IEEE P802.11
Wireless LANs

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| 802.11 TGac WG LB188 proposed resolutions for subclause 9.7.6.6 Channel Width Selection for Control Frames |
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Abstract

This document proposes resolutions for LB188 CID 6279, 6280, 6839, 6466, 6468, 6469 in sub-clause 9.7.6.6 of draft spec D3.1 .

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**CID 6279**

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| **CID** | **Commenter** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 6279 | Brian Hart | 110/44 | 9.7.6.6. | This is a Note but the impact seems much more powerful than a note. Is it a note because there is other normative language to this effect elsewhere? Then reference that. Else, convert this note to normative languge. Ditto P111L14. | As in comment | Revised – Tgac editor to make changes of TGac draft 3.1 as shown in document 11-12-1075/r4. |

**CID 6280**

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| 6280 | Brian Hart | 111/5 | 9.7.6.6. | "I/G .. set to 0 .. I/G .. set to 1" - we've upgraded the language to (non) bandwidth signaling TA | Upgrade language here. Ditto P147L1 | Revised – Tgac editor to make changes of TGac draft 3.1 as shown in document 11-12-1075/r4  |

**CID 6466, 6468**

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| 6466 | Mark Rison | 110/32 | 9.7.6.6 | Only RTS and CTS are allowed in clause 8 to carry a signaling TA. However, 9.7.6.6 allows any control frame which elicits a control response to carry a signaling TA | Add text in subclause 8.3.1 to allow the following to contain a signaling TA (possibly within a Control Wrapper):- Block Ack Request- Block Ack, if in the context of HT-Delayed BA- CF-End, if sent by a non-AP STA- VHT NDP Announcement- Beamforming Report Poll | Revised – Tgac editor to make changes of TGac draft 3.1 as shown in document 11-12-1075/r4  |
| 6468 | Mark Rison | 110/32 | 9.7.6.6 | Clarify exactly which control frames may elicit a control response for the purposes of signaling TAs | Change to just state, in a way similar to 9.3.2.5a (except that DYN\_BANDWIDTH is not present in the TXVECTOR -- see another comment), that only the following are allowed to carry a signaling TA, in addition to RTS (per the rules described elsewhere):- Block Ack Request- Block Ack, if in the context of HT-Delayed BA- CF-End, if sent by a non-AP STA- VHT NDP Announcement- Beamforming Report Poll[Note that this does not include PS-Poll. Also note that a CF-End sent by an AP is not responded to. I haven't worried about CF-End+CF-Ack -- should I?] | Revised – Tgac editor to make changes of TGac draft 3.1 as shown in document 11-12-1075/r4 |

**CID 6469**

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| 6469 | Mark Rison | 110/37 | 9.7.6.6 | "a control frame that is not an RTS frame in a non-HT format" is ambiguous: "{a control frame that is not an RTS frame} in a non-HT format" or "a control frame that is not {an RTS frame in a non-HT format}"? Is an RTS sent in an HT format covered by the statement? | Change to "that is not an RTS frame and is not in a non-HT format" | Revised – Tgac editor to make changes of TGac draft 3.1 as shown in document 11-12-1075/r4 |

**CID 6839**

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| 6839 | KaiyingLv | 110/44 | 9.7.6.6 | the "signaling TA" is repaced with "bandwidth signaling TA" | change all the "signaling TA" to "bandwidth signaling TA" in the draft. | Revised – Tgac editor to make changes of TGac draft 3.1 as shown in document 11-12-1075/r4  |

**Discussion for CID 6279**

Page116L62: “Note—The BSSID(TA) field of a CF -End frame is treated as a TA field when set to a signaling TA.”

Page117L33:“Note—A CF-End Frame transmitted by an AP, SIFS duration after receiving a CF-End frame is considered a control response frame.”

There is no other normative language to this effect elsewhere. Agree to add normative texts.

**Discussion for CID 6280**

TGac has defined bandwidth signaling TA and non-bandwidth signaling TA, which is represented by the IEEE MAC individual address of the transmitting VHT STA but with the Individual/Group bit set to 1.

The language here needs updates.

If the modification is ok, then the following text should also be updated.

Page 152 line 46: “The RA field of the VHT Compressed Beamforming frame(s) of the VHT Compressed Beamforming report shall be set to the MAC address obtained from the TA field of the VHT NDP Announcement frame or the Beamforming Report Poll frame to which this VHT Compressed Beamforming report is a response with the Individual/Group bit in the RA field set to 0.”

**Discussion for CID 6466, 6468**

Bandwidth signaling TA has the following purposes:

1. Indication of signaling a CH\_BANDWIDTH\_IN\_NON\_HT value
2. Indication of the operation of the dynamic bandwidth protocol, signalled with DYN\_BANDWIDTH\_IN\_NON\_HT equal to Dynamic/Static.

RTS/CTS is the only frame exchange where sensitivity to NAV is required. All description of dynamic bandwidth operation is specific to the RTS/CTS exchange. Please see the discussion in IEEE802.11-12/1007r2.

For other control frames in a non-HT format or a non-HT duplicate format which elicit a control response or a VHT Compressed Beamforming frame to carry a bandwidth signaling TA , bandwidth signalling TA indicating of signalling a CH\_BANDWIDTH\_IN\_NON\_HT value may be carried. Subclause 9.7.6.6 “Channel Width selection for control frames” allows any control frame in a non-HT format or a non-HT duplicate format which elicits a control response or a VHT Compressed Beamforming frame to carry a bandwidth signaling TA. However there is no clarification in this subclause about exactly which control frames may elicit a control response for the purposes of bandwidth signaling TAs. Therefore, a note may be added to clarify it.

Only RTS and CTS are explicitly described in clause 8.3.1 to allow carrying a bandwidth signaling TA. However, VHT NDP Announcement frame and Beamforming Report Poll frame are also allowed to carry a bandwidth signaling TA based on subclause 9.7.6.6. Therefore, the TA fields of VHT NDP Announcement frames, Beamforming Report Poll frames, PS-Poll frames, Block Ack Request frames, Block Ack frames in the context of HT-delayed Block Ack, CF-End frames sent by a non-AP STA should be also defined to allow carrying a bandwidth signaling TA.

For CF-End+CF-Ack control frame, there is never a control response frame so there is no bandwidth signaling TA.

For PS-Poll control frame, the rules for channel bandwidth selection and setting the RA field of the data frame in response to the PS-Poll frame should be defined.

**Discussion for CID 6469**

Agree with the comment. This subclause is to describe the rules for the control frame that is neither an RTS frame nor a non-HT format frame.

**Discussion for CID 6839**

TGac has updated “signaling TA” to “bandwidth signaling TA”. Replace all the “signaling TA" by "bandwidth signaling TA" in the draft.

**Proposed changes**

***TGac editor:***

***Please change the text on page 116 line 50 of TGac Draft 3.1 as follows:***

If a VHT STA transmits to another VHT STA a control frame that is not an RTS frame or a CF-End frame, and that control frame elicits a control response frame or a VHT Compressed Beamforming frame:

* If the control frame is transmitted in a non-HT duplicate PPDU (channel width 40 MHz or wider), the transmitting VHT STA shall set the TA field to a bandwidth signaling TA.
* If the control frame is transmitted in a non-HT PPDU (channel width 20 MHz), the transmitting VHT STA may set the TA field to a bandwidth signaling TA.

If the TA is a bandwidth signalling TA, the transmitting VHT STA shall set the TXVECTOR parameters CH\_BANDWIDTH\_IN\_NON\_HT and CH\_BANDWIDTH to the same value.

NOTE1 - Such control frames are BlockAckReq frames, BlockAck frames in the context of HT-delayed Block Ack, PS-Poll frames, VHT NDP Announcement frames and Beamforming Report Poll frames.

NOTE2 – Control Wrapper frames follow the rules pertaining to the carried control frame (see 9.10 Control Wrapper operation).

Channel width selection rules for RTS frames are described in 9.3.2.5a (VHT RTS procedure).

A VHT STA that transmits a CF-End frame in a non-HT duplicate PPDU (channel width 40 MHz or wider) addressed to a VHT AP shall set the Individual/Group bit in the BSSID(TA) field to 1.

A VHT STA that transmits a CF -End frame in a non-HT PPDU (channel width 20 MHz) addressed to a VHT AP may set the Individual/Group bit in the BSSID(TA) field to 1.

If the Individual/Group bit in the BSSID(TA) field of the CF-End frame is set to 1, the transmitting VHT STA shall set the TXVECTOR parameters CH\_BANDWIDTH\_IN\_NON\_HT and CH\_BANDWIDTH to the same value.

***TGac editor:***

***Please change the text on page 117 line 22 of TGac Draft 3.1 as follows:***

The ~~Individual/Group field of the~~ RA field of a control frame that is not a CF-End frame and that is sent in response to a control frame with a bandwidth signaling TA shall be set to ~~0.~~ a non-bandwidth signaling TA obtained from the TA field of the immediate previous control frame. For the channel width selection rules for CTS sent in response to an RTS with a bandwidth signaling TA ~~the Individual/Group bit in the TA field equal to 1~~ see 9.3.2.6 (CTS and DMG CTS procedure).

The RA field of a data frame that is sent in immediate response to a PS-Poll frame with a bandwidth signaling TA shall be set to a non-bandwidth signaling TA obtained from the TA field of the PS-Poll frame.

***TGac editor:***

***Please change the text on page 135 line 32 of TGac Draft 3.1 as follows:***

If there is no non-HT duplicate frame exchange in a TXOP, the TXOP holder shall set the TXVECTOR parameter CH\_BANDWIDTH of a non-initial PPDU to be the same or narrower than the TXVECTOR parameter CH\_BANDWIDTH of the preceding PPDU that it has transmitted in the same TXOP.

If a TXOP is protected by a CTS-to-self(#6470) frame carried in a non-HT or non-HT duplicate PPDU, theTXOP holder shall set the TXVECTOR parameter CH\_BANDWIDTH of a PPDU to be the same or narrower than the TXVECTOR parameter CH\_BANDWIDTH of the CTS-to-self (#6470) in the same TXOP.

NOTE-The bandwidth of a PS-Poll frame does not constrain the bandwidth of an immediate data response to that PS-Poll frame.

***TGac editor:***

***Please change the text on page 152 line 46 of TGac Draft 3.1 as follows:***

The RA field of the VHT Compressed Beamforming frame(s) of the VHT Compressed Beamforming report shall be set to a non-bandwidth signaling TA obtained from the TA field of the VHT NDP Announcement frame or the Beamforming Report Poll frame to which this VHT Compressed Beamforming report is a response.

***TGac editor:***

***Please change the text on page 42 line65 toTGac Draft3.1 as follows:***

 ***8.3.1.19 VHT NDP Announcement frame format***

***……***

The TA field is set to the address of the STA transmitting the VHT NDP Announcement frame or a bandwidth signaling TA. The TA field is set to a bandwidth signaling TA in a VHT NDP Announcement frame transmitted by a VHT STA in a non-HT or non-HT duplicate format to indicate that the scrambling sequence carries the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT.

***TGac editor:***

***Please change the text on page 44 line22 toTGac Draft3.1 as follows:***

***8.3.1.20 Beamforming Report Poll frame format***

***……***

The TA field is set to the address of the STA transmitting the Beamforming Report Poll or a bandwidth signaling TA. The TA field is set to a bandwidth signaling TA in a Beamforming Report Poll frame transmitted by a VHT STA in a non-HT or non-HT duplicate format to indicate that the scrambling sequence carries the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT.

***TGac editor:***

***Please add the text on page 42 line38 toTGac Draft3.1 as follows:***

***8.3.1.6 CF-End frame format***

***Change the second paragraph as follows:***

The BSSID (TA) field is set to the address of the STA contained in the AP except that the Individual/Group bit of the BSSID (TA) field is set to 1 in a CF-End frame transmitted by a VHT STA to a VHT AP in a non-HT or non-HT duplicate format to indicate that the scrambling sequence carries the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT,

***TGac editor:***

***Please add the text on page 42 line38 toTGac Draft3.1 as follows:***

***8.3.1.8 BlockAckReq frame format***

***Change the fourth parapraph as follows:***

The TA field is set to the address of the STA transmitting the BlockAckReq frame or a bandwidth signaling TA. The TA field is set to a bandwidth signaling TA in a BlockAckReq frame transmitted by a VHT STA in a non-HT or non-HT duplicate format to indicate that the scrambling sequence carries the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT.

***TGac editor:***

***Please add the text on page 42 line38 toTGac Draft3.1 as follows:***

***8.3.1.9 BlockAck frame format***

***Change the fourth parapraph as follows:***

The TA field is set to the address of the STA transmitting the BlockAck frame or a bandwidth signaling TA in the context of HT-delayed Block Ack. The TA field is set to a bandwidth signaling TA in a BlockAck frame transmitted in the context of HT-delayed Block Ack by a VHT STA in a non-HT or non-HT duplicate format to indicate that the scrambling sequence carries the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT.

***8.3.1.5 PS-Poll frame format***

***Change the second parapraph as follows:***

The TA field is the address of the STA transmitting the frame or a bandwidth signaling TA. The TA field is set to a bandwidth signaling TA in a PS-Poll frame transmitted by a VHT STA in a non-HT or non-HT duplicate format to indicate that the scrambling sequence carries the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT.

***TGac editor:***

***Please replace “signaling TA”by “bandwidth signaling TA” on page 119 line 60 as follows:***

A VHT STA shall not set the TA field to a bandwidth signaling TA in a frame sent to a non-VHT STA.

***Please replace “signaling TA”by “bandwidth signaling TA” on page 134 line 65 as follows:***

The channel width obtained for a TXOP is the bandwidth of the initial frame of the TXOP, if the initial frame does not have a bandwidth signaling TA or does not require a response. The channel width obta ined for a TXOP is the bandwidth of the response to the initial frame if the initial frame has a bandwidth signaling TA and requires a response.

**References:**