IEEE P802.11
Wireless LANs

|  |
| --- |
| Miscellaneous Part 4 |
| Date: 2016-01-21 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Alfred Asterjadhi | Qualcomm Inc. | 5775 Morehouse Dr, San Diego, CA 92109 | +1-858-658-5302 | aasterja@qti.qualcomm.com |
| Naveen Kakani | Qualcomm Inc.  |  |  |  |

Abstract

This submission proposes resolutions for multiple comments related to TGah D5.0:

* 8105, 8477, 8244, 8176, 8146, 8299, 8468, 8053 (8 CIDs)

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Added proposed resolutions for CIDs 8176, 8146

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.***

# PARS I

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 8105 | Stephens, Adrian | 138.26 | I encourage the 802.11ah editors to read the IEEE-SA style guide on equations and apply it throughout the amendment. | For example here, this would become something like:"... The RAW duration indicated by the corresponding RAW assignment, D\_RAW, is given, in units of microseconds, by:D\_RAW = D\_SLOT x N\_RAWwhere D\_SLOT is the RAW slot duration, in microseconds N\_RAW is the value of the Number of Slots subfield"In the above, underscore should be interpreted as subscripting.The essence is:1. Short variable names, not "self descriptive names"2. A where list in which each variable on the RHS of the equation is fully defined | Revised –Agree with the commenter. Proposed resolution accounts for the suggested changes. TGah editor to make the changes shown in 11-15/0174r0 under all headings that include CID 8105. |
| 8477 | Alfred Asterjadhi | 147,8 | The Capability Information field contains the EPD flag. Hence S1G STAs can declare support for EPD (inherited from 11ak). | It is good to clarify when and how EPD is used. | Rejected –The comment is referring to a text that has specific definition for Capability Information field for both DMG and non-DMG STA in the baseline.Reference to EPD flag is not defined in Capability Information filed (as of REVmc Draft 5.0). Need additional information to address the comment. |
| 8244 | Rolfe, Benjamin | 147, 33 | What exactly is the "short beacon interval" as where is it's use defined? I find no normative text describing short beacons, or short beacon intervals, except to indicate that the SBI may be used interchangeably with beacon interval in a number of places. Since the project scope allows only MAC changes necessary to support this PHY, there must be a need for short beacon intervals to support this PHY, but from this draft it is not clear. | Clearly define the meaning and function of short beacon and/or short beacon interval, how it is used (and necessary) to support the S1G PHY. | Revised –Add the definition of Short Beacon Interval time to Section 3.2.Short Beacon Interval: Time period between the transmissions of two consecutive beacon frames that contains minimal information, and does not include the transmission of the beacon frame.The purpose of this “short” beacon frame is to reduce the medium usage in sending the beacon (compared to existing 802.11 networks). In the context of 802.11ah this is relevant to allow for better medium usage.The specification allows for defning new frame formats and the normative behaviour associated with the use of the defined frames. The comment is not specifically asking for a frame format or a change in normative behaviour.TGah editor: Insert the following definition in in Subclause 3.2:“short beacon interval: The interval between the consecutive TSBTTs of beacons containing a minimal set of information elements.”.  |
| 8176 | Stephens, Adrian | 315.8 | Figure 9-96 uses colour and shading unnecessarily. The point of the style is that, when printed, this page will probably not show the shading at all, or will show it as a pattern of dots. | Remove the shading and indicate the channelness in some other way such as with horizontal lines. | Revised –Agree in principle with the commenter. Proposed resolution contains an updated figure that removes the shading. TGah editor to make the following to Figure 9-96:Add line delimiters where the shading boundaries are. Remove all shadings from the Figure. |
| 8146 | Stephens, Adrian | 542.46 | "CF32 AND". This term is unnecessary, because support for CF32 is implied in support for S1GM8. | Change any "CF32 AND S1GM8" to "S1GM8".I suspect the same issue applies in all S1GM sections. So please review them and remove unnecessary qualifiers. | Revised –TGah editor: Replace all occurrences of “CF32 AND S1GM” with “S1GM” in subclause B.4.28. |
| 8299 | Montemurro, Michael | 336.24 | IEEE 802.11 multicast traffic is either transmitted as unicast (with DMS) or group-addressed traffic. It's unclear from the description in this clause how frames are transmitted. My assumption is that they are group addressed. | Update the normative text in the clause to describe Multicast AID in terms of group-addressed frames, if that's what's intended. | Revised –The ambiguity derives from the use of the term multicast (pointed out by another CID as well). The proposed resolution of that CID was to replace multicast AID with group AID, as such would clarify this ambiguity.TGah editor: Replace “multicast AID” with “group AID”, replace “multicast” with “group” when part of MIB variables, field/subfield/element names (keeping capital letters) and in P159L4 replace:“This bit indicates support of Flexible Multicast described in 9.52 (Multicast AID).” with “This bit indicates support of group traffic delivery using a group AID as described in 9.52 (Multicast AID).” |
| 8468 | Asterjadhi, Alfred | 336.56 | A non-TIM STA that has negotiated TWTs does not need to wake up and read the beacon to understand whether multicast DL BUs are scheduled to be delivered for it. | Add the following clarifications:- An AP that has negotiated TWTs and multicast AID transmits the multicast DL BUs within the TWT SPs of a STA that is expecting these multicast frames.- The STA that has negotiated multicast AID and TWT does not need to wake to read the beacon to determine if multicast DL BUs are scheduled during the beacon interval, instead it expects these to be delivered during the TWT SPs. | Revised –Agree with the commenter. Proposed resolution accounts for the suggested changes. TGah editor to make the changes shown in 11-15/0174r0 under all headings that include CID 8468. |
| 8053 | Stephens, Adrian | 49.23 | " the SME should operate according to the procedure in 9.5.1.5.3 ...".There's a couple of problems with this. I suspect "should" is not correct. If we have any normative requirement, i suspect it should be a "shall".Also placing a normative requirement in clause 9 for the SME is to hide it well. | 1. If the cited text itself contains "shalls" for the SME, then replace "should operate" with "operates" at the cited location, and throughout clause 6 in the same context (7 instances).Move any normative behaviour for the SME out of clause 9 into clause 10. |  |

**8.4.2.188 RPS element**

**TGah Editor: *Change the paragraph below as follows (#8105):***

The Slot Duration Count subfield is y-bit unsigned integer and it is used to calculate the duration of a RAW slot, or the RAW slot duration. The RAW slot duration, DSLOT, has time unit of microsecond and it is calculated as:

DSLOT = 500 + CSLOT× 120

Where

 CSLOT is the value of the Slot Duration Count subfield

**TGah Editor: *Change the paragraph below as follows (#8105):***

The Slot Definition subfield is used to calculate the RAW duration. The RAW duration, DRAW, indicated by the corresponding RAW assignment can be calculated as follows:

DRAW = DSLOT × NRAW

Where

DSLOT is the RAW slot duration, in microseconds,

NRAW is the value of the Number of Slots subfield

**8.4.2.189 Page Slice element**

**TGah Editor: *Change the paragraph below as follows (#8105):***

The Page Slice Length subfield indicates the number of blocks included in each TIM for the associated page except for the last TIM. The number of blocks in each page slice is equal to the value of the Page Slice Length subfield. The value 0 for the Page Slice Length subfield is reserved. For the last TIM, the size of the last page slice, *PSlast,* is computed as

PSlast = Plength - (PScount - 1) x PSlength

where

*Plength* is the length (in bits) of a page indicated in the Page Bitmap field and is calculated as Plength = 8 x *PBlength*,

*PBlength* is the length of the page (in octets) indicated in the Page Bitmap field,

*PScount* is the value indicated in the Page Slice Count subfield,

*PSlength* is the value indicated in the Page Slice Length subfield.

For example, with a Page Bitmap field of 2 octets, a value in the Page Slice Length subfield equal to 3, and a value in the Page Slice Count subfield equal to 5, the page slice consists of 4 (=16 – 3x4) blocks for the last TIM, i.e., a value greater than the value indicated in the Page Slice Length subfield. Again, for example, with a Page Bitmap field of 2 octets, a value in the Page Slice Length subfield equal to 6, and a value in the Page Slice Count subfield equal to 3, the page slice consists of 4 (=16 – 6x2) blocks for the last TIM, i.e., a value less than the value indicated in the Page Slice Length subfield.

**TGah Editor: *Change the paragraph below as follows (#8105):***

The number of blocks assigned to all the TIMs, except the last TIM, within a DTIM interval, *Prem* is computed as

Prem = Plength - PSlast

Where

 Plength is the length of a page indicated in the Page Bitmap field

 PSlast is the size of the last page slice

**TGah Editor: *Change the paragraph below as follows (#8105):***

For every TIM, a STA computes the location of its block within a page slice, SBSTA, using the following equation:

SBSTA = AID[6:10]- BO(19-2)

where

AID is the association identifier of the STA

*BO* is the value indicated in the Block Offset subfield of the Page Slice element.

**8.8.5.4 Resource Allocation frame format**

**TGah Editor: *Change the paragraph below as follows (#8105):***

The Slot Assignment Bitmap subfield has a length in bits, SABlength, which is determined as:

SABlength = (RAW End AID - RAW Start AID+1) x 4

where

RAW End AID and RAW Start AID for the RAW group are defined in 8.4.2.188 (RPS element).

The Pad subfield contains 0 or 4 bits of 0s to make the total number of bits in the Slot Assignment Indication field equal to an integer number of octets.

**TGah Editor: *Change the paragraph below as follows (#8105):***

The STA shall determine the index of the RAW slot, *i*slot, in which the STA is allowed to start contending for the medium based on the following mapping function

*i*slot = (*x* + *N*offset) *mod N*RAW

where

*x* is the position index of the AID of the STA or the AID of the STA

*N*offset represents the offset value in the mapping function

NRAW is the value of the Number of Slots subfield

The value *x* is the position index of the AID of the STA if the RAW is restricted to STAs whose AID bits in the TIM element are equal to 1 (the RAW Type field is equal to 0 and the Bit 0 of the RAW Type Options field is equal to 1 or the RAW Type field is equal to 3), and AIDs are arranged in ascending order and each AID is assigned with a position index, which starts from 0 (see Figure 9-30c (Illustration of the RAW slot assignment procedure (RAW restricted to STAs whose AID bits in the TIM element are equal to 1))). Otherwise, if the RAW is not restricted to STAs whose AID bits in the TIM element are equal to 1 (the RAW Type field is equal to 0 and the Bit 0 of the Raw Type Options field is equal to 0), *x* is the AID of the STA(see Figure 9-30b (Illustration of the RAW slot assignment procedure (RAW not restricted to STAs whose AID bits in the TIM element are equal to 1))); *N*offset represents the offset value in the mapping function, which improves the fairness among the STAs in the RAW, and the STA shall use the 2 least significant octets of the FCS field of the S1G Beacon frame for the *N*offset;

**9.51.5.4 Relay-shared TXOP protection mechanisms**

**TGah Editor: *Change the paragraph below as follows (#8105):***

If explicit Ack procedure (see 9.51.5.2 (Explicit Ack procedure)) then the Duration field of the NDP CTS frame shall be set to a value D:

—*TRTS +TPENDING - TCTS <= D <= TTXOP \_REMAINING-TPPDU*

where

*TRTS* is the value obtained from the Duration/ID field of the S1G RTS frame that elicited the response

*TCTS* is the time, in microseconds, between the end of the PPDU carrying the RTS frame and the end of the NDP CTS frame

*TPENDING* is the estimated time required for the transmission of the frame to be forwarded, its response if required, protection frame exchanges if required, plus applicable IFS durations

*TTXOP\_REMAINING* is equal to any *TTXOP* as defined in 8.2.5.2 (Setting for single and multiple protection under enhanced distributed channel access (EDCA)) minus *TRTS*

*TPPDU* is the time required for transmission of the current PPDU

**9.52 Multicast AID**

**TGah Editor: *Change the paragraph below as follows (#8105):***

An S1G STA with dot11MulticastAIDActivated equal to true supports the implementation of group addressed traffic delivery using multicast AID. An S1G STA with dot11MulticastAIDActivated equal to true shall set the Multicast AID Support subfield in the S1G Capabilities element it transmits to 1. Otherwise, it shall set it to 0.

**TGah Editor: *Change the paragraph below as follows (#8468):***

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

An S1G STA that has negotiated a multicast AID and has not negotiated TWTs (see 9.44) shall wake up every multicast listen interval that corresponds to the multicast 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 included in the AID Response element containing the multicast AID and which 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 9.44 (TWT operation).

**TGah Editor: *Change the paragraph below as follows (#8468):***

The S1G AP that has indicated the presence of group addressed BUs for a given multicast AID in an S1G Beacon frame shall deliver these BUs using a PV1 frame with the multicast AID in the A1 field (see 8.8.3.2 (Address fields)) and setting the partial AID as described in 9.20a (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 9.44 (TWT operation).