IEEE P802.11  
Wireless LANs

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| LB 203 comment resolution for Annex B | | | | |
| Date: 2014-09-16 | | | | |
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Abstract

This submission proposes comment resolutions related to Annex B from TGah Draft 2.0 for the following CIDs:

- 3076, 3077, 3116, 4018, 3511

- 3577, 3578, 3677, 3806, 3811, 3812, 4124, 4142, 4143, 4174

Revisions:

R0: Original version

R1: Additional references added under S1GM3.

R2: Some changes made to Transmission/Reception of the normal CTS and ACK frames.

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 TGah Draft. This introduction is not part of the adopted material.

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

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

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Page** | **Line** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3076 | 487 | 46 | B.4.3 | I think the way that the PICS dependencies has been structured in B.4.3 is awkward. There are two ways of doing it 1. (you must be an AP if you support relay) 2. (you can only be a relay if you are an AP)  .11ah have chosen the former, but it is awkward, and wrong as specified. For example, the CF33:M at lines 46 and 53 require a relay sta to be both an AP and a non-AP. | Remove qualifications at lines 46 and 53. Change 488.32 to be (CF1 or CF2): O. | Revised –  Agree in principle with the commenter that better way of expressing the dependencies is possible but the comment that an S1G Relay is only an AP is not correct. As per the relevant texts, an S1G Relay is both an AP as well as a non-AP. Proposed resolution accounts for the suggested change.  TGah editor to make the changes shown in 11-14/1143r2 under the heading that include CID 3076. |
| 3077 | 487 | 59 | B.4.3 | "not cf25 or not cf32" is the same as "not (cf25 and cf32)" and because cf25 and 32 are mutually exclusive, will always be true. | Fix it.  I found three errors in the first three PICS rows I checked. I suspect there are multiple errors in the status column per page of the TGah PICs. I personally don't have time to work through them individually. Please find a volunteer to do so. | Revised –  Agree in principle with the commenter. Proposed resolution accounts for the suggested change.  TGah editor to make the changes shown in 11-14/1143r2 under the heading that include CID 3077. |
| 3116 | 487 | 1 | Annex B | Certain features are missing in the PICS subclause. | Make sure the PICS is complete for S1G STAs. | Revised –  Agree in principle with the commenter.  TGah editor to make the changes shown in 11-14/1143r2 under the heading that include CID 3116. |
| 4018 | 495 | 14 | B.4.13 | Annex B QD4: "Maintenance of within-queue ordering, exhaustive retransmission when sending non-QoS Data frames" should be NA for S1G since S1G do not send non-QoS Data frames. | Please add QD4 as stated in comment. | Revised –  Agree in principle with the commenter. Proposed resolution accounts for the suggested change.  TGah editor to make the changes shown in 11-14/1143r2 under the heading that include CID 4018. |
| 3511 | 499 | 4 | B.4.26.1 | "Operation" is not part of the name of a frame, field, etc., so does not have an initial cap. | Replace "Operation" with "operation". Also: in the 'Protocol capability' column of this table replace initial caps (of course except for the first letter of each item) with lower case whenever the term is not the name of a frame, field, element, etc. | Revised –  Agree in principle with the commenter.  TGah editor to make the changes shown in 11-14/1143r2 under the heading that include CID 3511. |

**CID 3076:**

Agree in principle with the commenter that better way of expressing the dependencies is possible but the comment that an S1G Relay is only an AP is not correct. As per the relevant texts, an S1G Relay is both an AP as well as a non-AP. Proposed resolution accounts for the suggested change.

**CID 3077:**

Agree in principle with the commenter. The mentioned error as well as similar errors throughout Annex B has been fixed.

***TGah editor: Please replace the table in B.4.3 IUT Configuration with the table below (Changes highlighted in red):***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | IUT configuration | References | Status | Support |
|  | What is the configuration of the IUT? |  |  |  |
| \*CF1 | Access Point (AP) | 4.3 (Components of the IEEE Std 802.11 architecture) | O.1  ~~CF33:M~~ | Yes  No  |
| \*CF2 | Independent station (neither an AP nor a mesh STA) | 4.3 (Components of the IEEE Std 802.11 architecture) | O.1  ~~CF33:M~~ | Yes  No  |
| \*CF2.4 | Operation in a PBSS | 4.3.3 (The personal BSS (PBSS)) | CF2&(not CF25 ~~OR~~ & not CF32):O | Yes  No  |
| \*CF6 | Orthogonal frequency division multiplexing (OFDM) PHY | --- | O.2  CF16.2:M  CF32:M | Yes  No  |
| \* CF12 | Quality of service (QoS) supported | 9.22 (HCF), 9.24 (Block acknowledgment (block ack)), 4.3.11(High  throughput (HT) STA), 4.3.17.3(Mesh STA) | O  (CF16 OR CF21 OR  CF22):M  CF25:M  CF32:M | Yes  No  N/A  |
| \*CF21 | Mesh station | 4.3.17 (Mesh BSS: IEEE Std 802.11 wireless  mesh network) | (not CF25) & (not CF32): O.1 | Yes  No  N/A  |
| \* CF32 | Sub 1 GHz (S1G) features | 8.4.2.170k (S1G Capabilities element) | O.2 | Yes  No  N/A  |
| \*CF33 | Relay | 9.42h (Relay operation) | ~~O.1~~  (CF1 & CF2): O | Yes  No  N/A  |

**CID 4018:**

Agree in principle with the commenter. The proposed change is accepted and QD4 has been modified to reflect this.

***TGah editor: Please replace the table in B.4.13 QoS enhanced distributed channel access (EDCA) with the table below (Changes highlighted in red):***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| * QoS enhanced distributed channel access (EDCA) | | | | |
| Item | Protocol capability | References | Status | Support |
| QD1 | Support for four transmit queues with a separate channel access entity associated with each | 9.2.4.2 (HCF contention based channel access (EDCA)), 9.21.2.1 (Reference implementation) | CF27&(11ad)CF12:M  CF32 & S1GM20.5: M  CF32 & S1GM20.4:O | Yes  No  N/A  |
| ... |  |  |  |  |
| QD3 | Multiple frame transmission support | 9.21.2.5 (Multiple frame transmission in an EDCA TXOP) | CF12 OR CF25(11ad) OR CF32:O | Yes  No  N/A  |
| QD4 | Maintenance of within-queue  ordering, exhaustive  retransmission when sending  non-QoS Data frames | 9.22.2.10  (Retransmit  procedures) | (CF12 & not CF32) OR CF25:M | Yes  No  N/A  |

**CID 3116:**

Discussion: Some S1G features were reported as missing/incorrect and have been corrected. The changes involved are:

- Inconsistencies in the HT MAC features have been fixed.

- Transmission/reception of Dynamic A-MSDU is mandatory if transmission/reception of A-MSDU is supported. SGM3 has been modified to reflect this.

- A Sensor Type STA may choose to support more than one transmit queue and hence it should not be restricted to only one transmit queue. SGM22.4 has been modified to reflect this.

- References have been updated as per D2.1.

- Relay Activation Request frame and Relay Activation Response frame were missing in B.4.4.2 and have been added.

- TWT Information frame was missing in B.4.4.2 and has been added.

- Resource Allocation frame has been moved under Short frame.

**CID 3511:**

This is an editorial comment. Agree in principle with the commenter. The proposed change is accepted.

***Tgah editor: Please replace the table in B.4.17.1*** ***HT MAC features with the table below (Changes highlighted in red):***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| * HT MAC features | | | | |
| Item | Protocol capability | References | Status | Support |
| ... |  |  |  |  |
| HTM3 | MPDU aggregation |  |  | Yes  No  N/A  |
| HTM3.1 | Reception of A-MPDU | 8.4.2.55.3 (AMPDU Parameters field), 11.4 (RSNA confidentiality and integrity protocols), 9.12.2 (AMPDU length limit rules) | (CF16 & not CF32):M CF32: O | Yes  No  N/A  |
| HTM3.2 | A-MPDU format | 8.7.1 (AMPDU format) | (CF16 or CF32):M | Yes  No  N/A  |
| HTM3.3 | A-MPDU contents | 8.7.3 (AMPDU contents) | (CF16 or CF32):M | Yes  No  N/A  |
| HTM3.4 | A-MPDU frame exchange sequences | 9.21.2.5 (Multiple frame transmission in an EDCA TXOP) | (CF16 & not CF32):M CF32: O | Yes  No  N/A  |
| HTM3.5 | Transmission of A-MPDU | 8.4.2.55.3 (AMPDU Parameters field), 11.4 (RSNA confidentiality and integrity protocols) | CF16:O CF29:M(11ac) CF32: O | Yes  No  N/A  |
| HTM4 | MSDU aggregation |  |  | Yes  No  N/A  |
| HTM4.1 | Reception of A-MSDUs | 8.2.4.5 (QoS Control field), 8.3.2.2 (Aggregate MSDU(11ad) (A-MSDU) format) | (CF16 & not CF32):M  CF32: O | Yes  No  N/A  |
| HTM4.2 | A-MSDU format | 8.3.2.2 (Aggregate MSDU(11ad) (A-MSDU) format) | (CF16 & not CF32):M  CF33 & ((not AD12) & (not AD14)): M  CF33 &((not AD13) & (not AD15)): M  RL2 & ((not AD12) & (not AD14)): M  RL2 & ((not AD13) & (not AD15)): M  CF33 & (AD12 OR (AD14): O  CF33 & (AD13 OR AD15): O  RL2 & (AD12 OR AD14): O  RL2 & (AD13 OR AD15): O | Yes  No  N/A  |
| HTM4.3 | A-MSDU content | 8.3.2.2 (Aggregate MSDU(11ad) (A-MSDU) format) | (CF16 & not CF32):M | Yes  No  N/A  |
| HTM4.4 | Transmission of A-MSDUs | 8.3.2.2 (Aggregate MSDU(11ad) (A-MSDU) format), 8.2.4.5 (QoS Control field) | (CF16 ~~& not CF32~~):O  CF32: O | Yes  No  N/A o |
| ... |  |  |  |  |
| HTM5.3 | HT-immediate block ack extensions | 9.23.7 (HT immediate block ack extensions) | (CF16 & not CF32):M  CF32:O (CF32 & S1GM20.5): M | Yes  No  N/A  |
| HTM5.4 | HT-delayed block ack extensions | 9.23.8 (HT delayed block ack extensions) | (CF16 & QB4.2 & not CF32):M CF32: O | Yes  No  N/A  |
| ... |  |  |  |  |
| HTM16.2 | Dual CTS protection The use of the dual CTS mechanism is deprecated. | 9.3.2.8 (Dual CTS protection) | HTP2.11 & not CF32: O | Yes  No  N/A  |

***Tgah editor: Please replace the table in B.4.26a.1*** ***S1G MAC features with the table below (Changes highlighted in red):***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Protocol capability | References | Status | Support |
|  | Are the following MAC protocol features supported? |  |  |  |
| S1GM1 | S1G ~~C~~capabilities signaling |  | CF32:M | Yes  No  N/A  |
| S1GM1.1 | S1G Capabilities element | 8.4.2.170k (S1G Capabilities element)(#3510) | CF32:M | Yes  No  N/A  |
| S1GM1.2 | Signaling of S1G ~~C~~capabilities in Probe Request, (Re) Association Request frames | 8.4.2.170k (S1G Capabilities element)(#3510), 8.3.3.5, 8.3.3.7, 8.3.3.9 | (CF2 & CF32):M | Yes  No  N/A  |
| S1GM1.3 | Signaling of S1G ~~C~~capabilities in S1G Beacon, Probe Response, (Re) Association Response frames | 8.4.2.170k (S1G Capabilities element)(#3510), 8.3.3.2, 8.3.3.6, 8.3.3.8, 8.3.3.10 | (CF1 & CF32):M | Yes  No  N/A  |
| S1GM2 | S1G ~~O~~operation |  | CF32:M | Yes  No  N/A  |
| S1GM2.1 | S1G Operation element | 8.4.2.170w (S1G Operation element) | CF32:M | Yes  No  N/A  |
| S1GM2.2 | Signaling of S1G ~~O~~operation in S1G Beacon, Probe Response | 8.4.2.170w (S1G Operation element), 8.3.3.2, 8.3.3.10 | (CF1 & CF32):M | Yes  No  N/A  |
| S1GM3 | MSDU ~~A~~aggregation | 9.1~~1~~2 (A-MSDU operation)  8.2.4.5 (QoS Control field)  8.8.3.2 (Address fields)  8.3.2.2.4 (Dynamic A-MSDU format) | CF32:O | Yes  No  N/A  |
| S1GM3.1 | Transmission of Dynamic A-MSDU | CF32:O  (CF32 & HTM4.4):M | Yes  No  N/A  |
| S1GM3.2 | Reception of Dynamic A-MSDU | CF32:O  (CF32 & HTM4.1):M | Yes  No  N/A  |
| S1GM3.3 | Transmission of Dynamic A-MSDU in Short frame | (CF32 & HTM4.4 & FT45):M | Yes  No  N/A  |
| S1GM3.4 | Reception of Dynamic A-MSDU carried in Short frame | (CF32 & HTM4.1 & FR46):M | Yes  No  N/A  |
| S1GM3.5 | Dynamic A-MSDU format | (CF32 & (HTM4.1 OR HTM4.4 OR S1GM3.3 OR S1GM3.4):M | Yes  No  N/A  |
| S1GM4 | Timing synchronization function (TSF) |  | CF32:M | Yes  No  N/A  |
| S1GM4.1 | Generation of S1G Beacon | 10.1.3.10.2 (Generation of S1G Beacon) | (CF1 & CF32): M | Yes  No  N/A  |
| S1GM4.1.1 | S1G Beacon generation at TBTT |  | (CF1 & CF32): M |  |
| S1GM4.1.2 | S1G Beacon generation at TSBTT |  | (CF1 & CF32): O | Yes  No  N/A  |
| S1GM4.1.3 | S1G Beacon reception at TBTT |  | (CF2 & CF32): M | Yes  No  N/A  |
| S1GM4.1.4 | S1G Beacon reception at TSBTT |  | (CF2 & CF32): M | Yes  No  N/A  |
| S1GM4.2 | TSF timer accuracy with S1G Beacon | 10.1.3.10.3 (TSF timer accuracy with S1G Beacon) | CF32: M | Yes  No  N/A  |
| S1GM4.3 | TSF timer accuracy with TACK, STACK, BAT, Short Probe Response frames |  | CF32: O | Yes  No  N/A  |
| S1GM4.4 | Signaling Probe Response Option element in Probe Request frame |  | CF32: O | Yes  No  N/A  |
| S1GM4.5 | Active scanning using NDP Probe Request frame | 10.1.4.3.~~3~~4b (NDP Probing) | CF32: O | Yes  No  N/A  |
| S1GM4.6 | Sending Short Probe Response frame | 10.1.4.3.4 (Criteria for s~~S~~ending a probe response), 10.1.4.3.4b (NDP Probing) | (CF1 & CF32): O | Yes  No  N/A  |
| S1GM5 | Reverse direction protocol | 9.28~~6.3~~ (~~Support for RD~~Reverse direction protocol) | CF32:O | Yes  No  N/A  |
| S1GM5.1 | Initiation of RD protocol | CF32:O | Yes  No  N/A  |
| S1GM5.2 | Response to RD request | CF32:O | Yes  No  N/A  |
| S1GM6 | Target wake time (TWT) operation | 9.4~~1~~2a (Target Wake Time (TWT)) | CF32:O | Yes  No  N/A  |
| S1GM6.1 | Assume the role of TWT STA | 9.42a.1 (TWT overview) | (CF32 & S1GM6):O.1 | Yes  No  N/A  |
| S1GM6.2 | Assume the role of TWT Peer STA | 9.42a.1 (TWT overview) | (CF32 & S1GM6):O.1 | Yes  No  N/A  |
| S1GM6.3 | Request TWT Setup | 9.42a.1 (TWT overview) | (CF32 & S1GM6.1):O | Yes  No  N/A  |
| S1GM6.4 | Response to TWT Setup request | 9.42a.1 (TWT overview) | (CF32 & S1GM6.2):M | Yes  No  N/A  |
| S1GM6.5 | TWT Teardown | 9.42a.8 (TWT Teardown) | (CF32 & S1GM6):O | Yes  No  N/A  |
| S1GM6.6 | TWT acknowledgement procedure | 9.42a.2 (TWT acknowledgement procedure) | (CF32 & S1GM6):M | Yes  No  N/A  |
| S1GM6.7 | Explicit TWT operation | 9.42a.3 (Explicit TWT operation) | (CF32 & S1GM6):O.2 | Yes  No  N/A  |
| S1GM6.8 | Implicit TWT operation | 9.42a.4 (Implicit TWT operation) | (CF32 & S1GM6):O.2 | Yes  No  N/A  |
| S1GM6.9 | Request NDP Paging Setup | 9.42a.6 (NDP Paging Setup) | (CF32 & S1GM6.1):O | Yes  No  N/A  |
| S1GM6.10 | Accept the NDP Paging Setup request | 9.42a.6 (NDP Paging Setup) | (CF32 & S1GM6.2):O | Yes  No  N/A  |
| S1GM6.11 | Schedule NDP Paging frame as the first frame in a TWT |  | (CF32 & S1GM10):M | Yes  No  N/A  |
| S1GM6.12 | TWT grouping(#3493) | 9.42a.5 (TWT Grouping) | (CF32 & S1GM6):O | Yes  No  N/A  |
| S1GM7 | Non-TIM STA operation | 9.4~~3~~2b (Non-TIM STA operation) | (CF2 & CF32):O  (CF1 & CF32 & (S1GM20.1 OR S1GM20.3)): M | Yes  No  N/A  |
| S1GM7.1 | Request Non-TIM Mode | 10.2.2.2 (Non-AP STA Power Management modes) | (CF2 & CF32 & S1GM7):O | Yes  No  N/A  |
| S1GM7.2 | Response to Non-TIM Mode request | 10.2.2.2 (Non-AP STA Power Management modes) | (CF1 & CF32 & S1GM7):M | Yes  No  N/A  |
| S1GM7.3 | Request rescheduling of awake/doze cycle | 9.4~~3~~2b.2 (Rescheduling of awake/doze cycle) | (CF2 & CF32 & S1GM7):O | Yes  No  N/A  |
| S1GM7.4 | Reschedule awake/doze cycle of non-TIM STAs | 9.4~~3~~2b.2 (Rescheduling of awake/doze cycle) | (CF1 & CF32 & S1GM7):O | Yes  No  N/A  |
| S1GM7.5 | Temporary PS Mode Switch to TIM mode | 9.4~~3~~2b.2 (Rescheduling of awake/doze cycle) | (CF2 & CF32 & S1GM7):O | Yes  No  N/A  |
| S1GM7.6 | Listen interval update procedure for Non-TIM STAs |  | (CF32 & S1GM7):O | Yes  No  N/A  |
| S1GM7.7 | Resource protection for non-TIM STAs | 9.4~~3~~2b.1 (Resource protection for non-TIM STAs) | (CF1 & CF32 & S1GM7):O | Yes  No  N/A  |
| S1GM7.8 | Resource protection for non-TIM STAs using periodic RAW (PRAW) operation | 9.4~~3~~2b.1.1 (Resource protection for non-TIM STAs using periodic RAW (PRAW) operation) | (CF1 & CF32 & S1GM7):O | Yes  No  N/A  |
| S1GM8 | Synchronization (Sync) frame operation | 9.4~~4~~2c (Synchronization (Sync) Frame Operation) | CF32:O | Yes  No  N/A  |
| S1GM8.1 | Request for a sync frame transmission | 9.4~~4~~2c.1 (Sync frame transmission procedure for uplink traffic) | (CF2 & CF32 & S1GM8):O | Yes  No  N/A  |
| S1GM8.2 | Schedule a sync frame transmission | (CF1 & CF32 & S1GM8):M | Yes  No  N/A  |
| S1GM8.3 | Request for time slot protection | (CF2 & CF32 & S1GM8):O | Yes  No  N/A  |
| S1GM8.4 | Protect the time slot assigned to the STA that requested for time slot protection. | (CF1 & CF32 & S1GM8):M | Yes  No  N/A  |
| S1GM8.5 | Respond to sync frame |  | (CF2 & CF32 & S1GM8):M | Yes  No  N/A  |
| S1GM9 | Bi directional TXOP | 9.42d (Bi directional TXOP) | CF32:O | Yes  No  N/A  |
| S1GM9.1 | Act as BDT Initiator | 9.42d.2 (Rules for BDT) | (CF32 & S1GM9):O | Yes  No  N/A  |
| S1GM9.2 | Act as BDT Responder | (CF32 & S1GM9):M | Yes  No  N/A  |
| S1GM10 | Subchannel Selective Transmission (SST) | 9.4~~7~~2f (Subchannel Selective Transmission (SST)) | CF32:O | Yes  No  N/A  |
| S1GM11 | Sectorized beam operation | 9.4~~8~~2g (Sectorized beam operation) | CF32:O | Yes  No  N/A  |
| S1GM11.1 | Support for Group Sectorization Operation | 9.4~~8~~2g.3 (Group sectorization operation) | (CF1 & CF32 & S1GM11):O.3  (CF2 & CF32 & S1GM11):M | Yes  No  N/A  |
| S1GM11.2 | Support for TXOP-based Sectorization Operation | 9.4~~8~~2g.4 (TXOP-based sectorization operation) | (CF1 & CF32 & S1GM11):O.3  (CF2 & CF32 & S1GM11):M | Yes  No  N/A  |
| S1GM11.3 | Transmission of S1G Sector Operation element with Sectorization Type field equal to 0 | 9.4~~8~~2g.2 (Sector Capabilities Exchange) | (CF1 & CF32 & S1GM11.1):M | Yes  No  N/A  |
| S1GM11.4 | Transmission of S1G Sector Operation element with Sectorization Type field equal to 1 | (CF1 & CF32 & S1GM11.2):M | Yes  No  N/A  |
| S1GM11.5 | Sector training operation | (CF32 & S1GM11):O | Yes  No  N/A  |
| S1GM11.6 | Send back Sector ID feedback to associated AP | (CF2 & CF32 & S1GM11):O | Yes  No  N/A  |
| S1GM12 | 1 MHz Control Response Preamble Support | 9.7.6.6 Channel Width selection for Control frames | CF32: O | Yes  No  N/A  |
| S1GM13 | Multicast AID | 9.~~50~~42i ( Multicast AID) | CF32:O | Yes  No  N/A  |
| S1GM14 | Traveling Pilot Operation | 9. ~~51~~42j (Traveling Pilot Operation) | CF32:O | Yes  No  N/A  |
| S1GM15 | Bitmap Protection for NDP BlockAck frames | 9. ~~52~~42k (Bitmap Protection for NDP BlockAck frames) | (CF32 & (FT47 OR FR 48)): M | Yes  No  N/A  |
| S1GM16 | Header Compression procedure | 9. ~~53~~42l (Header Compression procedure) | CF32:O | Yes  No  N/A  |
| S1GM16.1 | Signaling Header Compression element in (Re-)Association Request frames | (CF2 & CF32 & S1GM16):O | Yes  No  N/A  |
| S1GM16.2 | Signaling Header Compression element in (Re-)Association Response frames | (CF1 & CF32 & S1GM16):M | Yes  No  N/A  |
| S1GM16.3 | Request header compression procedure |  | (CF32 & S1GM16):O | Yes  No  N/A  |
| S1GM16.4 | Store the optional fields indicated in the Header Compression Request |  | (CF32 & S1GM16):O | Yes  No  N/A  |
| S1GM16.5 | Send back the Header Compression Response |  | CF32:M | Yes  No  N/A  |
| S1GM17 | Flow control | 9. ~~56~~42o (Flow control) | CF32:M | Yes  No  N/A  |
| S1GM17.1 | Request flow suspension/resumption | CF32:O | Yes  No  N/A  |
| S1GM17.2 | Flow suspension in response to Flow Suspension Action frame or NDP ACK frame | (CF2 & CF32):M | Yes  No  N/A  |
| S1GM17.3 | Flow suspension in response to STACK or BAT or TACK frame |  | (CF2 & CF32 & S1GM6.6):M | Yes  No  N/A  |
| S1GM17.4 | Flow resumption upon receiving a Flow Resumption Action frame |  | (CF2 & CF32):O | Yes  No  N/A  |
| S1GM18 | Dynamic AID assignment operation | 10.4~~5~~4a (Dynamic AID assignment operation) | CF32:O | Yes  No  N/A  |
| S1GM18.1 | Request AID switch | (CF2 & CF32 & S1GM18):O | Yes  No  N/A  |
| S1GM18.2 | Respond to request for AID switch | (CF1 & CF32 & S1GM18):M | Yes  No  N/A  |
| S1GM18.3 | Issue unsolicited AID switch instruction | (CF1 & CF32 & S1GM18):O | Yes  No  N/A  |
| S1GM18.4 | Respond to unsolicited AID switch instruction | (CF2 & CF32 & S1GM18):O | Yes  No  N/A  |
| S1GM19 | System information update procedure | 10.4~~6~~4b (System information update procedure) | CF32:M | Yes  No  N/A  |
| S1GM19.1 | Update the Change Sequence field in S1G Beacon frame | (CF1 & CF32):M | Yes  No  N/A  |
| S1GM19.2 | Respond to changes in the Change Sequence field in S1G Beacon frame | (CF2 & CF32):M | Yes  No  N/A  |
| S1GM19.3 | Respond to probe request frames that contain the Change Sequence field | (CF1 & CF32):O | Yes  No  N/A  |
| S1GM20 | STA types | 10.4~~8~~4d (Sensor Only BSS) | CF32:M | Yes  No  N/A  |
| S1GM20.1 | Support for Sensor type STA | (CF1 & CF32):O.5 | Yes  No  N/A  |
| S1GM20.2 | Support for non-Sensor type STA | (CF1 & CF32):O.5 | Yes  No  N/A  |
| S1GM20.3 | Support for both Sensor type and non-Sensor type STA | (CF1 & CF32):O.5 | Yes  No  N/A  |
| S1GM20.4 | Assume the role of Sensor type STA | (CF2 & CF32):O.6 | Yes  No  N/A  |
| S1GM20.5 | Assume the role of non-Sensor type STA | (CF2 & CF32):O.6 | Yes  No  N/A  |
| S1GM21 | Support for energy limited STAs | 10.4~~9~~4e (Support for energy limited STAs) | (CF1 & CF32 & (S1GM20.1 OR S1GM20.3)):M  (CF1 & CF32 & S1GM20.2):O  (CF2 & CF32 & S1GM20.4):O | Yes  No  N/A  |
| S1GM22 | S1G Channel Access |  | CF32: M | Yes  No  N/A  |
| S1GM22.1 | Response indication deferral (RID) function | 9.3.2.1 (CS  mechanism),  9.3.2.4 (Setting and resetting the NAV),  9.3.2.4a (Setting and resetting the RID),  9.3.2.1~~3~~5 (Response Indication procedure) | CF32: M | Yes  No  N/A  |
| S1GM22.2 | Dynamic bandwidth operation | 9.3.2.7 (CTS and DMG CTS procedure) | CF32: O | Yes  No  N/A  |
| S1GM22.3 | Fragment BA procedure | 9.3.2.10a (Fragment BA procedure) | CF32: O | Yes  No  N/A  |
| S1GM22.4 | Support for at least ~~only~~ one transmit queue with AC\_BE access category | 9.2.4.2 (HCF contention based channel access (EDCA)), 9.2~~1~~2.2.1 (Reference implementation) | CF32 & S1GM20.4: M | Yes  No  N/A  |
| S1GM22.5 | Restricted Access Window (RAW) Operation | 9.2~~0~~2.5 (Restricted Access Window (RAW) Operation) | CF32:O | Yes  No  N/A  |
| S1GM22.5.1 | EDCA backoff procedure in Generic RAW or Triggering Frame RAW | 9.2~~1~~2.5.5 (EDCA backoff procedure in Generic RAW or Triggering Frame RAW) | (CF1 & S1GM22.5):O  (CF2 & S1GM22.5):M | Yes  No  N/A  |
| S1GM22.5.2 | Deferral for Generic RAW, Triggering RAW, Sounding RAW and SIMPLEX RAW when RAW Type Option subfield indicates Non-TIM RAW |  | (CF2 & CF32 & S1GM7): O  (CF2 & CF32 & (not S1GM7)): M |  |
| S1GM22.5.3 | Deferral for SIMPLEX RAW when RAW Type Option subfield does not indicates Non-TIM RAW |  | (CF2 & CF32): O |  |
| S1GM23 | Traffic indication map (TIM) | 10.2.2.3 (AP TIM transmissions), 10.2.2.4 (TIM types) | CF1: M | Yes  No  N/A  |
| S1GM23.1 | Encode partial virtual bitmap in Block Bitmap mode | 8.4.2.6 (TIM element)(#3174) | (CF1 & CF32): O.5 | Yes  No  N/A  |
| S1GM23.1.1 | Encode partial virtual bitmap in Single AID mode |  | (CF1 & CF32): O.5 | Yes  No  N/A  |
| S1GM23.1.2 | Encode partial virtual bitmap in OLB mode |  | (CF1 & CF32): O.5 | Yes  No  N/A  |
| S1GM23.1.3 | Encode partial virtual bitmap in ADE mode |  | (CF1 & CF32): O | Yes  No  N/A  |
| S1GM23.1.4 | Decode partial virtual bitmap encoded in Block Bitmap mode |  | (CF2 & CF32 & not S1GM7):M | Yes  No  N/A  |
| S1GM23.1.5 | Decode partial virtual bitmap encoded in Single AID mode |  | (CF2 & CF32 & not S1GM7):M | Yes  No  N/A  |
| S1GM23.1.6 | Decode partial virtual bitmap encoded in OLB mode |  | (CF2 & CF32 & not S1GM7):M | Yes  No  N/A  |
| S1GM23.1.7 | Decode partial virtual bitmap encoded in ADE mode |  | (CF2 & CF32 & not S1GM7):O | Yes  No  N/A  |
| S1GM23.2 | Page slicing | 9.4~~6~~2e (Page Slicing) | (CF1 & CF32): O  (CF2 & CF32):O | Yes  No  N/A  |
| S1GM23.2.1 | Divide the TIM into page slices |  | (CF1 & CF32 & S1GM23.2): O | Yes  No  N/A  |
| S1GM23.2.2 | Decode the TIM divided into page slices |  | (CF2 & CF32 & S1GM23.2):M | Yes  No  N/A  |
| S1GM24 | AP power management | 10.2.2.~~19~~20 (AP Power management) | (CF1 & CF32): O | Yes  No  N/A  |
| S1GM25 | Association and reassociation | 10.3 (STA  authentication  and association) | CF32: M | Yes  No  N/A  |
| S1GM25.1 | Service type indication during association | 10.3.5.11 (Service type indication during association) | (CF2 & CF32 & PC14):O | Yes  No  N/A  |
| S1GM25.2 | Authentication Control | 10.3.8 (Authentication Control) | CF32: O | Yes  No  N/A  |
| S1GM25.2.1 | Centralized authentication control |  | (CF1 & CF32 & S1GM25.2): O.2  (CF2 & CF32 & S1GM25.2): O | Yes  No  N/A  |
| S1GM25.2.2 | Distributed authentication control |  | (CF1 & CF32 & S1GM25.2): O.2  (CF2 & CF32): M | Yes  No  N/A  |
| S1GM26 | Robust security network association (RSNA) |  | O | Yes  No  |
| S1GM26.1 | PV1 CCMP MPDU format | 11.4.3.2 (CCMP MPDU format) | CF32 & (FT45~~51~~ or FR46~~52~~): M | Yes  No  N/A  |
| S1GM26.2 | Local construction of CCMP Header for PV1 MPDUs | 11.4.3.2a (Construction of the CCMP Header for PV1 MPDUs) | CF32 & FR46~~52~~: M | Yes  No  N/A  |
| S1GM26.3 | CCMP cryptographic encapsulation procedure for PV1 MPDUs | 11.4.3.3 (CCMP cryptographic encapsulation) | CF32 & FT45~~51~~: M | Yes  No  N/A  |
| S1GM26.4 | CCMP decapsulation procedure for PV1 MPDUs | 11.4.3.4 (CCMP decapsulation) | CF32& FR46~~52~~: M | Yes  No  N/A  |
| S1GM27 | Asymmetric Block Ack Operation | 9.7.6.5.2 (Selection of a rate or MCS), 9.7.6.5.4a (MCS for asymmetric Block Ack Operation) | CF32: O | Yes  No  N/A  |
| S1GM28 | Control Response MCS Negotiation | 9.7.6.5.4b Control Response MCS Negotiation | CF32: O | Yes  No  N/A  |
| S1GM29 | OBSS Mitigation Support | 9.7.6.6 (Channel Width selection for control frames) | CF32: O | Yes  No  N/A  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Page** | **Line** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3577 | 493 | 27 | B.4.4.2 | There are multiple issues with the “M” in FR52 in the PICS table of MAC frames, i.e., making reception of short frame mandatory, including: 1. The PICS table entry shall reflect the spec correctly. Searched entire 11ah/D2.0 spec, did not find any text specifying Short Frame reception is mandatory. 2. The transmission of short frame, FT51, is optional. Then why do we have to make the reception of short frame mandatory? Please note that Short Frame uses AID, which will be assigned during assoication. This means there are opportunities for both sides of the link to signal the support of short frame. 3. more importantly, the use of short frame is not a “must” for Sub1G system, as the 11ah link will work well without it. Although the short frame can be used to improve the MAC goodput, the improvement is mainly seen in the cases with lower bandwidth, e.g., 1MHz channel. | Change “M” to “O” in the Status column of the FR52 entry on page 493 line 27. | Revised –  Based on the recent development in TGah, reception of short frames is optional in non-sensor only BSS and the proposed change has captured this.  TGah editor to make the changes shown in 11-14/1143r2 under the heading that include CID 3577. |
| 3578 | 493 | 35 | B.4.4.2 | Similarly, the mandatory marks, “M”, for FR52.3, FR52.4, and FR5.7 are also inappropriate, as there is no corresponding text in the spec, and also not necessary to make the reception mandatory while the tranmssion is optional, after association. | Change “M” to “O” in the Status column of the entries: FR52.3, FR52.4, and FR52.7, on page 493. | Revised –  Based on the recent development in TGah, reception of short frames is optional in non-sensor only BSS and the proposed change has captured this.  TGah editor to make the changes shown in 11-14/1143r2 under the heading that include CID 3578. |
| 3677 | 493 | 27 | B.4.4.2 | The improvement of a short frame compared with normal frame is marginal when the BSS operation bandwidth is greater than or equal to 2MHz. | It is not necessary to define short frame. The reception of short frames should be optional. | Revised –  Based on the recent development in TGah, reception of short frames is optional in non-sensor only BSS and the proposed change has captured this.  TGah editor to make the changes shown in 11-14/1143r2 under the heading that include CID 3677. |
| 3806 | 493 | 27 | B.4.4.2 | The improvement of short frame compared with normal frame is less when the BSS operation bandwidth is >=2MHz. The reception of short frames should be optional. | As proposed in comment. | Revised –  Based on the recent development in TGah, reception of short frames is optional in non-sensor only BSS and the proposed change has captured this.  TGah editor to make the changes shown in 11-14/1143r2 under the heading that include CID 3806. |
| 3811 | 505 | 18 | B4.4.2 | The improvement of NDP Block Ack frame compared with normal BlockAck frame is less when the BSS operation bandwidth is >=2MHz. The STA that works in >=2MHz BSS should be able to indicate whether it support NDPBlockAck or not. | As proposed in comment. | Rejected –  Reception of NDP Block Ack frame is stated as mandatory for HT STAs that support HT-immediate block ack extension. |
| 3812 | 505 | 18 | B4.4.2 | The improvement of NDP Probe Request frame compared with normal Probe Request frame is less when the BSS operation bandwidth is >=2MHz. The STA that works in >=2MHz BSS should be able to indicate whether it support NDP Probe Request or not. | As proposed in comment. | Rejected –  Reception of NDP Probe request is stated as mandatory for AP in the relevant text. |
| 4124 | 488 | 46 | B.4.4.2 | MAC frame support is refered to Annex J. However, Annex J is not inlcuded in the document. | Correct the reference to Annex J | Revised –  Agree in principle with the commenter. Proposed resolution accounts for the suggested change.  TGah editor to make the changes shown in 11-14/1143r2 under the heading that include CID 4122. |
| 4142 | 505 | 18 | B.4.4.2 | If a BSS operates at a wide BW (>=2MHz), the benefit of using a NDP probe request frame over a normal probe request frame is minimal. |  | Rejected –  Reception of NDP Probe request is stated as mandatory for AP in the relevant text. |
| 4143 | 493 | 27 | B.4.4.2 | The feature of short frames reception should be set as optional when BSS operation bandwidth is wider than 2MHz he gain of replacing normal frames with short frames is smaller than BSS operation bandwidth is 1MHz. |  | Revised –  Based on the recent development in TGah, reception of short frames is optional in non-sensor only BSS and the proposed change has captured this.  TGah editor to make the changes shown in 11-14/1143r2 under the heading that include CID 4143. |
| 4174 | 493 | 27 | B.4.4.2 | The improvement on efficiency by using short MAC frames instead of using normal MAC frames is not as significant when the BSS operation bandwidth is >=2MHz (compared with 1MHz BW). Therefore when the channel BW is >=2MHz, the support of short MAC frames should be optional. |  | Revised –  Based on the recent development in TGah, reception of short frames is optional in non-sensor only BSS and the proposed change has captured this.  TGah editor to make the changes shown in 11-14/1143r2 under the heading that include CID 4174. |

**CID 4124:**

Agree in principle with the commenter. Since Annex J is non-existent, reference to Annex J is deleted from table in B.4.4.2.

**CIDs 3577, 3578, 3677, 3806, 4143, 4174:**

Recent development in TGah has made reception of short frames optional in STAs that are part of BSS that do not contain any Sensor type STAs. Please refer to 14/1090r0 for details.

***TGah editor: Please replace the table in B.4.4.2 with the table below (Changes highlighted in red):***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| * MAC frames | | | | |
| Item | MAC frame | References | Status | Support |
|  | Is transmission of the following MAC frames supported? | Clause 8 ~~Annex J~~ |  |  |
| ... |  |  |  |  |
| FT7 | Beacon | Clause 8 (Frame formats) | (not CF2.3 & not CF32):M  (CF27 & not CF32):M | Yes  No  N/A  |
| ... |  |  |  |  |
| FT14 | CTS | Clause 8 (Frame formats) | CF27 & not CF32:M  (CF32 & VHTM3.1):O | Yes  No  N/A  |
| FT15 | Acknowledgment (Ack) | Clause 8 (Frame formats) | not CF32:M  (CF32 & (VHTM3.1 OR S1GM28)): O | Yes  No  N/A  |
| ... |  |  |  |  |
| FT43 | TACK | Clause 8 (Frame formats) | (CF32 & S1GM6.2):M  (CF32 & not S1GM6): O | Yes  No  N/A  |
| FT44 | S1G Beacon | Clause 8 (Frame formats) | (CF1 & CF32):M | Yes  No  N/A  |
| FT45 | Short frame | 8.8 (MAC frame format for Short frames) | CF32:O | Yes  No  N/A  |
| FT45.1 | STACK frame |  | (CF32 & S1GM6.2 OR S1GM6.1):M | Yes  No  N/A  |
| FT45.2 | BAT frame |  | (CF32 & S1GM6.2 & QB4.1):M | Yes  No  N/A  |
| FT45.3 | Short Action frame |  | CF32:O | Yes  No  N/A  |
| FT45.4 | Short Action No Ack frame |  | CF32:O | Yes  No  N/A  |
| FT45.5 | Short Probe Response frame |  | (CF1 & CF32):O | Yes  No  N/A  |
| FT45.6 | Short Data frame |  | CF32:O  RL6:M  (CF32 & S1GM13):O | Yes  No  N/A  |
| FT45.7 | Resource Allocation | ~~Clause 8 (Frame formats)~~ | (CF1 & CF32 & S1GM22.5): O | Yes  No  N/A  |
| ~~FT45~~ | ~~Resource Allocation~~ | ~~Clause 8 (Frame formats)~~ | ~~(CF1 & CF32 & S1GM22.5): O~~ | ~~Yes  No  N/A ~~ |
| FT46 | NDP MAC frames | 8.9 (NDP MAC frames) | CF32: M | Yes  No  N/A  |
| FT46.1 | NDP CTS | CF32: M | Yes  No  N/A  |
| FT46.2 | NDP PS-Poll | (CF2 & CF32):O | Yes  No  N/A  |
| FT46.3 | NDP Ack | CF32: M | Yes  No  N/A  |
| FT46.4 | NDP PS-Poll-Ack | (CF1 & CF32 & FR47.2):M | Yes  No  N/A  |
| FT46.5 | NDP BlockAck | (CF32 & HTM5.3): M | Yes  No  N/A  |
| FT46.6 | NDP Beamforming Report Poll | CF32& CF1:O | Yes  No  N/A  |
| FT46.7 | NDP Paging | (CF32 & S1GM6.11): M | Yes  No  N/A  |
| FT46.8 | NDP Probe Request | (CF32 & CF2 & S1GM4.5): M | Yes  No  N/A  |
| FT46.9 | NDP CF-End | CF32:O | Yes  No  N/A  |
| FT47 | S1G Action frame | 8.6.23a (S1G Action frame details) | CF32: M | Yes  No  N/A  |
| FT47.1 | AID Switch Request frame | (CF2 & CF32 & (S1GM13 or S1GM18)):M | Yes  No  N/A  |
| FT47.2 | AID Switch Response frame | (CF1 & CF32 & (S1GM13 or S1GM18)):M | Yes  No  N/A  |
| FT47.3 | Sync Control frame | (CF1 & CF32 & S1GM8.2):M | Yes  No  N/A  |
| FT47.4 | STA Information Announcement frame | (CF2 & CF32 & S1GM18):M | Yes  No  N/A  |
| FT47.5 | EDCA Parameter Set frame | (CF1 & CF32):O | Yes  No  N/A  |
| FT47.6 | Activity Specification frame | (CF2 & CF32 & S1GM21):M | Yes  No  N/A  |
| FT47.7 | TWT Setup frame | (CF32 & S1GM6.3):M | Yes  No  N/A  |
| FT47.8 | TWT Teardown frame | (CF32 & S1GM6.5):M | Yes  No  N/A  |
| FT47.9 | Sectorized Group ID List frame | (CF1 & CF32 & S1GM11):M | Yes  No  N/A  |
| FT47.10 | Sector ID feedback frame | (CF2 & CF32 & S1GM11):M | Yes  No  N/A  |
| FT47.11 | Header Compression Request frame |  | (CF32 & S1GM16):O | Yes  No  N/A  |
| FT47.12 | Header Compression Response frame |  | CF32: M | Yes  No  N/A  |
| FT47.13 | TWT Information frame |  | (CF32 & S1GM6.1):O  (CF32 & S1GM6.2):M | Yes  No  N/A  |
| FT48 | Relay Action frame | 8.6.23b (Relay Action frame details) | RL1:M | Yes  No  N/A  |
| FT48.1 | Reachable Address Update frame | RL1:M | Yes  No  N/A  |
| FT48.2 | Relay Activation Request frame |  | RL1:O | Yes  No  N/A  |
| FT48.3 | Relay Activation Response frame |  | RL1:M | Yes  No  N/A  |
| FT49 | Flow Control Action frame | 8.6.23c (Flow Control Action frame details) | CF32:M | Yes  No  N/A  |
| FT49.1 | Flow Suspension frame | (CF32 & S1GM17.1):M | Yes  No  N/A  |
| FT49.2 | Flow Resumption frame | (CF32 & S1GM17.1):O | Yes  No  N/A  |
| FT50 | Control Response MCS Negotiation frame | 8.6.27 (Control Response MCS Negotiation frame details) | CF32 & S1GM28:M | Yes  No  N/A  |
| FT50.1 | Control Response MCS Negotiation Request | (CF32 & S1GM28):O | Yes  No  N/A  |
| FT50.2 | Control Response MCS Negotiation Response | (CF32 & S1GM28):M | Yes  No  N/A  |
| ~~FT51~~ | ~~Short frame~~ | ~~8.8 (MAC frame format for Short frames)~~ | ~~CF32:O~~ | ~~Yes  No  N/A ~~ |
| ~~FT51.1~~ | ~~STACK frame~~ | ~~(CF32 & S1GM6.2 or S1GM6.1):M~~ | ~~Yes  No  N/A ~~ |
| ~~FT51.2~~ | ~~BAT frame~~ | ~~(CF32 & S1GM6.2 & QB4.1):M~~ | ~~Yes  No  N/A ~~ |
| ~~FT51.3~~ | ~~Short Action frame~~ | ~~CF32:O~~ | ~~Yes  No  N/A ~~ |
| ~~FT51.4~~ | ~~Short Action No Ack frame~~ | ~~CF32:O~~ | ~~Yes  No  N/A ~~ |
| ~~FT51.5~~ | ~~Short Probe Response frame~~ | ~~(CF1 & CF32):O~~ | ~~Yes  No  N/A ~~ |
| ~~FT51.6~~ | ~~Dynamic A-MSDU format~~ | ~~(CF32 & S1GM3.1):M~~ | ~~Yes  No  N/A ~~ |
| ~~FT51.7~~ | ~~Short Data frame~~ | ~~CF32:O~~  ~~RL6:M~~  ~~(CF32 & S1GM13):O~~ | ~~Yes  No  N/A ~~ |
|  | Is reception of the following MAC frames supported? | Clause 8, ~~Annex J~~ |  |  |
| ... |  |  |  |  |
| FR7 | Beacon | Clause 8 (Frame formats) | (not CF2.3 and not CF32):M  (CF27 & not CF32):M | Yes  No  N/A  |
| ... |  |  |  |  |
| FR14 | CTS | Clause 8 (Frame formats) | (CF27 & not CF32):M  (CF32 & VHTM3.1): O | Yes  No  N/A  |
| FR15 | Acknowledgment (Ack) | Clause 8 (Frame formats) | not CF32:M  (CF32 & (VHTM3.1 OR S1GM28)): O | Yes  No  N/A  |
| ... |  |  |  |  |
| FR44 | TACK | Clause 8 (Frame formats) | (CF1 & CF32):O  (CF2 & CF32 & S1GM7.3 or S1GM6.1):M | Yes  No  N/A  |
| FR45 | S1G Beacon | Clause 8 (Frame formats) | CF32:M | Yes  No  N/A  |
| FR46 | Short frame | 8.8 (MAC frame format for Short frames) | CF32:O | Yes  No  N/A  |
| FR46.1 | STACK frame |  | (CF32 & S1GM6.1):M | Yes  No  N/A  |
| FR46.2 | BAT frame |  | (CF32 & S1GM6.1 & QB4.1 or):M | Yes  No  N/A  |
| FR46.3 | Short Action frame |  | CF32 & (S1GM20.1 OR S1GM20.3 OR S1GM20.5):M  CF32 & (S1GM20.2 OR S1GM20.5):O | Yes  No  N/A  |
| FR46.4 | Short Action No Ack frame |  | CF32 & (S1GM20.1 OR S1GM20.3 OR S1GM20.5):M  CF32 & (S1GM20.2 OR S1GM20.5):O | Yes  No  N/A  |
| FR46.5 | Short Probe Response frame |  | CF32:O | Yes  No  N/A  |
| FR46.6 | Short Data frame |  | CF32 & (S1GM20.1 OR S1GM20.3 OR S1GM20.5):M  CF32 & (S1GM20.2 OR S1GM20.5):O | Yes  No  N/A  |
| FR46.7 | Resource Allocation | ~~Clause 8 (Frame formats)~~ | (CF2 & CF32 & S1GM22.5):M | Yes  No  N/A  |
| FR47 | NDP MAC frames | 8.9 (NDP MAC frames) | CF32:M | Yes  No  N/A  |
| FR47.1 | NDP CTS | CF32:M | Yes  No  N/A  |
| FR47.2 | NDP PS-Poll | (CF1 & CF32):O | Yes  No  N/A  |
| FR47.3 | NDP ACK | CF32:M | Yes  No  N/A  |
| FR47.4 | NDP PS-Poll-Ack | (CF2 & CF32 & FT46.2):M | Yes  No  N/A  |
| FR47.5 | NDP BlockAck | (CF32 & HTM5.3):M | Yes  No  N/A  |
| FR47.6 | NDP Beamforming Report Poll | (CF2 & CF32):O | Yes  No  N/A  |
| FR47.7 | NDP Paging | (CF32 & S1GM6.9):M | Yes  No  N/A  |
| FR47.8 | NDP Probe Request | (CF1 & CF32):M | Yes  No  N/A  |
| FR47.9 | NDP CF-End | (CF2 & CF32):O | Yes  No  N/A  |
| FR48 | S1G Action frame | 8.6.23a (S1G Action frame details) | CF32:M | Yes  No  N/A  |
| FR48.1 | AID Switch Request frame | (CF2 & CF32 & (S1GM13 or S1GM18)):M | Yes  No  N/A  |
| FR48.2 | AID Switch Response frame | (CF1 & CF32 & (S1GM13 or S1GM18)):M | Yes  No  N/A  |
| FR48.3 | Sync(#Ed) Control frame | (CF2 & CF32 & S1GM8.1):M | Yes  No  N/A  |
| FR48.4 | STA Information Announcement frame | (CF1 & CF32 & S1GM18):M | Yes  No  N/A  |
| FR48.5 | EDCA Parameter Set frame | (CF2 & CF32):M | Yes  No  N/A  |
| FR48.6 | Activity Specification frame | (CF1 & CF32 & S1GM21):M | Yes  No  N/A  |
| FR48.7 | TWT Setup frame | (CF32 & S1GM6.2):M | Yes  No  N/A  |
| FR48.8 | TWT Teardown frame | (CF32 & S1GM6.5):M | Yes  No  N/A  |
| FR48.9 | Sectorized Group ID List frame | (CF2 & CF32 & S1GM11):M | Yes  No  N/A  |
| FR48.10 | Sector ID feedback frame | (CF1 & CF32 & S1GM11):M | Yes  No  N/A  |
| FR48.11 | Header Compression Request frame | CF32: M | Yes  No  N/A  |
| FR48.12 | Header Compression Response frame |  | (CF32 & FT47.11):M | Yes  No  N/A  |
| FR48.13 | TWT Information frame |  | (CF32 & S1GM6):M | Yes  No  N/A  |
| FR49 | Relay Action frame | 8.6.23b (Relay Action frame details) | (CF1 & CF32):O | Yes  No  N/A  |
| FR49.1 | Reachable Address Update frame | RL1:M | Yes  No  N/A  |
| FR49.2 | Relay Activation Request frame |  | RL1:M | Yes  No  N/A  |
| FR49.3 | Relay Activation Response frame |  | RL1:M | Yes  No  N/A  |
| FR50 | Flow Control Action frame | 8.6.23c (Flow Control Action frame details) | (CF2 & CF32):O | Yes  No  N/A  |
| FR50.1 | Flow Suspension frame | (CF2 & CF32 & S1GM17):M | Yes  No  N/A  |
| FR50.2 | Flow Resumption frame | (CF2 & CF32 & S1GM17):M | Yes  No  N/A  |
| FR51 | Control Response MCS Negotiation frame | 8.6.23d (Control Response MCS Negotiation frame details) | CF32 & S1GM28:M | Yes  No  N/A  |
| FR51.1 | Control Response MCS Negotiation Request | (CF32 & S1GM28):M | Yes  No  N/A  |
| FR51.2 | Control Response MCS Negotiation Response | (CF32 & S1GM28):M | Yes  No  N/A  |
| ~~FR52~~ | ~~Short frame~~ | ~~8.8 (MAC frame format for Short frames)~~ | ~~CF32:M~~ | ~~Yes  No  N/A ~~ |
| ~~FR52.1~~ | ~~STACK frame~~ | ~~(CF32 & S1GM6.1):M~~ | ~~Yes  No  N/A ~~ |
| ~~FR52.2~~ | ~~BAT frame~~ | ~~(CF32 & S1GM6.1 & QB4.1 or):M~~ | ~~Yes  No  N/A ~~ |
| ~~FR52.3~~ | ~~Short Action frame~~ | ~~CF32 M~~ | ~~Yes  No  N/A ~~ |
| ~~FR52.4~~ | ~~Short Action No Ack frame~~ | ~~CF32 M~~ | ~~Yes  No  N/A ~~ |
| ~~FR52.5~~ | ~~Short Probe Response frame~~ | ~~CF32:O~~ | ~~Yes  No  N/A ~~ |
| ~~FR52.6~~ | ~~Dynamic A-MSDU format~~ | ~~(CF32 & S1GM3.2):M~~ | ~~Yes  No  N/A ~~ |
| ~~FR52.7~~ | ~~Short Data frame~~ | ~~CF32 M~~ | ~~Yes  No  N/A ~~ |