IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Comment Resolution for CC36 related to IEEE 802.11be Annex B (PICS) | | | | |
| Date: 2021-10-11 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Rajat Pushkarna | Panasonic Corp. |  |  | rajat.pushkarna@sg.panasonic.com |
| Rojan Chitrakar | Panasonic Corp. |  |  |  |
| Alfred Asterjadhi | Qualcomm |  |  |  |
| Yunbo Li | Huawei |  |  |  |
| Ming Gan | Huawei |  |  |  |
| Yongho Seok | Mediatek |  |  |  |

Abstract

This document includes proposed resolutions to CIDs 4281, 5533, 6672, 6748, 7287 related to Annex B

R0: Initial draft

R1: Minor changes based on feedback from members offline.

R2: Minor changes based on feedback from members offline.

R3: Removed CID 4206 as it is resolved by Kaiying

R4: Revised based on comments from Jarkko

R5: Minor editorials were corrected.

R6: Minor editorials

R7: Revision based on D1.4

R8: Minor editorials

R9: Edits based on comments from the group (indicated in cyan)

R10: Edits based on comments from Alfred (indicated in cyan)

R11: Edits based on feedback on call (indicated in green)

R12: Revisions based on comments from Jay and Yongho (indicated in green)

C

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Changes** | **Resolutions** |
|  |  |  |  |  |  |
| 4281 | 274 | Annex B | Annex B is incomplete. Please complete. | As in comment. | **Revised:** Agree with the commentor to add Annex B. Added EHT MAC features in Annex B.  **TGbe editor to make the changes shown in IEEE 802.11-21/1681r15 under all headings that include CID 4281.** |
| 5533 | 579 | B.4.36a | Many EHT MAC features have been amended and accepted in the spec (e.g. multi-link operation, channel access, discovery, etc.) but we don't have PICS for the EHT MAC features yet. We need to have it upon the agreements in the next version of draft. | As in comment | **Revised:** Agree with the commentor to add Annex B. Added EHT MAC features in Annex B.  **TGbe editor to make the changes shown in IEEE 802.11-21/1681r15 under all headings that include CID 5533.** |
| 6672 | 579 | B.4 | MAC related PICS are missing Annex B | Please provide PICS for EHT MAC | **Revised:** Agree with the commentor to add Annex B. Added EHT MAC features in Annex B.  **TGbe editor to make the changes shown in IEEE 802.11-21/1681r15 under all headings that include CID 6672.** |
| 6748 | 579 | B.4 | EHT MAC related PICS are missing. | Add EHT MAC related PICS | **Revised:** Agree with the commentor to add Annex B. Added EHT MAC features in Annex B.  **TGbe editor to make the changes shown in IEEE 802.11-21/1681r15 under all headings that include CID 6748.** |
| 7287 | 579 | B.4.36a.2 | There should be a section B4.36a.3 with EHT MAC features | Add EHT MAC features to PICS | **Revised:** Agree with the commentor to add Annex B. Added EHT MAC features in Annex B.  **TGbe editor to make the changes shown in IEEE 802.11-21/1681r15 under all headings that include CID 7287.** |

**Annex B (**CIDs 4281, 5533, 6672, 6748, 7287)

(normative)

**Protocol Implementation Conformance Statement (PICS) – proforma**

***TGbe editor: Add the following sub-clause (B.2.2) to 11bf draft:***

**B.2.2 General abbreviation for Item and Support columns**

***Add the following items at the end of sub-clause B.2.2:***

EHTM Extremely High Throughput MAC

EHTP Extremely High Throughput PHY

**B.4.3 IUT configuration**

***TGbe editor: Change the table in B.4.3 as follows:***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item** | **IUT configuration** | **References** | **Status** | **Support** |
| \*CFEHT | EHT operation | Clause 35, 36 | O | Yes: No: N/A: |
| CFEHT2G4 | EHT operations in the 2.4 GHz band | Clause 36 | CFEHT: O.10 | Yes: No: N/A: |
| CFEHT5G | EHT operations in the 5 GHz band | Clause 36 | CFEHT: O.10 | Yes: No:  N/A: |
| CFEHT6G | EHT operations in the 6 GHz band | Clause 36 | CFEHT: O.10 | Yes: No:  N/A: |
| CFEHTMLD | EHT MLD Operation | Clause 35 | CFEHT AND CFAP: M  CFEHT AND CFSTAofAP: | Yes: No:  N/A: |
| CFEHTMLDAP | EHT AP MLD operation | Clause 35 | CFEHTMLD: O.11 | Yes: No:  N/A: |
| CFEHTMLDnonAP | EHT non-AP MLD operation | Clause 35 | CFEHTMLD: O.11 | Yes: No:  N/A: |
| CFEHTNSTRMobileAP | NSTR mobile AP MLD operation | Clause 35 | CFEHTMLD: O.11 | Yes: No:  N/A: |

***TGbe editor: Add the following subclause (B.4.4.2) to 11be draft:***

**B.4.4.2 MAC frames**

***Insert the following rows at the end of the indicated sections of the table in B.4.4.2:***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item** | **MAC frame** | **References** | **Status** | **Support** |
|  | Is transmission of the following MAC frames supported? |  |  |  |
| FT57 | EHT Action frames | 9.6.34 | CFEHT: O | * Yes * No * N/A |
| FT57.1 | EML Operating Mode Notification frame | 9.6.34.3 | EHTM9.10 OR EHTM9.11: M | * Yes * No * N/A |
| FT58 | Protected EHT Action frame | 9.6.35 | CFEHT: O | * Yes * No * N/A |
| FT58.1 | TID-To-Link Mapping Request frame | 9.6.35.2 | EHTM9.14: M | * Yes * No * N/A |
| FT58.2 | TID-To-Link Mapping Response frame | 9.6.35.3 | EHTM9.14: M | * Yes * No * N/A |
| FT58.3 | TID-To-Link Mapping Teardown frame | 9.6.35.4 | EHTM9.14: M | * Yes * No * N/A |
| FT58.4 | EPCS Priority Access Enable Request frame | 9.6.35.5 | EHTM5: M | * Yes * No * N/A |
| FT58.5 | EPCS Priority Access Enable Response frame | 9.6.35.6 | EHTM5: M | * Yes * No * N/A |
| FT58.6 | EPCS Priority Access Teardown frame | 9.6.35.7 | EHTM5: M | * Yes * No * N/A |
|  | Is reception of the following MAC frames supported? |  |  |  |
| FR58 | EHT Action frames | 9.6.34 | CFEHT: M | * Yes * No * N/A |
| FR58.1 | EML Operating Mode Notification frame | 9.6.34.3 | (EHTM9.10 OR EHTM9.11): M | * Yes * No * N/A |
| FR59 | Protected EHT Action frame | 9.6.35 | CFEHT: O | * Yes * No * N/A |
| FR59.1 | TID-To-Link Mapping Request frame | 9.6.35.2 | EHTM9.14: M | * Yes * No * N/A |
| FR59.2 | TID-To-Link Mapping Response frame | 9.6.35.3 | EHTM9.14: M | * Yes * No * N/A |
| FR59.3 | TID-To-Link Mapping Teardown frame | 9.6.35.4 | EHTM9.14: M | * Yes * No * N/A |
| FR59.4 | EPCS Priority Access Enable Request frame | 9.6.35.5 | EHTM5: M | * Yes * No * N/A |
| FR59.5 | EPCS Priority Access Enable Response frame | 9.6.35.6 | EHTM5: M | * Yes * No * N/A |
| FR59.6 | EPCS Priority Access Teardown frame | 9.6.35.7 | EHTM5: M | * Yes * No * N/A |

**B.4.xx Extremely High Throughput (EHT) features**

***TGbe editor: Insert a new subclause at the end of B.4 as follows:***

**B.4.xx.x EHT MAC features**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Item** | **Protocol Capability** | **References** | | **Status** | **Support** |
|  | Are the following MAC protocol features supported? |  | |  |  |
| EHTM1 | EHT capabilities signaling |  | |  |  |
| EHTM1.1 | EHT Capabilities element | 9.4.2.295c (EHT Capabilities element) | | CFEHT: M | * Yes * No * N/A |
| EHTM1.2 | Signaling of EHT STA capabilities in Probe Request, (Re) Association Request frames | 9.3.3.5 (Association  Request  frame format),  9.3.3.7 (Reassociation  Request frame  format), 9.3.3.9  (Probe Request  frame format),  9.4.2.295c (EHT  Capabilities  element) | | CFEHT AND CFIndepSTA:M | * Yes * No * N/A |
| EHTM1.3 | Signaling of EHT STA capabilities and EHT BSS capabilities in Beacon, Probe Response, (Re)Association Response frames | 9.3.3.2 (Beacon  frame format),  9.3.3.6  (Association  Response  frame format),  9.3.3.8 (Reassociation  Response  frame format),  9.3.3.10 (Probe  Response  frame format),  9.4.2.295c (EHT  Capabilities  element) | | CFEHT AND CFAP: M | * Yes * No * N/A |
| EHTM1.4 | Signalling of MLD capabilities using MLD capabilities subfield present in the Common Info field of the Basic Multi-Link element. | 9.3.3.2 (Beacon  frame format),  9.3.3.5 (Association  Request  frame format),  9.3.3.6  (Association  Response  frame format),  9.3.3.7 (Reassociation  Request frame  format),  9.3.3.8 (Reassociation  Response  frame format)  9.3.3.10 (Probe  Response  frame format) | | CFEHTMLD: M | * Yes * No * N/A |
| EHTM2 | Signaling of EHT operation | 9.4.2.295a (EHT Operation element) | | CFEHT AND CFAP: M | * Yes * No * N/A |
| EHTM3 | HE variant HT Control field |  | |  |  |
| EHTM3.1 | EHT OM Control | 9.2.4.7.8 (EHT OM Control) | | CFAP AND EHTP3.5: M  CFEHT: O | * Yes * No * N/A |
| EHTM3.2 | SRS Control | 9.2.4.7.9 (SRS Control) | | CFEHTMLD: O | * Yes * No * N/A |
| EHTM3.3 | AAR Control | 9.2.4.7.10 (AAR Control) | | CFEHTMLD: O | * Yes * No * N/A |
| EHTM4 | Restricted TWT | 35.8 | | CFEHT: O | * Yes * No * N/A |
| EHTM5 | EPCS priority access | 35.16 | | CFEHT: O | * Yes * No * N/A |
| EHTM6 | Triggered TXOP sharing procedure | 35.2.1.3 | | CFEHT: O | * Yes * No * N/A |
| EHTM7 | EHT BSS Operation |  | |  |  |
| EHTM7.1 | EHT BSS 6 GHz operation | 35.15.1 | | CFEHT6G: M | * Yes * No * N/A |
| EHTM7.2 | Preamble puncturing operation | 35.15.2 | | CFEHT AND CFAP: M  CFEHT AND CFSTAofAP: M | * Yes * No * N/A |
| EHTM8 | MU Beamforming capable |  | |  |  |
| EHTM8.1 | MU beamformer capable if the MU Beamformer (BW ≤ 80 MHz), MU Beamformer (BW = 160 MHz), and MU Beamformer (BW = 320 MHz), any is atleast set to 1. | 35.6.1 | | CFEHT AND CFAP: M | * Yes * No * N/A |
| EHTM8.2 | MU beamformer capable if the MU Beamformer (BW ≤ 80 MHz), MU Beamformer (BW = 160 MHz), and MU Beamformer (BW = 320 MHz), is 0. | 35.6.1 | | CFEHT AND CFSTAofAP: M | * Yes * No * N/A |
| EHTM9 | EHT MLD features |  | |  |  |
| EHTM9.1 | Multi-Link discovery procedures | 35.3.4 | | CFEHTMLD: M | * Yes * No * N/A |
| EHTM9.2 | Multi-link (re)setup procedure | 35.3.5 | | CFEHTMLD: M | * Yes * No * N/A |
| EHTM9.3 | Block ack procedures in Multi-link operation | 35.3.8 | | CFEHTMLD: M | * Yes * No * N/A |
| EHTM9.4 | Link management procedure with default TID-to-link mapping | 35.3.7 | | CFEHTMLD: M | * Yes * No * N/A |
| EHTM9.5 | Multi-link sequence number spaces | 35.3.8 | | CFEHTMLD: M | * Yes * No * N/A |
| EHTM9.6 | BSS parameter critical update procedure | 35.3.10 | | CFEHTMLD: M | * Yes * No * N/A |
| EHTM9.7 | Multi-link power management | 35.3.12 | | CFEHTMLD: M | * Yes * No * N/A |
| EHTM9.7.1 | Dynamic link transitions | 35.3.7.2 | | CFEHTMLDAP: M  CFEHTMLDnonAP: O  CFEHTMLDNSTRmobileAP: M | * Yes * No * N/A |
| EHTM9.7.2 | MLD max idle period management | 35.3.12.3 | | CFEHTMLD: M | * Yes * No * N/A |
| EHTM9.7.3 | WNM Sleep mode in multi-link operation | 35.3.12.5 | | CFEHTMLDnonAP: O | * Yes * No * N/A |
| EHTM9.8 | Non-Simultaneous transmit and receive (NSTR) operation | 35.3.16.4 | | CFEHTMLDNSTRmobileAP:M  CFEHTMLDnonAP: O | * Yes * No * N/A |
| EHTM9.8.1 | PPDU end time alignment | 35.3.16.5 | | EHTM9.8: M  CFEHTMLDAP:M | * Yes * No * N/A |
| EHTM9.8.2 | Start time sync PPDUs medium access | 35.3.16.6 | | EHTM9.8: O | * Yes * No * N/A |
| EHTM9.8.3 | Medium access recovery procedure | | 35.3.16.8 | EHTM9.8: M  EHT9.10: M  EHT9.11: M | * Yes * No * N/A |
| EHTM9.9 | Multi-link group addressed frame delivery | 35.3.15 | | CFEHTMLD: M | * Yes * No * N/A |
| EHTM9.10 | EMLSR mode | 35.3.17 | | CFEHTMLD: O | * Yes * No * N/A |
| EHTM9.10.1 | EMLSR configuration | 35.3.17 | | EHTM9.10: M | * Yes * No * N/A |
| EHTM9.11 | EMLMR mode | 35.3.18 | | CFEHTMLD: O | * Yes * No * N/A |
| EHTM9.12 | Simultaneous transmit and receive (STR) operation | 35.3.16.3 | | CFEHTMLDAP: M  CFEHTMLDnonAP: O | * Yes * No * N/A |
| EHTM9.13 | NSTR mobile AP MLD operation | 35.3.19 | | CFEHTNSTRMobileAP: M | * Yes * No * N/A |
| EHTM9.14 | TID-to-link mapping | 35.3.7.1 | | CFEHTMLD: O | * Yes * No * N/A |
| EHTM9.15 | TDLS procedure in multi-link operation | 35.3.21 | | CFEHTMLDnonAP: O | * Yes * No * N/A |
| EHTM9.16 | Multi-link SCS procedure | 35.3.22 | | CFEHTMLD: O | * Yes * No * N/A |
| EHTM9.17 | Proxy ARP service in AP MLDs | 35.3.24 | | CFEHTMLDAP: O  CFEHTNSTRMobileAP: O | * Yes * No * N/A |
| EHTM9.18 | Multi-link MSCS procedure | 35.3.23 | | CFEHTMLD: O | * Yes * No * N/A |
| EHTM9.19 | Multi-link procedures for channel switching, extended channel switching and channel quieting | 35.3.11 | | CFEHTMLDAP: M  CFEHTNSTRMobileAP:O  CFEHTMLDnonAP: M | * Yes * No * N/A |
| EHTM10 | EHT sounding protocol |  | |  |  |
| EHTM10.1 | EHT Sounding protocol as MU beamformer | 35.6 | | EHT8.1: M | * Yes * No * N/A |
| EHTM10.2 | EHT Sounding protocol as MU beamformee | 35.6 | | EHT8.2:M | * Yes * No * N/A |

**SP: Do you agree to the resolutions provided in the document 11-21/1681r15 for the following CIDs: 4281, 5533, 6672, 6748, 7287 for inclusion in the latest 11be draft?**