IEEE P802.11  
Wireless LANs

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| Proposed Comment Resolutions for 802.11ah D0.1 CC9 | | | | |
| Date: 2013-07-16 | | | | |
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Abstract

These domument proposes resolutions for following comments of P802.11ah D0.1 Comment Correction (CC9) [1].

PHY CID: 555, 570, 576

[Note]

Proposed changes for following comments are not provided in this document.

CID: 500, 501, 526, 547, 578

| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| --- | --- | --- | --- | --- |
| 555 | 24 | 7.3.5.11 | The subclause 7.3.5.11 PHY-CCA.indication needs to be amended to support S1G. | Add modification of subclause 7.3.5.11.  Details are TBD. |
| 576 | 24 | 7.3.5.11.2 | The semantics of PHY-CCA.indication shall be defined for S1G STA. | 1) Modify the last sentence of the fourth paragraph of 7.3.5.11.2 as follows:  ---  The channel-list parameter in a PHY-CCA.indication primitive generated by an HT STA, a VHT STA, a TVHT STA and an S1G STA contains at most a single element. Table 7-5 defines the members of this set.  2) Modify the Table 7-5 to add support of an S1G STA.  See 11/13-0668r0 for proposed changes. |

The subclause 7.3.5.11 does not exist in IEEE P802.11ah D0.1, and is amended by IEEE P802.11ac [3] and IEEE P802.11af [4] to add support of multiple channel widths. Even though the S1G PHY is based on the VHT PHY, it is necessary to add support of 1MHz channel.

Subclause 10.43a of IEEE P802.11ah D0.1 specifies as follows;

|  |
| --- |
| When establishing a 2/4/8/16MHz BSS, the AP determines and announces the location of 1MHz primary channel located at either upper or lower side of the 2MHz primary channel. |

The proposed comment resolution of CID 863 [6] inserts new subclause 9.19.2.8a (EDCA channel access in an S1G BSS). According to the proposed 9.19.2.8a, an S1G STA shall not transmits 1MHz PPDU if the S1G STA invokes a backoff procedure at the primary 2MHz channel for >= 2MHz PPDU transmission. This means >= 2MHz PPDU transmission procedure is same as the VHT STA, so, the ‘primary’ channel-list element shall be mapped to 2MHz primary channel.

To support 1MHz PPDU transmission, a new element ‘secondary1’ is necessary to show 1MHz primary channel is idle, but 2MHz primary channel is busy.

In addition to modify Table 7-5 of IEEE P802.11af, modified version of Figure 7-1 of IEEE P802.11ac is needed. Also, Table 9-19a in subclause 9.19.2.8a “EDCA channel access in an S1G BSS” needs to be modified.

Proposed Resolution:

Revised:

*(Instruction to TGah Editor) Insert new subclause 7.3.5.11.2 as follows;*

### 7.3.5.11.2 Semantics of the service primitive

*Change the fourth paragraph as follows:*

When STATE is IDLE or when, for the type of PHY in operation, CCA is determined by a single channel, the channel-list parameter is absent. Otherwise, it carries a set indicating which channels are busy. The channel-list parameter in a PHYCCA.indication primitive generated by a VHT STA, a TVHT STA, and an S1G STA contains at most a single element. Table 7-5 defines the members of this set.

*Change the Table 7-5 as follows*

**Table 7-5 Channel-list parameter elements**

|  |  |
| --- | --- |
| **Channel-list elements** | **Meaning** |
| primary | For an HT STA that is not a VHT STA, indicates that the primary 20 MHz channel is busy.  For a VHT STA, indicates that the primary 20 MHz channel is busy according to the rules specified in 22.3.19.5.3 (CCA sensitivity for signals occupying the primary 20 MHz channel).  For a TVHT STA, indicates that the primary channel is busy according to the rules specified in 23.3.19.5.3 (CCA sensitivity for signals occupying the primary channel).  For an S1G STA, indicates that the primary 2MHz channel is busy according to the rules specified in 24.3.18.5.3 (CCA sensitivity for signals occupying the primary 2MHz channel). |
| secondary | For an HT STA that is not a VHT STA, indicates that the secondary channel is busy.  For a VHT STA, indicates that the secondary 20 MHz channel is busy according to the rules specified in 22.3.19.5.4 (CCA sensitivity for signals not occupying the primary 20 MHz channel).  For a TVHT STA, indicates that the secondary channel is busy according to the rules specified in 23.3.19.5.4 (CCA sensitivity for signals not occupying the primary channel).  For an S1G STA, indicates that the secondary 2MHz channel is busy according to the rules specified in 24.3.18.5.3 (CCA sensitivity for signals occupying the primary 2MHz channel). |
| secondary40 | For a VHT STA, i~~I~~ndicates that the secondary 40 MHz channel is busy according to the rules specified in 22.3.19.5.4 (CCA sensitivity for signals not occupying the primary 20 MHz channel).  For a TVHT STA, indicates that the secondaryTVHT\_2W channel is busy according to the rules specified in 23.3.19.5.4 (CCA sensitivity for signals not occupying the primary channel).  For an S1G STA, indicates that the secondary 4MHz channel is busy according to the rules specified in 24.3.18.5.4 (CCA sensitivity for signals not occupying the primary 2MHz channel). |
| secondary80 | For a VHT STA, i~~I~~ndicates that the secondary 80 MHz channel is busy according to the rules specified in 22.3.19.5.4 (CCA sensitivity for signals not occupying the primary 20 MHz channel).  For an S1G STA, indicates that the secondary 8MHz channel is busy according to the rules specified in 24.3.18.5.4 (CCA sensitivity for signals not occupying the primary 2MHz channel). |

*Insert the following row at the end of Table 7-5:*

**Table 7-5 Channel-list parameter elements**

|  |  |
| --- | --- |
| **Channel-list elements** | **Meaning** |
| secondary1 | For an S1G STA, indicates that the secondary 1MHz channel is busy according to the rules specified in 24.3.18.5.4 (CCA sensitivity for signals not occupying the primary 2MHz channel). |

*Insert the following paragraph and Figure 7-1c at the end of the 7.3.5.11.2:*

For a S1G STA, the relationship of the channel-list parameter elements to the 1MHz, 4 MHz, 8 MHz and 16 MHz BSS operating channel is illustrated by example in Figure 7-1c.

2 MHz

4 MHz

8 MHz

16 MHz

secondary40

primary

secondary80

secondary1

secondary

**Figure 7-1c -- The channel-list parameter elements to the 1MHz, 4 MHz, 8 MHz and 16 MHz channel width.**

### 9.19.2.8a EDCA channel access in an S1G BSS

*(Instruction to TGah Editor) Change Table-9-19a as follows;*

**Table 9-19a -- Channels indicated idle by the channel-list parameter**

|  |  |
| --- | --- |
| **PHY-CCA.indication**  **channel-list element** | **Idle channels** |
| primary | None |
| secondary1 | Primary 1MHz channel |
| secondary | Primary 2MHz channel |
| secondary40 | Primary 2MHz channel and secondary 2MHz channel |
| secondary80 | Primary 2MHz channel, secondary 2MHz channel and secondary 4MHz channel. |

| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| --- | --- | --- | --- | --- |
| 570 |  | T.2 | Annex T.2 needs to be modified to support S1G STA. | Add following new modification to T.2  ----  Change bullet l) in the 5th paragraph as follows:  l) The Time Difference of Departure accuracy test is passed if both of the following conditions are met:  1) The RMS value of e is less than aTxPHYTxStartRMS when transmitting a VHT PPDU, a TVHT PPDU and an S1G PPDU, or aTxPmdTxStartRMS otherwise.  2) aTxPHYTxStartRMS when transmitting a VHT PPDU, a TVHT PPDU and an S1G PPDU or aTxPmdTxStartRMS otherwise is less than TIME\_OF\_DEPARTURE\_ACCURACY\_TEST\_THRESH, where the units of e, aTxPHYTxStartRMS when transmitting a  VHT PPDU, a TVHT PPDU and an S1G PPDU or aTxPmdTxStartRMS otherwise, and TIME\_OF\_DEPARTURE\_ACCURACY\_TEST\_THRESH are properly accounted for.  ---  Change the associated note of bullet l) in the 5th paragraph as follows:  Replace the phrase "aTxPmdTxStartRFDelay when transmitting a non-VHT PPDU or aTxPHYTxStartRFDelay when transmitting a VHT PPDU"  by  "aTxPHYTxStartRFDelay when transmitting a VHT PPDU, a TVHT PPDU and an S1G PPDU or aTxPmdTxStartRFDelay otherwise" |

As the commenter pointed, the subclause T.2 shall be modified. Though, a future revision of IEEE P802.11ah will modify the subclause T.2, it is better to delay to add T.2 after 802.11af has been stabilized.

Proposed Resolution:

Rejected:

**References:**

[1] IEEE 802.11-13/0701r4 “TGah CC9 comments on D0.1”

[2] IEEE P802.11-REVmc/D1.5

[3] IEEE P802.11ac/D5.1

[4] IEEE P802.11af//D5.0

[5] IEEE 802.11-13/0779r0 “CC9 EDCA Channel Access Comment Resolution”