IEEE P802.11
Wireless LANs

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| CR for CID 16643 |
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Abstract

This document provides CR for CID: 16643

1. **Introduction**

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. The introduction and the explanation of the proposed changes are 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.***

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| **CID** | **Commenter** | **Clause Number(C)** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 16643 | Robert Stacey | 8.3.5.12.3 | 62.55 | The use of the per20bitmap element in  PHY-CCA.indication() is incompatible with existing MAC text. For example, 802.11-2016 P1105 below Equation (9-3), P1394 second paragraph in 10.2.3.2.4, P1434L2, P1756 paragraph 4 of 11.16.9. One of three fixes is necessary; all require a lot of work. Option 1: all existing references to PHY-CCA.indication(BUSY, channel-list) must describe behavior when channel-list is per20bitmap in addition to existing behavior where channel-list is primary, secondary, etc. Option 2: Define a single unified way of signaling channel busy -- a single set of channel-list options that handles busy on each 20 MHz subchannel independently and update existing MAC text to use this new mechanism. Option 3: Add another parameter, for example PHY-CCA.indication(IDLE|BUSY, channel-list, per20bitmap), and apply the new parameter only where needed, e.g. in the BQR behavior. | Fix per comment | Revised –The modification of P1105 below Equation (9-3) as shown in 11-18/1958r4No change for 10.22.3.2.4, because HCCA is not used by HE STAs.No change for P1434L2, 10.24.10.3 GCR block ack BlockAckReq and BlockAck frame exchanges. Because the GCR BAR and BA are only for SU transmission, it doesn’t related to per20bitmap.No change for 11.16.9 STA CCA sensing in a 20/40 MHz BSS. Because in 11ax spec, only following sentence is mentioined ”An HE STA shall follow the rules defined in 11.16 (20/40 MHz BSS operation) for channel selection, determining scanning requirements, channel switching, NAV assertion when operating in 2.4 GHz unless explicitly stated otherwise in Clause 27” it doesn’t include STA CCA sensing.Besides the paragraphs mentioned in this comment, PHY-CCA.indication(BUSY,{per20bitmap}) is missed in the 4th paragraph of 28.3.17.6.3 CCA sensitivity for the primary 20 MHz channel. It is added as shown in 11-18/1958r4 |

1. **Proposed changes**

***11ax Editor: Modify clause 9.4.2.160 Extended BSS Load element as below***

9.4.2.160 Extended BSS Load element

Change the 7th paragraph as follows:

The Observable Secondary 20 MHz Utilization, Observable Secondary 40 MHz Utilization, and Observable Secondary 80 MHz Utilization fields are defined using Equation (9-3).

$$Observable Secondary W1 Utilization$$

$= \left⌊\frac{T\_{busy, W1}}{dot11ChannelUtilizationBeaconIntervals×dot11BeaconPeriod×1024}×255\right⌋$ (9-3)

where

 dot11ChannelUtilizationBeaconIntervals represents the number of consecutive beacon intervals during

which the secondary channel busy time is measured.

 $T\_{busy, W1}$ is computed as the sum of the times from PHY-CCA.indication(BUSY,{W2}) to the next issue

of a PHY-CCA.indication primitive and that overlap the measurement interval, for W1 = 20,

40, or 80. For a VHT AP, for W1 = 20, 40, 80, W2 equals secondary, secondary40, or secondary80, respectively. For an HE AP, for W1= 20, W2 equals secondary or per20bitmap in which the bit corresponding to the primary 20 MHz channel is set to 0 and the bit corresponding to the secondary 20 MHz channel is set to 1; for W1= 40, W2 equals secondary40 or per20bitmap in which the bits corresponding to the primary 20 MHz and secondary 20 MHz channels are set to 0, and at least one bit corresponding to any 20MHz subchannel in the secondary 40 MHz channel is set to 1; for W1 = 80, W2 equals secondary80 or per20bitmap in which the bits corresponding to the primary 20 MHz, secondary 20 MHz and secondary 40 MHz channels are set to 0, and at least one bit corresponding to any 20 MHz subchannel in the secondary 80 MHz channel is set to 1.

*11ax Editor: Modify clause 28.3.17.6.3 CCA sensitivity for the primary 20 MHz channel as below*

28.3.17.6.3 CCA sensitivity for the primary 20 MHz channel

Change the 4th paragraph as follows:

If the dot11HECCAIndicationMode is equal to either 0 (singleelement) or 1 (per20bitmap), the receiver shall issue a PHY-CCA.indication(BUSY, {primary}) primitive for any signal that exceeds a threshold equal to 20 dB above the minimum modulation and coding rate sensitivity (-82 + 20 = -62 dBm) in the primary 20 MHz channel within a period of aCCATime after the signal arrives at the receiver's antenna(s); then the receiver shall not issue a PHY-CCA.indication(BUSY,{secondary}), PHY-CCA.indication(BUSY,{secondary40}), PHY-CCA.indication(BUSY,{secondary80}), PHY-CCA.indication(BUSY,{per20bitmap}), or PHYCCA.indication(IDLE) primitive while the threshold continues to be exceeded.