IEEE P802.11
Wireless LANs

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| LB230 CR Preamble Punctuing  |
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Abstract

This submission proposes resolutions of comments received from TGax LB230.

(The proposed change is based on TGax Draft 2.2.)

* CIDs: 11155, 13230, 13312 (3 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 TGax Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGax Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGax Editor: Editing instructions preceded by “TGax Editor” are instructions to the TGax editor to modify existing material in the TGax draft. As a result of adopting the changes, the TGax editor will execute the instructions rather than copy them to the TGax Draft.***

| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| --- | --- | --- | --- | --- | --- |
| 13230 | 49.54 | 8.3.5.12 | There are two different ways for an HE PHY to issue PHY-CCA.indication. 1. With channel-list {primary}, {secondary}, {secondary40} or {secondary80}. 2. With channellist {per20MHzbitmap}. This will create problems in the behavioral text since we would need to describe the same behavior with two different and equivalent PHY-CCA.indications. | Remove per20MHzbitmap and enumerate the preamble puncturing modes not already covered by secondary, secondary40, etc. | Revised- Agree that current TGax D2.0 is not clearly describing how to use per20MHzbitmap in the MAC behaviour aspect. But, about the suggestion (remove per20MHzbitmap and enumerate all possible combination of the preamble puncturing) from the commenter, About 252 (2^8 – 4 (primary, secondary, secondary40, secondary80)) PHY-CCA.indication primitive channel-list elements have to be enumated.Please remind that per20MHzbitmap is not designed to support only the HE MU PPDU with preamble puncturing. per20MHzbitmap is also used for the BQR and the UL MU CS mechanism. Enumerating 254 PHY-CCA.indication primitive channel-list elements make another complicate problem. So, the proposed resolution is to keep per20MHzbitmap with some behavioral text modification for a further clarification. TGax editor makes changes as shown in the as specified in 11-18/0604r1. |
| 11155 | 195.54 | 10.22.2.5 | "per20MHzbitmap" - ugly. The "secondary40" doesn't feel the need to embed units. | Globally change to "per20bitmap" | Revised-Agree in principle.TGax editor makes changes as shown in the as specified in 11-18/0604r1. |
| 13312 | 502.07 | 28.3.19.6.5 | Issuing two diffent forms of PHY-CCA.indication based on device capability is a bad idea. Also, the use of per20MHzbitmap is poorly defined (only issued when primary channel is bury?). We would need behavioral text to handle equivalent but different signals. For example, the PHY-CCA.indication(BUSY, {secondary40}) and CCA.indication(BUSY, {per20MHzbitmap=00001100} are equivalent (if the LSB represents primary channel). | Remove per20MHzbitmap and enumerate the preamble puncturing modes not already covered by secondary, secondary40, etc. | Revised- Agree that current TGax D2.0 is not clearly describing how to use per20MHzbitmap in the MAC behaviour aspect. But, about the suggestion (remove per20MHzbitmap and enumerate all possible combination of the preamble puncturing) from the commenter, About 252 (2^8 – 4 (primary, secondary, secondary40, secondary80)) PHY-CCA.indication primitive channel-list elements have to be enumated.Please remind that per20MHzbitmap is not designed to support only the HE MU PPDU with preamble puncturing. per20MHzbitmap is also used for the BQR and the UL MU CS mechanism. Enumerating 254 PHY-CCA.indication primitive channel-list elements make another complicate problem. So, the proposed resolution is to keep per20MHzbitmap with some behavioral text modification for a further clarification. TGax editor makes changes as shown in the as specified in 11-18/0604r1. |

***TGax editor: replace “per20MHzbitmap” with “per20bitmap” throughout TGax draft. (#11155)***

***TGax editor: change 10.22.2.5 as the following (renumbing the subclause number based on 802.11REVmd 1.0) (#13230, 13312):***

**10.~~22~~23.2.5 EDCA channel access in a VHT, HE or TVHT BSS**

If the MAC receives a PHY-CCA.indication primitive with the channel-list parameter present, the channels considered idle are defined in Table 10-15 (Channels indicated idle by the channel-list parameter).

If dot11HECCAIndicationMode is present, the channel-list parameter in a PHY-CCA.indication primitive may contain per20bitmap. Otherwise, the channel-list parameter in a PHY-CCA.indication primitive does not contain per20bitmap.

When dot11HECCAIndicationMode is present, the channel-list parameter in a PHY-CCA.indication primitive contains the following:

* primary if dot11HECCAIndicationMode is equal to 0 (singleelement) or 1 (per20bitmap)
* secondary, secondary40, or secondary80 if dot11HECCAIndicationMode is equal to 0 (singleelement)
* per20bitmap if dot11HECCAIndicationMode is equal to 1 (per20bitmap) or 2 (per20bitmapsifs)

An HE STA shall set the dot11HECCAIndicationMode to 0 (singleelement) except as follows:

* The STA shall set the dot11HECCAIndicationMode to 1 (per20bitmap) to obtain the CCA status (see 28.3.19.6.5 (Per 20 MHz CCA sensitivity)) for each of the 20 MHz subchannels when the STA intends to transmit an HE MU PPDU with preamble puncturing.
* The STA shall set the dot11HECCAIndicationMode to 2 (per20bitmapsifs) to obtain the CCA status (see 28.3.19.6.5 (Per 20 MHz CCA sensitivity)) for each of the 20 MHz subchannels during the SIFS that follows the reception of a Trigger frame addressed to the STA and that has the CS Required subfield equal to 1 (see 27.5.3.5 (UL MU CS mechanism)).

***TGax editor: change 27.15.3 as the following (The following changes are not related with the specific CIDs but those changes are proposed to fix some unintended errors about the Ack Policy of the preamble punctured HE MU PPDU):***

**27.15.3 MCS, NSS, BW and DCM selection**

An HE STA that sends a Control frame in response to a frame carried in an HE SU PPDU or an HE ER SU PPDU or a HE MU PPDU that carries an MPDU with the Ack Policy equal to Normal Ack or Implicit Block Ack Request shall set the TXVECTOR parameter CH\_BANDWIDTH to indicate a channel width that is the same as the channel width indicated by the RXVECTOR parameter CH\_BANDWIDTH of the frame eliciting the response. When the most recent successfully received PPDU sent by the responding STA to the soliciting STA after association was an HE ER SU PPDU, the soliciting STA that sends an HE SU PPDU shall set the TXVECTOR parameter CH\_BANDWIDTH to CBW20.

NOTE- A preamble puncuted HE MU PPDU can’t carry an MPDU with the Ack Policy equal to Normal Ack or Implicit Block Ack Request when the solicited PPDU containing a control response occupies one ore more punctured 20 MHz channels of the preamble puncuted HE MU PPDU (see 27.4.4.3 (Responding to an HE MU PPDU with an SU PPDU)).

***TGax editor: insert the following paragraph at the end of 27.15.3:***

**27.4.4.3 Responding to an HE MU PPDU with an SU PPDU**

An AP that send an HE MU PPDU shall not set the Ack Policy to Normal Ack or Implicit Block Ack Request for each of the MPDUs carried in the HE MU PPDU when the solicited PPDU containing a control response would occupy one or more 20 MHz channels where pre-HE modulated fields of the soliciting PPDU are not located.