IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Reviewer’s Comments and Resolutions | | | | |
| Date: 2014-27-05 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
|  |  |  |  |  |

Abstract

This submission proposes resolutions for generic comments that are not related to CIDs for TGah Draft 1.3.

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** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** | **Name** |
|  |  |  |  |  |  |  |

**Discussion:**

***Change the 2nd paragraph of 9.21.2.8 (Truncation of TXOP) (Chao-Chun):***

An S1G STA that transmits a PPDU with the TXVECTOR parameter RESPONSE INDICATION equal to Long Response or an NDP (PS-Poll-)Ack with Idle(#1175) Indication field equal to 1 and Duration field equal to 0 may transmit an NDP CF-End frame, after PIFS, to truncate any active RID or NAV, if it does not receive after a SIFS, a response with the RXVECTOR's parameter RESPONSE INDICATION that is equal to NDP Response or Normal Response,.(#840, 14/0075r1)

***Change the paragraph starting in P213L55 of Subclause 9.21.2.9a as follows (Chao-Chun):***

An S1G STAthat intends to transmit an 8 or 16 MHz PPDU may also invoke a backoff procedure at the primary 2 MHz channel using the CCA conditions defined in 24.3.17.5.4.1 (CCA sensitivity for devices in Type 2 channels implementing intended 8 or 16 MHz transmit channel width channel access procedure), if the S1G STA is permitted to begin a TXOP (as defined in 9.21.2.3 (Obtaining an EDCA TXOP)) and the S1G STA has at least one MSDU pending for transmission for the AC of the permitted TXOP. In this case the S1G STA shall perform exactly one of the following steps:

***Change the 1st and 2nd paragraph of Subclause 4.3.12b as follows (Chitto, Alfred):***

This subclause summarizes the normative requirements for an IEEE 802.11 S1G STA stated elsewhere in this standard.

The IEEE S1G 802.11 STA operates in frequency bands below 1 GHz excluding the TV White Space bands.

***Change the 1st paragraph of Subclause 9.48.2 as follows (James):***

A sectorized beam-capable STA shall exchange its S1G Capabilities element with an AP. After the sectorized beam-capable STA is(#Ed) associated with a sectorized beam-capable AP, the AP can transmit through its sectorized beam to the(#Ed) STA.

***Change the 4th paragraph of Subclause 9.48.2 as follows (James):***

If dot11S1GSectorTrainingOperationImplemented is true, a STA shall set the Sector Training Operation Support field in the S1G Capabilities element to 1 in the Association Request Frame. If dot11S1GSectorTrainingOperationImplemented is false, the STA shall set the Sector Training Operation Support field in the S1G Capabilities element to 0. If dot11S1GSectorTrainingOperationImplemented is true, the STA shall set dot11HTControlFieldSupported to true.(#14/0257r1)

***Change the 7th paragraph of 9.48.2 as follows (James):***

When the AP Sectorized Beam-Capable field is equal(#1185) to 3, group sectorization and TXOP-based sectorization operations(#Ed) may be optionally used at the same time provided that the AP or non-AP STA, intending to apply TXOP-based sectorization during the omni-beacon interval or the sectorized beacon interval, follows the rule according to which(#Ed) a non-AP STA is not allowed to transmit in certain beacon intervals as described in 9.48.3 (Group sectorization operation).(#14/0377r1)

***Change the 8th paragraph of 9.48.2 as follows (James):***

After the exchange of the S1G Capabilities element during the Association, a sectorized beam-capable AP supporting group sectorization operation shall transmit a S1G Sector Operation element with the Sectorization Type field equal(#1185) to 0 to advertise the period of(#Ed) the current sector, omni-directional or sectorized beam, the current sector ID, the(#Ed) allowable group IDs, and the duration of(#Ed) the current sector in the beacon to start a beacon interval. A sectorized beam-capable AP supporting TXOP-based sectorization operation may transmit a S1G Sector Operation element with the Sectorization Type field set to 1 to advertise if periodic sector training is on or off, its training period, and the remaining beacon intervals to the next periodic training in the S1G Sector Operation element in a beacon.

***Change the 1st paragraph of 9.48.3 as follows (James):***

Group sectorization operation is based on the AP transmitting a sectorized beacon. A sectorized beacon is a beacon transmitted through a sectorized beam which covers a specific sector of the BSS.

***Change the 3rd paragraph of 9.48.3 as follows (James):***

In a Sectorized BSS, the AP may alternate the sectorized beacons and the non-sectorized (omni) beacons, as illustrated by the example(#Ed) in Figure 9-35 (Sectorized BSS operation). More than one sector could be active at the same time, i.e.,(#Ed) they can overlap in time. In such case, STAs from different sectors are allowed to transmit while their sectors are active(#14/0146r1). During the omni beacon interval all the stations in the BSS may transmit regardless of their geographical locations. Sectorized beacons are transmitted to selected geographical areas to inform groups of stations that they are allowed to transmit during the sector intervals specified in the S1G Sector Operation element. The AP with group sectorization operation(#Ed) receives transmissions from all sectors continuously.

***Change the 4th paragraph of 9.48.4 as follows (James):***

In TXOP-based sectorization operation, during a frame exchange between the AP employing sectorized beamforming (#1062, Ed) and a non AP STA, spatial re-use by OBSS APs or OBSS non-AP STAs sharing the same wireless medium is allowed under the following rules:

***Change item c of the 7th paragraph of 9.48.4 as follows (James):***

c) SO frame exchange sequence 3: The AP starts a frame exchange with an omni-RTS frame to solicit a CTS response from a station and uses the omni-transmission to set up the protection for the duration of the sectorized beam transmission and then switches to the sectorized beam transmission for the remainder of the protected duration. SO condition is confirmed by an OBSS non-AP STA or OBSS AP which observes the omni-transmission of the AP but not the beamformed transmission of the AP and not the station's transmission. Note that in the first diagram in Figure 9-38 (SO frame exchange sequence 3), an OBSS non-AP STA or OBSS AP infers its spatial orthogonality with the AP by observing the omni RTS frame and omni-preamble of the long preamble but not the subsequent sectorized beam transmission and with the station by observing a gap of no transmission between the omni RTS frame and the omni-preamble of the long preamble. Note that in the second diagram in Figure 9-38 (SO frame exchange sequence 3), an OBSS non-AP STA or OBSS AP infers its spatial orthogonality with the AP by observing the transmission of the omni-RTS frame and the omni-beam packet of the short format but not observing the subsequent sectorized beam transmission and with the station by observing a gap of no transmission between the omni-RTS frame and the omni-beam packet of the short format by the AP.

***Change the 1st paragraph of 9.48.5.1 as follows (James):***

The sector training is one way to help the stations to determine the best sectors to communicate with the AP. Sector training requires the AP to transmit training NDPs over all sectors. The best sector might be chosen by a station based on instantaneous or averaged CSI. The specific method of choosing the sector is beyond the scope of this standard. The results of the sector training may be fed-back by the stations to the AP using Sector ID feedback frame. These training NDPs shall be transmitted consecutively and should be sent within a single TXOP. The sector training is set up or requested using the HT variant Control field. The sector training supports up to eight sectors. The AP may use other methods to determine the station's best sector.

***Change the 2nd paragraph of 9.48.5.2 as follows (James):***

In TXOP-based sectorization operation, the sector training may occur periodically with the training period and the beacon interval in which the training occurs as indicated in S1G Sector Operation element (TXOP-based), in response to a request from a STA, or initiated by the AP. The stations may perform the sector training by receiving the training NDPs from AP. In the case that the AP receives the sector training request from a station, the AP shall initiate a sector training. AP supporting TXOP-based sectorization shall support sector training and sector training request. In the S1G Sector Operation element (TXOP-based) (see 8.4.2.170e), which is transmitted in beacon, probe response, or association response, the AP indicates in which beacon interval a sector training occurs.

***Change the 3rd paragraph of 9.48.5.2 as follows (James):***

In group sectorization operation, a STA can find its best sector ID by listening to all the sectorized beacons. The S1G Sector Operation element (group) carried in the sectorized beacon provides the sectorized beacons rotation period, current sector ID, the sub-period of the current sector and the group IDs of the groups of STAs which are allowed to transmit within the current beacon interval. The sector training may also be used for STAs to reduce time for sector discovery and allow STAs which don't listen to all the sectorized beacons for its power saving.

***Change the 5th paragraph of 9.48.5.2 as follows (James):***

The station may request sector training(#1682) from AP by using the HT Variant Control field if it is capable of sector training request. By setting the MAI=14 in the Link Adaptation Control subfield of the HT Variant Control field, the station indicates HT variant control field is used for signaling sector training(#1682) (or Antenna Selection) information. The sector(#1682) training (or sector training resumption) is requested by a station when the ASELC subfield is equal(#1185) to 1 and the ASEL Data subfield with values in the range of 1 to 15, being the number of the first NDP training frames to be transmitted when the command is sector training resumption(#1682), where 0 corresponds to the first training frame in the sector training request.(#1682) When the NDP Announcement field is also equal(#1185) to 1, it indicates training NDP frames to follow with consecutive training NDP frames separated by SIFS.

***Change the 8th paragraph of 9.48.5.2 as follows (James):***

AP may schedule sector sounding for multiple STAs by RAW in a beacon interval using the RAW Parameter Set element with the RAW Type subfield equal(#1185) to Sounding RAW and the RAW Type Options subfield equal(#1185) to Sector Sounding RAW (see 8.4.2.170a (RPS element)). During the Sounding RAW, non-AP STAs are prohibited to transmit but can elect to listen to the sector training for the entire RAW. This Sector Sounding RAW may be scheduled as periodic or non-periodic.

***Change the 1st paragraph of 4.3.12b.6 as follows (James):***

The partition of the coverage area of a BSS into sectors, each containing a subset of stations, is called sectorization. This partitioning is generally achieved by the AP transmitting or receiving through a set of antennas or a set of synthesized antenna beams to cover different sectors of the BSS. Sectorization is applicable to long range outdoor networks containing a large number of stations and with overlapping BSSs with the goal of reducing medium contention or interference by limiting the number of stations within a sector and/or allowing spatial sharing among OBSS APs or OBSS STAs. Two types of sectorization operation(#Ed), group sectorization and TXOP-based sectorization, are described in this specification.

***Change the 1st paragraph of 8.6.24.2 (Matt):***

The AID Switch Request frame is an Action frame of category S1G. A STA that is changing its device characteristic as defined in 8.4.2.170c (AID Request element) uses the frame to notify the frame’s recipient of the change and to request a Multicast ID from an AP.(#14/0257r1, Ed) The Action field of the AID Switch Request frame contains the information shown in Table 8-388b (AID Switch Request frame action field format).

***Change the 1st paragraph of 8.6.24.3 (Matt):***

The AID Switch Response frame is an Action frame of category S1G. It is sent by an AP in response to an AID Switch Request frame, or sent by an AP to a non-AP STA to instruct the STA to change its AID or wakeup interval and it is sent by an AP to assign a Multicast AID to a requesting STA.(#14/0257r1, Ed) The Action field of the AID Switch Response frame contains the information shown in Table 8-388c (AID Switch Response frame action field format).

***Change the two subclause headings below as follows (Matt):***

**8.6.26.2 Flow Suspend frame format**

**8.6.26.3 Flow Resume frame format**

***Change the 6th paragraph of 8.8.4.2 as follows (Matt):***

If the Next TWT Info(#Ed) Present field in the Frame Control field is equal to 1 and the Flow Control bit of the Frame Control field is equal to 0, then the Next TWT Info/Suspend Duration field contains a next TWT value for the intended recipient of the frame corresponding to the lowest six octets of the TSF time for the next TWT logically ANDed with the value 0xFFFFFFFFFFF8 and then added to the value of the TWT Identifier that corresponds to that Next TWT value.(#14/0040r1, 14/0396r3)

***Change the last paragraph of 9.45.2 as follows (Matt):***

Figure 9-33 (Example of SF exchange sequence) illustrates an example of SF exchange signaling. STA A initiates the speed frame exchange by setting the Response Indication to Long Response in the PS-Poll+SF frame and in the preamble of two PV0 PPDUs to allow STA B to transmit its BUs. At the end, STA B sends a PPDU with the Response Indication 3 (Normal Ack) and STA A will terminate the SF exchange by sending a PPDU with the Response Indication equal(#1185) to 0 (No response).(#14/0315r1, Ed)

***Change the rows below in 6.3.3.3.2 as follows (Zander):***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Page Slice(#Ed) | Page Slice element | As defined in 8.4.2.170b (Page Slice element) | The set of Page slices present in DTIM interval, if such ele­ment was present in the S1G Bea­con or Probe Response, else null. The support of a feature is described on Page slicing(see 9.46 (Page Slicing(#14/0090r3))) | Do not adopt |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S1G Capabilities | As defined in frame format | As defined in 8.4.2.170j (S1G Capabilities ele­ment) | The values from the S1G Capabilities element. The parameter is present if dot11S1GOptionImplemented is true and an S1G Capabilities element was present in the Probe Response or S1G Beacon frame from which the BSSDe­scription was determined, and not present otherwise. | Adopt |

***Change the 3rd paragraph of 9.43.1.1 as follows (Zander):***

An example of the basic operation of PRAW allocation is shown in Figure 9-31 (Example of PRAW operation). In this figure, PRAW is allocated at every Short Beacon interval, but the allocation of the PRAW is indicated at every DTIM(#1240) Beacon frame. STA1 is a TIM STA that is not included in the PRAW allocation and STA2 is a non-TIM STA for which the AP has scheduled TWT and is included in the PRAW allocation. When STA1 listens to the Beacon frame, it can identify the allowed user group, start time, duration, and the periodicity of the allocated PRAW. As STA1 is not included in the allowed user group of the PRAW, STA1 will not access the channel during allocated PRAW, which is indicated in the S1G Beacon frame that is transmitted every Short Beacon Interval. And, STA2 wakes up at its scheduled TWT which is within the PRAW, and send its uplink data if it has a data frame to send.

Additional ones:

***Note: In general if a word is not the name of a field or element or frame it should start with a lower case.***

***Change the following sentences in the pages and lines listed as follows:***

In P5L28:

* Mandatory support for detection and decode of SIG-A field of the S1G\_LONG preamble

In P5L42:

* Optional support for compressed beamforming feedback

In P5L56:

* NDP MAC frames and PV1 frames

**In P285L44:**

An S1G STA that is an S1G AP shall set the Channel Width subfield in the S1G Operation Information field of the S1G Operation element to indicate the BSS operating channel width as defined in Table 10-25b (S1G BSS operating channel width). Table 10-25b (S1G BSS operating channel width) is the only combination allowed in an S1G BSS operation. The Channel Width field in the S1G Operation element not listed in Table 10-22 shall not be declared by an S1G STA that is an S1G AP.(#14/0262r0)

***In P133L14:***

***Replace the Editor note:***

|  |
| --- |
| ***“Editor’s Note: Part of the instructions in #14/0359r1 removed description of B5 but there is no alternative description for that bit. The change seems unintentional and the TGah group should re-consider restoring the description.”*** |

***With the following (already present in D1.2):***

“B5 bits indicates the location of 1MHz primary

channel

-B5 is set to 0 to indicate a lower side of 2MHz

primary channel.

-B5 is set to 1 to indicate a upper side of 2MHz

primary channel.”

**8.8.5.4 Resource Allocation frame format**

**Please include the paragraphs prior to the paragraph in Page 163/ Line 38 (Draft 1.3) as follows:**

The subfields of the Frame Control field, except the Slot Assignment Mode and the Group Indicator subfields, are defined in 8.8.3.1 (Frame Control field).

* The Slot Assignment Mode subfield indicates which of the two frame formats for the Resource Allocation is broadcasted by the AP when the RAW Type subfield indicates a Generic RAW and the RAW Type Options subfield indicates RA frame. If the Slot Assignment Mode subfield is set to 0, the Resource Allocation frame format that is broadcasted is as shown in Figure 8-691 (Resource Allocation frame format for slot assignment mode 0). If the Slot Assignment Mode subfield is set to 1, the Resource Allocation frame format that is broadcasted is as shown in Figure 8-692 (Resource Allocation frame format for slot assignment mode 1).
* Group Indicator of length 1 bit indicates whether any subfield of MU group is included or no subfield of MU group exists in the Slot Assignment field if Slot Assignment mode field is equal to 0. Otherwise, it is reserved.(#14/0366r1)