both the MU-MIMO Supported field and the SU-MIMO Supported subfield are set to 0.

The MU-MIMO Supported field and the Hybrid Beamforming and MU-MIMO Supported field are set to one to indicate that the STA supports the hybrid beamforming protocol during MU-MIMO transmission, including the hybrid beamforming protocol described in 10.39.9.2.4. The Hybrid Beamforming and MU-MIMO Supported field is reserved if the MU-MIMO Supported field is zero.

The SU-MIMO Supported field and Hybrid Beamforming and SU-MIMO Supported field are set to one to indicate that the STA supports hybrid beamforming protocol during SU-MIMO transmission, including the hybrid beamforming protocol described in 10.39.9.2.4. The Hybrid Beamforming and SU-MIMO Supported field is reserved if the SU-MIMO Supported field is zero.

9.4.2.250.3 Antenna Polarization Capability subelement

The Antenna Polarization Capability subelement allows a STA to share its antenna polarization characterstics with other stations. The Antenna Polarization Capability subelement is defined in Figure 35.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Number of DMG Antennas | Polarization Capability 0 | … | Polarization Capability N |
| Octets: | 1 | 2 | … | 2 |

1. —Antenna Polarization Capability subelement format

The Number of DMG Antennas field defines the combined total number of RX and TX antennas of an EDMG STA.

A Polarization Capability field is present for as many DMG antennas as indicated by the value of the Number of DMG Antennas field. Each Polarization Capability *i* field, 0 ≤ *i* ≤ *N*, describes the polarization characteristics of the DMG antenna that is identified by index *i*. Each Polarization Capability *i* field is defined in Figure 36.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | B0 B1 | B2 B3 | B4 B10 | B11 B15 |
|  | TX/RX | Polarization Configuration | Polarization Description | Reserved |
| Bits: | 2 | 2 | 7 | 5 |

1. —Polarization Capability field format

The TX/RX subfield is set to 1 to indicate that the antenna is for both transmission and reception, is set to 2 to indicate that the antenna is for transmission only,and is set to 3 to indicate that the antenna is for reception only. Value 0 is reserved.

The Polarization Configuration subfield is set to 0 to indicate single polarization, is set to 1 to indicate polarization switch, is set to 2 to indicate synthesizable polarization, and is set to 3 to indicate MIMO dual polarization.

The definition of the Polarization Description subfield depends on the setting of the Polarization Configuration subfield.

If the value of the Polarization Configuration subfield is equal to single polarization or MIMO dual polarization, the Polarization Description subfield is set to 0 to indicate linear polarization, is set to 1 to indicate circular polarization and is set to 2 for mixed polarization. Other values are reserved.

If the value of the Polarization Configuration subfield is equal to synthesizable polarization, the Polarization Description subfield is set to 0 to indicate linear polarization, is set to 1 to indicate circular polarization, is set to 2 for mixed polarization, and is set to 3 to indicate support for both linear and circular polarization. Other values are reserved.

If the value of the Polarization Configuration subfield is equal to polarization switch, the Polarization Description subfield is defined as shown in Figure 37.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | B0 | B1 B2 | B3 B4 | B5 B6 |
|  | Number of Throws | Polarization for Throw 1 | Polarization for Throw 2 | Polarization for Throw 3 |
| Bits: | 1 | 2 | 2 | 2 |

1. —Polarization Description field format

The Number of Throws subfield is set to 0 to indicate 2 throws and is set to 1 to indicate 3 throws. If the Number of Throws subfield is set to indicate 2 throws, the Polarization for Throw 3 subfield is reserved.

Each of Polarization for Throw 1 subfield, Polarization for Throw 2 subfield and Polarization for Throw 3 subfield is set to set to 0 to indicate linear polarization, is set to 1 to indicate circular polarization and is set to 2 for mixed polarization. Value 3 is reserved.

9.4.2.250.4 EDMG PHY Capability subelement

The EDMG PHY Capability subelement is defined in Figure 38.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0 | B1 | B2 | B3 | B4 | B5 | B6 | B7 B9 |
|  | Phase Hopping Supported | Open Loop Precoding Supported | DCM π/2-SQPSK Supported | Short CW Punctured Supported | Short CW Superimposed Supported | Long CW Punctured Supported | Long CW Superimposed Supported | SC Maximum Number of SU-MIMO Spatial Streams Supported |
| Bits: | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B10 B12 | B13 | B14 | B15 | B16 B18 | B19 B20 | B21 | B22 B23 |
|  | OFDM Maximum Number of SU-MIMO Spatial Streams Supported | NUC TX Supported | NUC RX Supported | π/2-8-PSK Supported | Number of Concurrent RF Chains | STBC Supported | EDMG A-PPDU | Reserved |
| Bits: | 3 | 1 | 1 | 1 | 3 | 2 | 1 | 2 |

1. —EDMG PHY Capability subelementformat

If the Phase Hopping Supported field is set to 1, the STA supports phase hopping as specified in 30.6.8.3. Otherwise, the STA does not support phase hopping.

If the Open Loop Precoding Supported field is set to 1, the STA supports open loop precoding as specified in 30.6.8.3. Otherwise, the STA does not support open loop precoding.

If the DCM π/2-SQPSK Supported field is set to 1, the STA supports DCM π/2-SQPSK as specified in 30.5.9.5.2. Otherwise, the STA does not support DCM π/2-SQPSK.

The Short CW Punctured Supported, Short CW Superimposed Supported, Long CW Punctured Supported and Long CW Superimposed Supported fields indicate the support by an EDMG STA for LDPC code rate 7/8 with codeword length equal to 624, 672, 1248, and 1344 bits as follows:

* A STA indicates support for transmission and reception of LDPC code with short codeword length equal to 624 bits and code rate 7/8 by setting Short CW Punctured Supported field to 1, otherwise this field is set to 0. The encoding procedure for short codeword length equal to 624 bits is defined in 20.6.3.2.3.
* A STA indicates support for transmission and reception of LDPC code with short codeword length equal to 672 bits and code rate 7/8 by setting Short CW Superimposed Supported field to 1, otherwise this field is set to 0. The encoding procedure for short codeword length equal to 672 bits is defined in 30.5.9.4 and parity check matrix is defined in 30.3.6.2. This field is reserved if the Short CW Punctured Supported field is zero.
* A STA indicates support for transmission and reception of LDPC code with long codeword length equal to 1248 bits and code rate 7/8 by setting Long CW Punctured Supported field to 1, otherwise this field is set to 0. The encoding procedure for long codeword length equal to 1248 bits is defined in 30.5.9.4.
* A STA indicates support for transmission and reception of LDPC code with long codeword length equal to 1344 bits and code rate 7/8 by setting Long CW Superimposed Supported Bit field to 1, otherwise this field is set to 0. The encoding procedure for long codeword length equal to 1344 bits is defined in 30.5.9.4. This field is reserved if the Long CW Punctured Supported field is zero.

The SC Maximum Number of SU-MIMO Spatial Streams Supported field indicates the maximum number of SU-MIMO spatial streams for the EDMG SC modulation class that the STA can demodulate. The value of this field is in the range 1 to 8, with the value being equal to the bit representation plus 1.

The OFDM Maximum Number of SU-MIMO Spatial Streams Supported field indicates the maximum number of SU-MIMO spatial streams for the EDMG OFDM modulation class that the STA can demodulate. The value of this field is in the range 1 to 8, with the value being equal to the bit representation plus 1.

The NUC TX Supported field is set to one to indicate that the STA supports transmission of PPDUs using non-uniform constellation. Otherwise, this field is set to zero.

The NUC RX Supported field is set to one to indicate that the STA support reception of PPDUs using non-uniform constellation. Otherwise, this field is set to zero.

The π/2-8-PSK Supported field is set to one to indicate that the STA supports SC MCS 12 and SC MCS 13 using 8-PSK modulation. Otherwise, this field is set to zero.

The value of the Number of Concurrent RF Chains field plus one indicates the maximum number of concurrent transmit or receive chains of the STA. The value of this field ranges from 0 to 7. The value of this field is less than or equal to the value of the Number of DMG Antennas field in the Antenna Polarization Capability field.

The STBC Supported field is set to 1 to indicate that the STA supports single stream STBC reception. It is set to 2 to indicate that the STA supports one or more spatial stream STBC reception; in this case, the maximum number of spatial streams which can be decoded is limited by the minimum of four and the value of the SC Maximum Number of SU-MIMO Spatial Streams Supported field for an EDMG SC PPDU and the value of the OFDM Maximum Number of SU-MIMO Spatial Streams Supported field for an EDMG OFDM PPDU. This field set to 0 to indicate that the STA does not support STBC. Value 3 is reserved.

The EDMG A-PPDU field is set to 1 to indicate that the STA supports EDMG A-PPDU as described in 10.14. Otherwise, it is set to 0. CID1099

9.4.2.250.5 Supported Channels subelement

The Supported Channels subelement is defined in Figure 39, where N is the integer number of channels and M is the integer number of channel aggregation combinations that the STA supports.

NOTE—As specified in 30.1.1, support for 2.16 GHz and 4.32 GHz channels by an EDMG STA is mandatory.

|  |  |  |
| --- | --- | --- |
|  | EDMG Channels Information | EDMG Aggregated Channels Information |
| Octets: | N+1 | 2×M+1 |

1. —Supported Channels subelement format

The EDMG Channels Information field is defined in Figure 40.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Number of EDMG Channels | EDMG Channel 1 | … | EDMG Channel N |
| Octets: | 1 | 1 | … | 1 |

1. —EDMG Channels Information field format

The Number of EDMG Channels subfield defines the value of N.

Each EDMG Channel *i* subfield (1 ≤ *i* ≤ N) includes the channel number of a channel that is supported by the STA, as defined in Annex E.

The EDMG Aggregated Channels Information subfield is defined in Figure 41.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Number of Channel Aggregation Combinations | Channel Aggregation Combination 1 | … | Channel Aggregation Combination M |
| Octets: | 1 | 2 | … | 2 |

1. —EDMG Aggregated Channels Information field format

The Number of Channel Aggregation Combinations subfield defines the value of M.

Each Channel Aggregation Combination *i* subfield (1 ≤ i ≤ M) is defined in Figure 42. The channel numbers, as defined in Annex E, of the channels that are aggregated for each channel aggregation combination are included in the Aggregated Channel 1 and Aggregated Channel 2 subfields.

|  |  |  |
| --- | --- | --- |
|  | Aggregated Channel 1 | Aggregated Channel 2 |
| Octets: | 1 | 1 |

1. —Channel Aggregation Combination subfield format

9.4.2.250.6 MAC Capability subelement

The MAC Capability subelement is defined in Figure 43.

|  |  |  |
| --- | --- | --- |
|  | EDMG Multi-TID Capability | SM Power Save Capability |
| Octets: | 1 | 1 |

1. —MAC Capability subelement format

The EDMG Multi-TID Capability field is defined in Figure 44.

|  |  |  |  |
| --- | --- | --- | --- |
|  | B0 B3 | B4 | B5 B7 |
|  | EDMG Multi-TID Aggregation Support | EDMG All Ack Support | Reserved |
| Bits: | 4 | 1 | 3 |

1. —EDMG Multi-TID Capability field format

The EDMG Multi-TID Aggregation Support subfield contains the number of TIDs minus one of QoS Data frames that the STA is able to receive or aggregate in a multi-TID A-MPDU as described in 10.63. A value of zero indicates that the STA does not support EDMG multi-TID aggregation.

The EDMG All Ack Support subfield is set to one to indicate support for the reception of a Multi-TID BlockAck frame under the all ack context when the AckType subfield value is 11 (see 10.63.2). The EDMG All Ack Support subfield is set to 0 otherwise. CID1956

The SM Power Save Capability field is defined in Figure 45.

|  |  |  |
| --- | --- | --- |
|  | B0 B1 | B2 B7 |
|  | SM Power Save | Reserved |
| Bits: | 2 | 6 |

1. —SM Power Save Capability field format

The SM Power Save subfield indicates the support for spatial multiplexing power save for an EDMG STA (see 11.2.6). It also indicates the spatial multiplexing power save mode that is in operation immediately after (re)association. This subfield is set to 0 for static SM power save mode, 1 for dynamic SM power save mode, and 3 for SM power save disabled or not supported. The value of 2 is reserved.

It is only valid in a (Re)Association Request frame sent to an AP or a PCP. Otherwise this subfield is set to 0 or 3 upon transmission and it ignored upon reception.

NOTE—This subfield indicates the operational state immediately after (re)association as well as (if not set to 3) a capability.

9.4.2.250.7 Segmentation and Reassembly Capability subelement

The Segmentation and Reassembly Capability field is defined in Figure 46 and its subfields are defined in Table 7.

|  |  |  |  |
| --- | --- | --- | --- |
|  | B0 B2 | B3 B6 | B7 |
|  | Reserved | Maximum Segmented MSDU Exponent | Segmentation and Reassembly Support |
| Bits: | 3 | 4 | 1 |

1. —Segmentation and Reassembly subelement format
2. —Field definition of Segmentation and Reassembly subelement

|  |  |  |
| --- | --- | --- |
| Field | Definition | Encoding |
| Maximum Segmented MSDU Exponent | Indicates the maximum MSDU size supported when segmentation and reassembly is enabled. | This subfield is an integer in the range 0 to 9. The maximum segmented MSDU size that is defined by this subfield is equal to:  2 (13 + Maximum Segmented MSDU Exponent) – 1 octets |
| Segmentation and Reassembly Support | Indicates whether the STA supports the segmentation and reassembly mechanism as specified in 10.62. | 0 – Segmentation and reassembly is not supported  1 – Segmentation and reassembly is supported |

*Instruct the Editor to modify paragraph 7 of Section 9.7.1 as follows:*

An A-MPDU pre-EOF padding refers to the contents of the A-MPDU up to, but not including, the EOF Padding field or the first A-MPDU subframe carrying a Block Ack Schedule frame with EOF subfield set to 1.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1272 | Yan Xin | 9.4.2.250.2 | DL MU-MIMO is indicated for data trasnmission when MU-MIMO Supported subfield in Beamforming Capability filed is set to one. It is not clear why UL MU-MIMO Supported subfield is defined. UL MU-MIMO phase is optionally a part of MU-MIMO beamforming. | clarify the definition of UL MU-MIMO Supported |

Resolution: Reject

Discussion: The current text is clear. The UL MU-MIMO bit indicates support for an optional feature.