IEEE P802.11
Wireless LANs

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| CC35 CIDs 39, 43, 44, 334, 468 for 802.11ah |
| Date: 2021-11-08 |
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Abstract

This submission proposes resolutions for the following comments from comment collection 35 on P802.11-REVmeD0.0:

39, 43, 44, 334, 468

**Revision History:**

R0: Initial version

R1: Incorporated feedback from the commenter for CID 334

# CID 39

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| CID | Clause | Comment | Proposed Change |
| 39 | 10.3.2.5.2 | In the definition for LongTxTime, this if statement appears to be incorrect: If FORMAT is S1G\_DUP\_2M and PREAMBLE\_TYPE is S1G\_SHORT\_PREAMBLE orS1G\_LONG\_PREAMBLE. According to Section 23.1.4 PPDU formats: The S1G\_LONG format is not used for S1G\_DUP\_2M transmissions. | Change this sentence: "If FORMAT is S1G\_DUP\_2M and PREAMBLE\_TYPE is S1G\_SHORT\_PREAMBLE orS1G\_LONG\_PREAMBLE, then LongTxTime is equal to the largest value in thedot11EDCATableTXOPLimit." to "If FORMAT is S1G\_DUP\_2M then LongTxTime is equal to the largest value in thedot11EDCATableTXOPLimit." |

## Discussion:

Accept

### Proposed Changes using 802.11me d0.4 as a baseline:

* P2090.26

If the value of the RESPONSE\_INDICATION parameter is Long Response, the RID counter shall be set to LongTxTime + aSIFSTime, where LongTxTime is obtained as follows:

* If FORMAT is S1G and CH\_BANDWIDTH is CBW1 or FORMAT is S1G\_DUP\_1M, then LongTxTime is equal to the S1G PPDU duration as defined in Table 9-34 (Maximum data unit sizes (in octets) and durations (in microseconds)).
* If FORMAT is S1G and PREAMBLE\_TYPE is S1G\_SHORT\_PREAMBLE or S1G\_LONG\_PREAMBLE, then LongTxTime is equal to the largest value in the dot11EDCATableTXOPLimit.
* If FORMAT is S1G\_DUP\_2M then LongTxTime is equal to the largest value in the dot11EDCATableTXOPLimit.

# CID 43

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| CID | Clause | Comment | Proposed Change |
| 43 | 9.4.2.200 | Use of Length/type encoding via the EPD feature (Ethertype protocol decrimination) would save an additional 6 octets per data frame for 802.11ah STAs. This would be very useful particularly in regulatory domains with duty cycle requirements since it would save 320 usecs per data frame at the MCS10 rate. | Define an EPD bit in the S1G Capability Element to signal support for Length/Type encoding when set to 1. |

## Discussion:

Reject: Industry is likely to use the Extended Capabilities element in any case, so it makes no sense to duplicate the EPD bit in the S1G Capabilities element.

# CID 44

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| CID | Clause | Comment | Proposed Change |
| 44 | 10.47.1 | The following statement appears to be incorrect for an announced TWT agreement where the NDP Paging field is not present: "If the NDP Paging field was not present in the TWT response corresponding to a TWT agreement, the TWT requesting STA shall be in the awake state following each TWT start time associated with each TWT agreement for the AdjustedMinimumTWTWakeDuration associated with that TWT agreement even if no PS-Poll frame, NDP PS-Poll frame, or U-APSD trigger frame has been transmitted by the STA or until it has received an EOSP field equal to 1 from the TWT responding STA, whichever occurs first." That seems to be in contradiction to how an announced TWT agreement works since the AP can't know that the STA is awake until a frame is received that indicates the STA is either in Active state or no longer in power save state. | Maybe this whole section should be rewritten. The TWT section 26.8 in 11ax is much clearer although the feature is not quite the same. |

## Discussion:

Reject: Insufficient details

# CID 334

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| CID | Clause | Comment | Proposed Change |
| 334 | 10.55 | What does "For the S1G STAs with the group MAC address, which do not have the group AID, the S1G AP does notfollow this subclause to transmit group data." mean? S1G STAs with the group address (whatever that means) do not have the group AID? Or some S1G STAs with the group address do not have the group ID? | If the latter then change ", which" to "that" |

## Discussion:

Revised

Non-AP S1G STAs that support both PV1 frames and group addressed traffic delivery using group AID may request that group addressed frames are delivered using a group AID. These frames are formatted as a PV1 frame. There may be STAs that need to receive the same or different group addressed frames that have not requested delivery using group AID. For these STAs the AP does not follow subclause 10.55 to transmit the group addressed frames.

### Proposed Changes using 802.11me d0.4 as a baseline:

* P2617.31

**10.55 Group AID**

An S1G STA with dot11GroupAIDActivated equal to true supports the implementation of group addressed traffic delivery using group AID. An S1G STA with dot11GroupAIDActivated equal to true shall set the Group AID Support subfield in the S1G Capabilities element it transmits to 1. Otherwise, it shall set it to 0.

A group AID is an AID that is assigned by an S1G AP to identify a group of S1G STAs. A group AID corresponds to a bit in the traffic-indication virtual bitmap. An S1G AP signals the presence of group addressed BUs that correspond to a group AID using the same signaling as the signaling of individually addressed BUs, i.e., the AP sets the bit corresponding to the group AID in the traffic-indication virtual bitmap to 1 when BUs are present, and sets it to 0 otherwise.

An S1G AP shall not follow this subclause to transmit a group addressed frame to a STA that has not requested delivery using a group AID for that group address.

An S1G STA with dot11GroupAIDActivated equal to true that has a group MAC address may request a group AID from the S1G AP to which it is associated to by sending an AID Switch Request frame. Upon receiving the AID Switch Request frame, the S1G AP that supports group AID responds with an AID Switch Response frame that contains the assigned group AID that corresponds to that group MAC address and the group listen interval as described in 10.20 (S1G dynamic AID assignment operation). The S1G AP may assign different group AIDs to S1G STAs that have the same group MAC address but different group listen intervals. The S1G STA should maintain the link between the assigned group AID to its group MAC address and group listen interval.

An S1G AP that has negotiated a group AID shall indicate the presence of group addressed BUs corresponding to the group AID in the TIM included in the S1G Beacon frame that is sent every group listen interval, following the expiration of a counter that corresponds to the AID Switch Count field included in the AID Response element containing the group AID and that started upon transmission of that element.

An S1G STA that has negotiated a group AID and has not negotiated TWTs (see 10.47 (Target wake time (TWT))) shall wake up every group listen interval that corresponds to the group AID to receive the S1G Beacon frame, starting from the TBTT or TSBTT that follows the expiration of a counter that corresponds to the AID Switch Count field included in the AID Response element containing the group AID and that started upon receipt of that element. An S1G STA that has negotiated both group AID and TWTs wakes at specific target wake times as defined in 10.47 (Target wake time (TWT)).

For example, when S1G AP with dot11PageSlicingActivated equal to true has data buffered for a group of S1G STAs with dot11PageSlicingActivated equal to true that belong to a group AID, it indicates this condition in the Page Slice element (9.4.2.192 (Page Slice element)) transmitted in a DTIM Beacon frame. The S1G STAs that detect this indication will wake up at the assigned beacon interval to determine the TIM and extract the assigned time slots that carry the buffered group data. The S1G AP transmits the buffered group data within the assigned time slots for the S1G STAs’ reception.

The S1G AP that has indicated the presence of group addressed BUs for a given group AID in an S1G Beacon frame shall deliver these BUs using a PV1 frame with the group AID in the A1 field (see 9.8.3.2 (Address fields)) and setting the partial AID as described in 10.21 (Group ID, partial AID, Uplink Indication, and COLOR in S1G PPDUs). These group addressed frames should be delivered during the beacon interval or short beacon interval that follows the S1G Beacon frame or within negotiated TWT SPs if that group AID is assigned to a non-AP STA that follows 10.47 (Target wake time (TWT)).

An S1G STA that has a group AID assigned for a particular group MAC address shall discard any received frame that contains that group MAC address in the RA field.

NOTE—This avoids that the STA receives duplicate groupcast BUs with different group delivery procedures.

# CID 468

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| CID | Clause | Comment | Proposed Change |
| 468 | 10.49 | "When a STA receives an NDP CTS frame with the RA/Partial BSSID field equal to the S1G partial AID of the STA from the UL-Sync capable AP with which the STA is associated, the STA shall transmit a Data frame to the AP an SIFS after the reception of the NDP CTS frame if the STA has a Data frame to transmit to the AP and has requested the AP for a sync frame transmission. When a STA receives an NDP CTS frame with the RA/Partial BSSID field not equal to the S1G partial AID of the STA, the STA shall follow the NAV setting rules defined in 10.3.2.4 (Setting and resetting the NAV). After transmitting the NDP CTS frame, the AP shall wait for an AckTimeout interval (as defined in 10.3.2.11 (Acknowledgment procedure)), starting at the PHY-TXEND.confirm primitive. If a PHY-RXSTART.indication primitive does not occur during the AckTimeout interval, the AP may transmit a CF-End frame or an NDP CF-End frame to reset the NAV provided that the remaining duration is long enough to transmit this frame." -- no resetting of NAV if the sync frame is not an NDP CTS frame and no RXSTART appears within AckTimeout (c.f. vanilla CTS behaviour)? | As it says in the comment |

## Discussion:

Revised

### Proposed Changes using 802.11me d0.4 as a baseline:

* P2587.51

The UL-Sync capable AP should use an NDP CTS frame as a sync frame. The AP may use any NAV-setting frame as a sync frame provided that the frame solicits a Data frame as an immediate response from the receiving STA (e.g., a reverse direction grant).

When a STA receives an NDP CTS frame with the RA/Partial BSSID field equal to the S1G partial AID of the STA from the UL-Sync capable AP with which the STA is associated, the STA shall transmit a Data frame to the AP a SIFS after the reception of the NDP CTS frame if the STA has a Data frame to transmit to the AP and has requested the AP for a sync frame transmission. When a STA receives an NDP CTS frame with the RA/Partial BSSID field not equal to the S1G partial AID of the STA, the STA shall follow the NAV setting rules defined in 10.3.2.4 (Setting and resetting the NAV).

After transmitting the sync frame, the AP shall wait for an AckTimeout interval (as defined in 10.3.2.11 (Acknowledgment procedure)), starting at the PHY-TXEND.confirm primitive. If a PHY-RXSTART.indication primitive does not occur during the AckTimeout interval, the AP may transmit a CF End frame or an NDP CF-End frame to reset the NAV provided that the remaining duration is long enough to transmit this frame.

**References:**