IEEE P802.11
Wireless LANs

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| LB 205 MAC Miscellaneous comment resolution |
| Date: 2015-01-13 |
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Abstract

This submission proposes comment resolutions of MAC miscellaneous comments from TGah Draft 3.0.

* CIDs: 5026, 5129, 5168, 5234, 5237, 5298, 5355, 5376, 5377, 5398, 5435, 5439 (13 CIDs)

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** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| --- | --- | --- | --- | --- | --- |
| 5026 | 5.31 | 3.2 | "small payload" -- small is a very subjective measure used to classify a STA as a sensor. | replace "small payloads" with "payloads of less than X bytes in size" | Revised- Agree in principe. “small payload” is a very subject terminology. TGah editor to make changes shown in 11-15-0128r1 under the heading for CID 5026, 5439. |
| 5129 | 5.15 | 3.2 | VHT single MPDU can aggregate VHT or S1G S1G PPDU. The term of "VHT single MPDU" may cause some confusion on the aggregation of PPDU for narrow BW, low throughput transmission on S1G. | change "VHT single MPDU" to "VHT/S1G single MPDU" | Rejected-If the naming of the VHT single MPDU has been changed, it can also make a confusion to 11ac protocol behavior. Because this change affects on IEEE 802.11 base specification, I like to encourage to submit a comment to 802.11 REVmc.  |
| 5168 | 128.48 | 8.4.2.45 | The elements for S1G AP is not complete, e.g. S1G Beacon Compatibility | Go through S1G elements to make sure the related elements are listed here. | Revised- Agree in principle. S1G Beacon Compatibility element and Short Beacon Interval element are not included in the Nontransmitted BSSID Profile field. TGah editor to make changes shown in 11-15-0128r1 under the heading for CID 5168, 5435. |
| 5234 | 5.09 | 3.2 | The "VHT single MPDU" is now carried not only in a VHT PPDU but also in an S1G PPDU which makes the use of this terminology by an S1G STA very confusing. | Replace the definition "very high throughput (VHT) single medium access control (MAC) protocol data unit (VHT single MPDU)" with "single medium access control (MAC) protocol data unit (S-MPDU)". Replace "VHT single MPDU" with "S-MPDU" throughout the draft. Instruct the editor to do the same through REVmc D3.0. | Rejected- If the naming of the VHT single MPDU has been changed, it can also make a confusion to 11ac protocol behavior. Because this change affects on IEEE 802.11 base specification, I like to encourage to submit a comment to 802.11 REVmc. |
| 5237 | 7.31 | 3.2 | The following definitions S1G\_1M, S1G\_SHORT, S1G\_LONG are used throughout the draft but not always and not consistently. It would be best to be used always to avoid confusion. But first of all does the S1G\_SHORT, S1G\_LONG include the S1G\_DUP\_2M case? From 24.1.4 it seems it does so we need to keep consistency here and throughout as well. Another issue is that these definitions are used for both the PPDU format and at times the PPDU preamble as well. | I guess the suggested change would be the following:- Use these definitions consistently throughout the draft whenever appropriate (it makes sense for the format of the PPDU and also for the preamble case but needs to be clearer when referring to one and when to the other case)- Look for short/long preamble and use these definitions thoughout the draft. | Revised- Agree in principle. The definitions of S1G\_1M, S1G\_SHORT and S1G\_LONG are for the PPDU format. So, add the terminology of PPDU for each definition.And, also include the 2MHz Duplicated format in the S1G\_SHORT. TGah editor to make changes shown in 11-15-0128r1 under the heading for CID 5237. |
| 5298 | 266.48 | 9.22.2.6 | Subclauses from 9.22.2.6 to 9.22.2.10 have undergone major changes from REVmc D2.0 to REVmc D3.0 due to the incorpation of 11ac and 11af. In order to ensure that 11ah amendment is inline with the normative behavior specified in these subclauses check that the neccessary changes to this subclauses are performed to be inline with the normative behavior of S1G STAs and their functionality. This may be as simple as adding S1G qualifiers when applicable. | As in comment. | Revised- Agree in principle. TGah editor to make changes shown in 11-15-0128r1 under the heading for CID 5298. |
| 5355 | 22.24 | 6.3.7.3.2 | I have two questions here. Which field cof the association response carries the listen interval and why is it not specified that the parameter is present only when s1goptionimplemented. Similar comment for other rows in the MLME primitives. | As in comment. | Revised- Agreed in principle. It is unclear which field in the association response frame carries the listen interval. And, AID Response element in the association response frame carries the listen interval. TGah editor to make the changes shown in 11-14/1575r1 under all headings that include CID 5248.And, TGah editor remove the Listen Interval row from the table in 6.3.7.5.2 (Semantics of the service primitive). |
| 5376 | 200.05 | 8.7.3 | It is necessary to add a case for an S1G STA when A-MPDU is used in S1G PPDU (Ref: P802.11mc D3.0 P1217L57). | Insert a following text at the top of 8.7.3:(Editing instruction: Insert a new bullet at the end of the first paragraph)-- The FORMAT parameter set to S1G, S1G\_DUP\_1M, or S1G\_DUP\_2M and the AGGREGATION parameter set to 1 | Accepted |
| 5377 | 200.40 | 8.7.3 | For the S1G relay, only Data frames are allowed as contents of an A-MPDU, if the A-MPDU contains multiple PV1 MPDUs. As the values of EOSP and Relayed Frame fields in the Frame Control field, and A3 Present, A4 Present subfields in the SID field are identical across MPDUs within the A-MPDU (Refer to 9.13.1 A-MPDU contents, P258L50), MPDUs in the relayed A-MPDU have A3 and A4 fields that is not specified for Control/Management frames in relay. | 1) Change Table 8-409 by inserting a new row as follows:- Name of Context = "S1G Relay"- Definition of Context = "The A-MPDU is transmitted within an S1G PPDU and forwarded by a relay."- Table defining permitted contents = "Table 8-414a (A-MPDU contents in the S1G relay context)"2) Insert a new Table 8-414a (A-MPDU contents in the S1G relay enabled immediate response context) with following contents:[headings]MPDU, Conditions[1st row]- MPDU = "Delayed Block Ack Data"- Conditions = "QoS Data frames with a TID that corresponds to an HT-delayed block ack agreement. These have the Ack Policy field equal to Block Ack."[2nd row]- MPDU = "Data frames sent under an HT-immediate block ack agreement"- Conditions = "QoS Data frames with the same TID, which corresponds to an HT-immediate block ack agreement. These all have the Ack Policy field equal to the same value, which is either Implicit Block Ack Request or Block Ack." | Rejected- When control frame and management frames are PV0 frame, those frames couldn’t be aggregated with PV1 frame. And, Aggregared MPDU of PV1 control and data frames is not supported.  |
| 5398 | 200.16 | 8.7.3 | Reference to tables in Table 8-409 are not updated to P802.11mc D3.0. | Update the reference (number) of tables. | Accepted |
| 5435 | 128.48 | 8.4.2.45 | S1G Beacon Compatibility for S1G AP is not complete. Need to list all the related elements. | As in the comment. | Revised- Agree in principle. S1G Beacon Compatibility element and Short Beacon Interval element are not included in the Nontransmitted BSSID Profile field. TGah editor to make changes shown in 11-15-0128r1 under the heading for CID 5168, 5435. |
| 5439 | 5.31 | 3.2 | The definition "sensor station (STA): A sensor STA is a non-AP STA using data frames with small payload size. A sensor STA is also expected to have limited available power and low traffic volume." includes every 802.11 station (since all use, at one time or another, small payload data frames). Even if a requirement of ONLY small payload data frames is added, the definiton still includes every 802.11-capable cellphone that doesn't support big data (supports only voice and text). Either speify the critical 802.11 functional aspects of this definition or delete it:-- Does the sensor station need to include a sensor (else why call it a \_sensor\_ station?), and, if so, what is a "sensor" in terms of 802.11 functions?-- What size is a "small" payload? Do all tweets and voice frames qualify?-- Since all non-AP 802.11 STAs at times use "data frames with samll payload size", then according to the definiton given here all 802.11 non-AP STAs formally qualify as "sensor STAs". If the criterion should be that the ONLY data frames supported by a sensor STA are below a certain specified size (1KB?), then that criterion needs to be explicitly stated in the definition.-- What definition clearly distinguishes the sensor station from other non-AP stations? What specific functions in a non-AP 802.11 station make it a "non-sensor station"?-- Also "is expected to have" is a marketing approximation that does not belong in an IEEE technical standard. | Since this definition provides no clear distinction from "non-AP station", delete this definition and all uses of "sensor station" and "sensor STA" in this draft. | Revised- Agree in principe. The definition of the sensor station is a very subject. TGah editor to make changes shown in 11-15-0128r1 under the heading for CID 5026, 5439. |
| 5047 | 317.06 | 9.42g.5.2 | "(short) beacon interval" -- using this wording seems to require to introduce a new abbreviation which could easily be avoided by using "short beacon interval or beacon interval". This would alse prevent the use of parenthathes. | Replace "(short) beacon interval" with "short beacon interval or beacon interval" | Rejected–The current form is more compact and satisfies the larger number of voters and there is nothing wrong with adding an abbreviation – we have a subclause dedicated for that very purpose. |

**Propose:**

Revised for CID 5026, 5439, 5237, 5168, 5435, 5298, per discussion and editing instructions in 11-15/0128r1.

***TGah editor: Modify the sub-clause*** ***3.2 as the following:***

**3.2 Definitions specific to IEEE 802.11**

sensor station (STA): A sensor STA is a non-AP STA ~~using data frames with small payload size. A sensor STA is also expected to have limited available power and low traffic volume~~ that meets the sensor profile (e.g., short MSDU size, low traffic volume , battery operated device, etc) and is allowed to associate with an AP that has setup a sensor BSS or a mixed BSS.

sub 1 GHz 1M (S1G\_1M) physical layer protocol data unit (PPDU): 1 MHz PPDU or 1 MHz Duplicated PPDU.

sub 1 GHz long (S1G\_LONG) physical layer protocol data unit (PPDU): 2 MHz, 4 MHz, 8 MHz or 16 MHz PPDU with long preamble format.

sub 1 GHz short (S1G\_SHORT) physical layer protocol data unit (PPDU): 2 MHz, 4 MHz, 8 MHz, ~~or~~ 16 MHz or 2 MHz Duplicated PPDU with short preamble format.

***TGah editor: Modify the sub-clause 8.4.2.45 as the following:***

8.4.2.45 Multiple BSSID element

—The Timestamp and Beacon Interval fields, DSSS Parameter Set, IBSS Parameter Set, Country, Channel Switch Announcement, Extended Channel Switch Announcement, Wide Bandwidth Channel Switch, VHT Transmit Power Envelope, Supported Operating Classes, IBSS DFS, ERP Information, HT Capabilities, HT Operation, VHT Capabilities, VHT Operation ~~elements~~, S1G Beacon Compatibility, Short Beacon Interval, S1G Capabilities, and S1G Operation elements are not included in the Nontransmitted BSSID Profile field; the values of these elements for each nontransmitted BSSID are always the same as the corresponding transmitted BSSID element values.

**9.22.2.2 EDCA backoff procedure**

Change the 2nd paragraph as follows:

For the purposes of this subclause, transmission failure of an MPDU is defined as follows:

— After transmitting an MPDU (even if it is carried in an A-MPDU or as part of a VHT or S1G MU PPDU that might have TXVECTOR parameter NUM\_USERS > 1) that requires an immediate frame as a response, the STA shall wait for a timeout interval of duration of aSIFSTime + aSlotTime + aRxPHYStartDelay, starting at the PHY-TXEND.confirm primitive. If a PHY-RXSTART.indication primitive does not occur during the timeout interval, the STA concludes thatthe transmission of the MPDU has failed.

**9.22.2.3 EDCA TXOPs**

Change the following paragraph in the subclause as follows:

There are three modes of EDCA TXOP defined: initiation of an EDCA TXOP, sharing an EDCA TXOP, and multiple frame transmission within an EDCA TXOP. Initiation of the TXOP occurs when the EDCA rules permit access to the medium. Sharing of the EDCA TXOP occurs when an EDCAF within an AP that supports DL-MU-MIMO has obtained access to the medium, making the corresponding AC the primary AC, and includes traffic from queues associated with other ACs in VHT or S1G MU PPDUs transmitted during the TXOP. Multiple frame transmission within the TXOP occurs when an EDCAF retains the right to access the medium following the completion of a frame exchange sequence, such as on receipt of an Ack frame.

**9.22.2.6 Sharing an EDCA TXOP**

Change the following paragraph in the subclause as follows:

This mode applies only to an AP that supports DL-MU-MIMO. The AC associated with the EDCAF that gains an EDCA TXOP becomes the primary AC. TXOP sharing is allowed when primary AC traffic is transmitted in a VHT or S1G MU PPDU and resources permit traffic from secondary ACs to be included, targeting up to four STAs. The inclusion of secondary AC traffic in a VHT or S1G MU PPDU shall not increase the duration of the VHT or S1G MU PPDU beyond that required to transport the primary AC traffic. If a destination is targeted by frames in the queues of both the primary AC and at least one secondary AC, the frames in the primary AC queue shall be transmitted to the destination first, among a series of downlink transmissions within a TXOP. The decision of which secondary ACs and destinations are selected for TXOP sharing, as well as the order of transmissions, are implementation specific and out of scope for this specification.

When sharing, the TXOP limit that applies is the TXOP limit of the primary AC.

NOTE—An AP can protect the immediate response by preceding the VHT or S1G MU PPDU (which might have TXVECTOR parameter NUM\_USERS > 1) with an RTS/CTS exchange or a CTS-to-self transmission.

**9.22.2.7 Multiple frame transmission in an EDCA TXOP**

Change the following paragraph in the subclause as follows:

Multiple frames may be transmitted in an EDCA TXOP that was acquired following the rules in 9.22.2.4 (Obtaining an EDCA TXOP) if there is more than one frame pending in the primary AC for which the channel has been acquired. However, those frames that are pending in other ACs shall not be transmitted in this EDCA TXOP except when sent in a VHT or S1G MU PPDU with TXVECTOR parameter NUM\_USERS > 1 and if allowed by the rules in 9.22.2.6 (Sharing an EDCA TXOP). If a TXOP holder has in its transmit queue an additional frame of the primary AC and the duration of transmission of that frame plus any expected acknowledgment for that frame is less than the remaining TXNAV timer value, then the TXOP holder may commence transmission of that frame a SIFS (or RIFS, if the conditions defined in 9.3.2.3.2 (RIFS) are met) after the completion of the immediately preceding frame exchange sequence, subject to the TXOP limit restriction as described in 9.22.2.2 (EDCA backoff procedure). A STA shall not commence the transmission of an RTS with a bandwidth signaling TA until at least PIFS time after the immediately preceding frame exchange sequence. An HT STA that is a TXOP holder may transmit multiple MPDUs of the same AC within an A-MPDU as long as the duration of transmission of the A-MPDU plus any expected BlockAck frame response is less than the remaining TXNAV timer value. An S1G STA that is a TXOP holder may transmit multiple MPDUs of the same AC within an A-MPDU as long as the duration of transmission of the A-MPDU plus any expected (NDP) BlockAck frame response is less than the remaining TXNAV timer value.

…

Note that, as for an EDCA TXOP, a multiple frame transmission is granted to an EDCAF, not to a STA, so that the multiple frame transmission is permitted only for the transmission of a frame of the same AC as the frame that was granted the EDCA TXOP, unless the EDCA TXOP obtained is used by an AP for a PSMP sequence or a VHT or S1G MU PPDU with TXVECTOR parameter NUM\_USERS > 1.