IEEE P802.11
Wireless LANs

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| LB 205 Comment Resolution for Subclause 8.4.2.170k |
| Date: 2014-12-20 |
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Abstract

This submission proposes resolutions for comments in subclause 8.4.2.170k of TGah Draft 3.0 with the following CIDs:

* 5188, 5189, 5265

Revisions:

- Rev 0: Initial version of the document

- Rev 1: Incorporated some minor changes resulted from the feedback received during the PhC (hightlighted in green).

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.***

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| **CID** | **Commenter** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 5188 | Liwen Chu | 154.37 | 8.4.2.170k | STA Sectorized Beam-Capable and AP Sectorized Beam-Capable make S1G Capabilties element longer which is not necessary. What you can do is do define 2-bit Sectorized Beam-Capable subfield where AP and STA have different definition. | As in comment | Revised –Agree in principle with the commenter. Proposed resolution accounts for the suggested change and removes some redundancy of the capability signalling in 9.50.2 Sector Capabilities Exchange.TGah editor to make the changes shown in 11-14/1609r1 under all headings that include CID 5188. |
| 5189 | Liwen Chu | 154.37 | 8.4.2.170k | "usable channel indication" make the definition of "OBSS Mitigation Support" confusion. Also no other places in the draft use "usable channel indication" . | Dredefine "OBSS Mitigation Support" | Revised –Agree in principle with the commenter. Proposed resolution accounts for the suggested change.TGah editor to make the changes shown in 11-14/1609r1 under all headings that include CID 5188. |
| 5265 | Alfred Asterjadhi | 149.27 | 8.4.2.170k.2 | The normative behavior for several of this capability subfields is missing in D3.0 (e.g., Rx LDPC, Tx STBC, Rx STBC, Maximum A-MPDU Length Exponent, etc). | Make sure that all of the fields in the S1G Capabilities element have a corresponding normative behavior specified somewhere in clause >8. | Revised –Agree in principle with the comment. Checked that all capability bits have corresponding normative behaviror and when missing added it.TGah editor to make the changes shown in 11-14/1609r1 under all headings that include CID 5265. |

**Discussion:**

*Note 1: Could not find any normative text for Number of Sounding Dimensions subfield of the VHT Capabilities element. How was this signalled in VHT? AI: Once checked apply the change to S1G.*

*Note 2: Could not find any normative text for Rx LDPC subfield of the VHT Capabitlies element. Applied for S1G. No AIs.*

*Note 3: Supported Channel Width field is missing the “Set” which is used in the VHT Capabilities element. For consistency adding the “Set”.*

*Note 4: The normative behaviour for Maximum MPDU Lengh, Maximum A-MPDU Length Exponent, and Minimum MPDU Start Spacing subfields was added as part of the resolutions for CIDs 5295 and 5296 and are already present in TGah D3.1.*

**TGah Editor: *Remove “STA Sectorized-Beam Capable” subfield from the S1G Capabilities Info field and replace “AP Sectorized Beam-Capable” subfield with “Sectorized Beam-Capable” subfield in Figure 8-575a26(S1G Capabilities Info field) (#5188):***

**TGah Editor: *Change the table below as follows (#5188, 5189):***

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| * **Subfields of the S1G Capabilities Info field**
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| **Subfield** | **Definition** | **Encoding** |
| … |  |  |
|  |  |  |
| Sectorized Beam-Capable | TheSectorized Beam-Capable subfield indicates which type of sectorization operation is supported by the STA. | If sent by an AP:Set to 0 if sectorization operation is not supported,Set to 1 if only TXOP-based sectorization operation is supported,Set to 2 if only group sectorization operation is supported,Set to 3 if both group sectorization and TXOP-based sectorization operations are supported.If sent by a non-AP STA:Set to 0 if not supported,Set to 1 if supportedWhen equal to 1, a non-AP STA supports both group sectorization and TXOP-based sectorization operation. |
| OBSS Mitigation Support | The OBSS Mitigation Support subfield indicates whether the STA supports channel width reduction during a TXOP for OBSS mitigation. | Set to 1 to indicate thatthe STA supports channel width reduction during a TXOP for OBSS mitigation. Set to 0 otherwise. |
| … |  |  |

**9.50.2 Sector Capabilities Exchange**

**TGah Editor: *Change the paragraphs below as follows (#5188):***

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

If dot11S1GSectorImplemented is true, a non-AP STA shall set the Sectorized Beam-Capable field in the S1G Capabilities element it transmits to 1. The sectorized beam-capable non-AP STA shall support both group sectorization and TXOP-based sectorization operations.

If dot11S1GSectorImplemented is true, an AP shall set the Sectorized Beam-Capable field in the S1G Capabilities element it transmits to:

* 1 if the AP supports only TXOP-based sectorization
* 2 if the AP supports only group sectorization
* 3 if the AP supports both TXOP-based sectorization and group sectorization.

A STA with dot11S1GSectorImplemented equal to falseshall set the Sectorized Beam-Capable field in the S1G Capabilities element to 0.

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.

When the AP sets the Sectorized Beam-Capable field to 3 in the S1G Capabilities element it transmits, then group sectorization and TXOP-based sectorization may be optionally used at the same time if:

* The AP intends to apply TXOP-based sectorization during the omni-beacon interval or the sectorized beacon interval to STAs with the corresponding Sector ID.
* 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 a non-AP STA is not allowed to transmit in certain beacon intervals as described in 9.50.3 (Group sectorization operation).

**9.7.6.6 Channel Width selection for Control frames**

**TGah Editor: *Change the paragraphs below as follows (#5189, 5265):***

When both transmitting STA and receiving STA indicate OBSS mitigation support in the OBSS Mitigation Support subfield of the S1G Capabilities element, the receiving STA operating in a 2/4/8/16 MHz BSS that sends a (duplicated) NDP\_2M Ack or NDP\_2M BlockAck in response to a frame carried in an S1G PPDU may set the TXVECTOR parameter CH\_BANDWIDTH to indicate a channel width that is less than or equal to the channel width indicated by the RXVECTOR parameter CH\_BANDWIDTH of the frame eliciting the response.

**TGah Editor: *Insert “Set” after “Supported Channel Width” throughout the draft, unless the term “Set” is already present in the expression. (#5265):***

**9.16 LDPC operation**

**TGah Editor: *Change the paragraphs below as follows (#5265):***

An HT STA shall not transmit a frame with the TXVECTOR parameter FORMAT set to HT\_MF or HT\_GF and the TXVECTOR parameter FEC\_CODING set to LDPC\_CODING unless the RA of the frame corresponds to a STA for which the LDPC Coding Capability subfield of the HT Capabilities element received from that STA contained a value of 1 and dot11LDPCCodingOptionActivated is true.

An S1G STA shall not transmit a frame with the TXVECTOR parameter FEC\_CODING set to LDPC\_CODING unless the RA of the frame corresponds to a STA for which the Rx LDPC subfield of the S1G Capabilities element from that STA contained a value of 1 and dot11S1GLDPCCodingOptionActivated is true.

Further restrictions on TXVECTOR parameter values may apply due to rules found in 9.26 (Protection mechanisms) and 9.7 (Multirate support).

**9.17 STBC operation**

**TGah Editor: *Change the paragraphs below as follows (#5265):***

A STA that has not set the Tx STBC subfield to 1 in the HT Capabilities element shall not transmit HT PPDUs with a TXVECTOR parameter STBC set to a nonzero value. A STA that has not set the Tx STBC subfield to 1 in the VHT Capabilities element shall not transmit VHT SU PPDUs with a TXVECTOR parameter STBC set to a nonzero value. A STA that has not set the Tx STBC subfield to 1 in the S1G Capabilities element shall not transmit S1G SU PPDUs with TXVECTOR parameter STBC set to a nonzero value.

A STA shall not send an HT PPDU with the TXVECTOR parameter STBC set to a nonzero value to a recipient STA unless the recipient STA has indicated in the Rx STBC field of its HT Capabilities element that it supports the reception of PPDUs using STBC with a number of spatial streams equal to or greater than the number of spatial streams in the HT PPDU. A STA shall not send a VHT PPDU with the TXVECTOR parameter STBC set to a nonzero value to a recipient STA unless the recipient STA has indicated in the Rx STBC field of its VHT Capabilities element that it supports the reception of PPDUs using STBC with a number of spatial streams equal to or greater than the number of spatial streams in the VHT PPDU. A STA shall not send an S1G PPDU with the TXVECTOR parameter STBC set to a nonzero value to a recipient STA unless the recipient STA has indicated in the Rx STBC field of its S1G Capabilities element that it supports the reception of PPDUs using STBC with a number of spatial streams equal to or greater than the number of spatial streams in the S1G PPDU.

**9.24.8.2 HT-delayed block ack negotiation**

**TGah Editor: *Change the paragraphs below as follows (#5265):***

HT-delayed block ack is an optional feature. An HT STA declares support for HT-delayed block ack in the HT

Capabilities element. An S1G STA declares support for HT-delayed block ack in the S1G Capabilities element.

An HT STA shall not attempt to create a block ack agreement under HT-delayed block ack policy unless the recipient HT STA declares support for this feature. An S1G STA shall not attempt to create a block ack agreement under HT-delayed block ack policy unless the recipient S1G STA declares support for this feature.

**9.52 Multicast AID**

**TGah Editor: *Change the paragraphs below as follows (#5265):***

An S1G STA with dot11MulticastAIDActivated equal to true supports the implementation of multicast traffic using multicast AID, which follows the rules of the implementation of traffic using 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.

**9.45.2 Rescheduling of awake/doze cycle**

**TGah Editor: *Change the paragraphs below as follows (#5265):***

An S1G AP may set the wakeup timer (Duration field) as the duration to a TBTT in the responding control frame (either NDP Ack frame or NDP PS-Poll-Ack frame) and treat the non-TIM STA as a TIM STA starting from the TBTT if the bit corresponding to the non-TIM STA in the traffic indication virtual bitmap is equal to 1 and the STA has indicated support of temporary PS mode switch by setting the Temporary PS Mode Switch subfield to 1 in the S1G Capabilities element it transmitted to the AP. After the amount of time that is equal to the Duration field value in the responding control frame from the S1G AP, the non-TIM S1G STA shall wake up to receive the Beacon frame. Upon receiving the Beacon frame, the non-TIM STA infers from the TIM element indicating that there is BU for it that it is treated as a TIM STA and operates as a TIM STA from then on, setting dot11NonTIMModeActivated to false and switching to TIM mode (see 10.2.2.2 (Non-AP STA Power Management modes)). The S1G STA returns to the non-TIM STA operation mode by setting dot11NonTIMModeActivated to true if the S1G AP indicates that there is no more data buffered for the S1G STA and the S1G STA indicates to the S1G AP that there is no more data to transmit. The S1G AP treats the S1G STA as a non-TIM STA if the STA indicates that there is no more data to transmit and the S1G AP indicates that there is no more data buffered for the STA.