IEEE P802.11
Wireless LANs

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| Resolution for CIDs related to EHT Capabilities elements (CC34) |
| Date: Feb 16, 2021 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Gaurang Naik | Qualcomm Inc. |  |  | gnaik@qti.qualcomm.com |
| Abhishek Patil |  |  | appatil@qti.qualcomm.com |
| Alfred Asterjadhi |  |  | aasterja@qti.qualcomm.com |
| George Cherian |  |  | gcherian@qti.qualcomm.com |
| Duncan Ho |  |  | dho@qti.qualcomm.com |
| Yanjun Sun |  |  | yanjuns@qti.qualcomm.com |

 Abstract

This submission proposes resolutions for following 14 CIDs received for TGbe CC34:

1126, 1004, 2246, 3352, 3353, 3354, 3355, 3356, 3357, 3358, 1009, 1121, 1133, 1022

Revisions:

* Rev 0: Initial version of the document.

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.

***Editing instructions formatted like this are intended to be copied into the TGbe Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGbe Editor: Editing instructions preceded by “TGbe Editor” are instructions to the TGbe editor to modify existing material in the TGbe draft. As a result of adopting the changes, the TGbe editor will execute the instructions rather than copy them to the TGbe Draft.***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Pg/Ln** | **Section** | **Comment** | **Proposed Change** | **Resolution** |
| 1126 | Alfred Asterjadhi | 76/37 | 9.4.2.295c | Add the missing subclause for EHT Capabilies element. Also please note that EHT MAC Capabilities are missing. | As in comment. | **Revised**The missing subclauses on EHT Capabilities element in subclause 9.4.2.295c were added. **Tgbe editor please implement changes as shown in doc 11-21/0253r0 tagged as 1126.** |
| 1004 | Abhishek Patil | 57/38 | 9.3.3 | Update the frame format tables in clause 9.3.3 to include EHT Cap and EHT Op | As in comment | **Revised**The frame formats for various management frames were updated to include EHT Operation element and EHT Capabilities element. In addition, clause 6.3 (MLME) and C.3 (MIB) was updated to include the corresponding entries. Changes applied over 11be D0.3 and approved text from doc 21/0113r1. **TGbe editor please implement changes as shown in doc 11-21/0253r0 tagged as 1004.** |
| 2246 | Massinissa Lalam | 38/57 | 9.3.3 | A place holder should be added for "EHT Capabilities" and "EHT Operation" IEs in Beacon, (Re)Association Response, Probe Response respective tables, above the "Multi-Link" IE.A place holder should be added for "EHT Capabilities" IE in (Re)Association Request, Probe Request respective tables, above the "Multi-Link" IE. | as the comment | **Revised**The frame formats for various management frames were updated to include EHT Operation element and EHT Capabilities element. In addition, clause 6.3 (MLME) and C.3 (MIB) was updated to include the corresponding entries. Changes applied over 11be D0.3 and approved text from doc 21/0113r1. **TGbe editor please implement changes as shown in doc 11-21/0253r0 tagged as 2246.** |
| 3352 | Zhiqiang Han | 57/48 | 9.3.3.2 | Beacon frame also should include EHT capabilities element, EHT Operation element | as the comment | **Revised**The frame format for Beacon frame was updated to include EHT Operation element and EHT Capabilities element. **TGbe editor please implement changes as shown in doc 11-21/0253r0 tagged as 3352.** |
| 3353 | Zhiqiang Han | 58/07 | 9.3.3.5 | Association Request need include EHT capabilities element | as the comment | **Revised**The frame format for Association Request frame was updated to include EHT Capabilities element. **TGbe editor please implement changes as shown in doc 11-21/0253r0 tagged as 3353.** |
| 3354 | Zhiqiang Han | 58/23 | 9.3.3.6 | Association Response frame indludes EHT capabilities element, EHT Operation element | as the comment | **Revised**The frame format for Association Response frame was updated to include EHT Operation element and EHT Capabilities element. **TGbe editor please implement changes as shown in doc 11-21/0253r0 tagged as 3354.** |
| 3355 | Zhiqiang Han | 58/40 | 9.3.3.7 | Reassociation Request need include EHT capabilities element | as the comment | **Revised**The frame format for Reassociation Request frame was updated to include EHT Capabilities element. **TGbe editor please implement changes as shown in doc 11-21/0253r0 tagged as 3355.** |
| 3356 | Zhiqiang Han | 58/57 | 9.3.3.8 | Reassociation Response frame indludes EHT capabilities element, EHT Operation element | as the comment | **Revised**The frame format for Reassociation Response frame was updated to include EHT Operation element and EHT Capabilities element. **TGbe editor please implement changes as shown in doc 11-21/0253r0 tagged as 3356.** |
| 3357 | Zhiqiang Han | 59/07 | 9.3.3.9 | Probe Request frame includes EHT Capabilites element | as the comment | **Revised**The frame format for Probe Request frame was updated to include EHT Capabilities element. **TGbe editor please implement changes as shown in doc 11-21/0253r0 tagged as 3357.** |
| 3358 | Zhiqiang Han | 59/24 | 9.3.3.10 | Probe Reponse frame includes EHT Capabilites element, EHT operation element. | as the comment | **Revised**The frame format for Probe Response frame was updated to include EHT Operation element and EHT Capabilities element. **TGbe editor please implement changes as shown in doc 11-21/0253r0 tagged as 3358.** |
| 1009 | Abhishek Patil | 69/01 | 9.4.2.1 | Add an entries for EHT Cap and EHT Op Ies to Table 9-92 | As in comment. | **Revised**Entries for EHT Capabilities and EHT Operation element were added to Table 9-92.**TGbe editor please implement changes as shown in doc 11-21/0253r0 tagged as 1009.** |
| 1121 | Alfred Asterjadhi | 68/55 | 9.4.2.1 | Add element IDs for EHT Caps and HE Ops. | As in comment. | **Revised**Entries for EHT Capabilities and EHT Operation element were added to Table 9-92.**TGbe editor please implement changes as shown in doc 11-21/0253r0 tagged as 1121.** |
| 1133 | Alfred Asterjadhi | 235/03 | 9.6.12 | Any updates to TDLS related action frames? Add EHT related elements for example (references relative to TGax 8.0). | As in comment. | **Revised**The EHT Capabilities element was added in TDLS Discovery Response Action frame, TDLS Setup Request Action frame, and TDLS Setup Response Action frame. The EHT Operation element was added to TDLS Setup Confirm Action frame.**TGbe editor please implement changes as shown in doc 11-21/0253r0 tagged as 1133.** |
| 1022 | Abhishek Patil | 87/01 | 11.20.1 | Update 11.20.1 to mention that TDLS Setup Confirm frame carries EHT Operation element. | Insert the following as the last paragraph in clasue 11.20.1:"The EHT Operation element shall be present in a TDLS Setup Confirm frame when both STAs are EHT capable." | **Accepted****TGbe editor please implement changes as shown in doc 11-21/0253r0 tagged as 1022.** |

***TGbe editor: Please note Baseline is REVmd D5.0, 11ax D8.0, 11be D0.3, and approved text in 21/0113r1***

***TGbe editor: Please add/edit the subclauses as follows [CID 1126]***

### 9.4.2.295c EHT Capabilities element

9.4.2.295c.1 ~~EHT PHY Capabilities Information field~~General

A STA declares that it is an EHT STA by transmitting the EHT Capabilities element.

The EHT Capabilities element contains a number of fields that are used to advertise the EHT capabilities of an EHT STA. The EHT Capabilities element is defined in Figure 9-xxx (EHT Capabilities element format).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Element ID | Length | Element ID Extension | EHT MAC Capabilities Information | EHT PHY Capabilities Information | Supported EHT-MCS And NSS Set | EHT PPE Thresholds (optional) |
| Octets: | 1 | 1 | 1 | TBD | TBD | TBD | variable |
|  Figure 9-xxx EHT Capabilities element format |

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

The EHT MAC Capabilities Information, EHT PHY Capabilities Information, Supported EHT-MCS And NSS Set, and EHT PPE Thresholds fields are defined in the subclauses below.

9.4.2.295c.2 EHT MAC Capabilities Information field

The format of the EHT MAC Capabilities Information field is defined in Figure 9-xxx (EHT MAC Capabilities Information field format).

|  |  |  |
| --- | --- | --- |
|  | B0 | B1 TBD  |
|  | NSEP Priority Access Supported | Reserved |
| Bits: | 1 | TBD |
| **Figure 9-xxx: EHT MAC Capabilities Information field format** |

The subfields of the EHT MAC Capabilities Information field are defined in Table 9-xxx (Subfields of the EHT MAC Capabilities Information field).

|  |
| --- |
|  Table 9-xxx – Subfields of the EHT MAC Capabilities Information field |
| Subfield | Definition | Encoding |
| NSEP Priority Access Supported | Indicates support for NSEP priority access. | Set to 1 if dot11EHTNSEPPriorityAccessActivated is true (see (35.10 (NSEP priority access)).Set to 0 otherwise. |

9.4.2.295c.2 EHT PHY Capabilities Information field

9.4.2.295c.3 Supported EHT-MCS And NSS Set

9.4.2.295c.4 EHT PPE Thresholds field

### 6.3.7.4 MLME-ASSOCIATE.indication

### 6.3.7.4.2 Semantics of the service primitive

***TGbe editor: Please update the row of the table below as follows (over approved spec text in 21/0113r1) [CID 1004, 2246]:***

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| EHTCapabilities | As defined in EHTCapabilities element | As defined in 9.4.2.295c(EHT Capabilities element) | Specifies the parameters in the EHT Capabilities element that are supported by the peer STA. The parameter is present if dot11EHTOptionImplemented is true and the EHT Capabilities element is present in the Association Request frame received from the STA; otherwise, not present. |

### 6.3.8.4 MLME-REASSOCIATE.indication

### 6.3.8.4.2 Semantics of the service primitive

***TGbe editor: Please update the row of the table below as follows (over approved spec text in 21/0113r1) [CID 1004, 2246]:***

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| EHTCapabilities | As defined in EHTCapabilities element | As defined in 9.4.2.295c(EHT Capabilities element) | Specifies the parameters in the EHT Capabilities element that are supported by the peer STA. The parameter is present if dot11EHTOptionImplemented is true and the EHT Capabilities element is present in the Reassociation Request frame received from the STA; otherwise, not present. |

***TGbe editor: Please insert the following row in the tables of the subclauses listed below (and in the .request itself) [CID 1004, 2246]:***

* ***6.3.3.2 MLME-SCAN.request***
* ***6.3.4.2 MLME-JOIN.request***

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| EHT Capabilities | As defined in EHTCapabilities element | As defined in 9.4.2.295c(EHT Capabilities element) | Specifies the parameters in theEHT Capabilities element that are supported by the STA. The parameter is present if dot11EHTOptionImplemented istrue; otherwise not present. |

***TGbe editor: Please insert the following rows in the tables of the subclause listed below [CID 1004, 2246]:***

* ***6.3.3.3 MLME-SCAN.confirm***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** |  **Description** | **IBSS adoption** |
| EHT Capabilities | As defined in frame format | As defined in 9.4.2.295c(EHT Capabilities element) | The value from the EHT Capabilities element. The parameter is present if dot11EHTOptionImplemented is true and an EHT Capabilities element was present in the Probe Response or Beacon frame from which the BSSDescription was determined. Otherwise, the parameter is not present.  | Do not adopt |
| EHT Operation | As defined in frame format | As defined in 9.4.2.295a(EHT Operation element) | The value from the EHT Operation element. The parameter is present if dot11EHTOptionImplemented is true and an EHT Operation element was present in the Probe Response or Beacon frame from which the BSSDescriptionSet was determined. Otherwise, the parameter is not present. | Adopt |

***TGbe editor: Please insert the following rows in the tables of the subclause listed below [CID 1004, 2246]:***

* ***6.3.11.2 MLME-START.request***

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| EHT Capabilities | As defined in EHT Capabilities element. | As defined in 9.4.2.295c(EHT Capabilities element) | Specifies the parameters within the EHT Capabilities element that are supported by the STA. The parameter is present if dot11EHTOptionImplemented is true; otherwise, this parameter is not present. |
| EHT Operation | As defined in EHT Operation element. | As defined in 9.4.2.295a(EHT Operation element) | Provides additional information for operating the EHT BSS. The parameter is present if dot11EHTOptionImplemented is true; otherwise, this parameter is not present. |

**C.3 MIB Detail**

***TGbe editor: Change the comment list following the dot11smt definition as follows (not all lines shown) [CID 1004, 2246]:***

dot11smt OBJECT IDENTIFIER ::= { ieee802dot11 1 }

-- dot11GLKLinkMetricsTable ::= { dot11smt 41 }

-- dot11HEStationConfigTable ::= { dot11smt 42 }

-- dot11PPEThresholdsMappingsTable ::= { dot11smt 43 }

-- dot11EHTStationConfigTable ::= { dot11smt <ANA> }

***TGbe editor: Change Dot11StationConfigEntry as follows (not all lines shown) [CID 1004, 2246]:***

Dot11StationConfigEntry ::= SEQUENCE

{

dot11FutureChannelGuidanceActivated TruthValue,

dot11HEOptionImplemented TruthValue,

dot11EHTOptionImplemented TruthValue,

***TGbe editor: Insert the following after the dot11FutureChannelGuidanceActivated OBJECT-TYPE element in theDot11StationConfig TABLE [CID 1004, 2246]:***

dot11EHTOptionImplemented OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This is a capability variable.

Its value is determined by device capabilities.

This attribute indicates whether the entity is EHT Capable."

::= { dot11StationConfigEntry <ANA>}

***TGbe editor: Please insert the following rows in the tables listed below:***

* ***Both rows in Table 9-32 (Beacon frame body) [CID 1004, 2246, 3352]***
* ***The first row in Table 9-34 (Association Request frame body) [CID 1004, 2246, 3353]***
* ***Both rows in Table 9-35(Association Response frame body) [CID 1004, 2246, 3354]***
* ***The first row in Table 9-36(Reassociation Request frame body) [CID 1004, 2246, 3355]***
* ***Both rows in Table 9-37(Reassociation Response frame body) [CID 1004, 2246, 3356]***
* ***The first row in Table 9-38(Probe Request frame body) [CID 1004, 2246, 3357]***
* ***Both rows in Table 9-39 (Probe Response frame body) [CID 1004, 2246, 3358]***
* ***The first row in Table 9-373(TDLS Discovery Response Action field format) in 11ax D8.0 [CID 1133]***
* ***The first row in Table 9-414(Information for TDLS Setup Request Action field) [CID 1133]***
* ***The first row in Table 9-415(Information for TDLS Setup Response Action field) [CID 1133]***

|  |  |  |
| --- | --- | --- |
| **Order** | **Information** | **Notes** |
| <ANA> | EHT Capabilities | The EHT Capabilities element is present if dot11EHTOptionImplemented is true; otherwise it is not present. |
| <ANA> | EHT Operation | The EHT Operation element is present if dot11EHTOptionImplemented is true; otherwise it is not present. |

***TGbe editor: Please insert the following row in Table 9-416—Information for TDLS Setup Confirm Action field [CID 1133]:***

|  |  |  |
| --- | --- | --- |
| **Order** | **Information** | **Notes** |
| <ANA> | EHT Operation | The EHT Operation element is present when dot11EHTOptionImplemented is true, the TDLS Setup Response frame contained an EHT Capabilities element and the Status Code is SUCCESS; otherwise it is not present. The EHT Operation element is defined in 9.4.2.295a (EHT Operation element). |

***TGbe editor: Please insert the following rows in Table 9-92 (Element IDs) [CID 1009, 1121]:***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | **Element ID** | **Element ID Extension** | **Extensible** | **Fragmentable** |
| EHT Capabilities (see 9.4.2.295c (EHT Capabilities element)) |  <ANA> | <ANA> |  Yes | No |
| EHT Operation (see 9.4.2.295a (EHT Operation element)) |  <ANA> | <ANA> |  Yes | No |

### 11.20 Tunneled direct-link setup

**11.20.1 General**

***TGbe editor: Please insert the following as the last paragraph [CID 1022]:***

The EHT Operation element shall be present in a TDLS Setup Confirm frame when both STAs are EHT capable.