IEEE P802.11 Wireless LANs

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| Proposed TGai Comment Resolution for Segment-1 Center Frequency indication in 80+80 Channel Bandwidth |
| Date:2013-12-27 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Lei Wang | InterDigital Communications | 781 Third Ave., King of Prussia, PA 19406 | 1 858 205 7286 | leiw@billeigean.com |
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Abstract

This submission proposes a comment resolution to the TGai comment, CID 2130, in the comment database of the TGai Working Group Technical Letter Ballot 198 on 802.11ai Draft 1.0.

# Introduction

As a response to IEEE 802.11 Working Group Technical Letter Ballot 198 for 802.11ai Draft 1.0[Ref-2], The comment, CID 2130, was submitted, as shown below.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Clause Number(C)** | **Page(C)** | **Line(C)** | **Type of Comment** | **Comment** | **Proposed Change** |
| 2130 | 8.5.8.35 | 65 | 1 | T | Regarding FD Capability, in the 20/40/80MHz bandwidth operation cases, the primary channel and the bandwidth would uniquely define the operating channel. However, in the case of 80+80 MHz operation, the receiving STAs would need to know the center frequency of the secondary 80 MHz (and the Primary channel field specifies the primary 80 MHz channel). For instance, the AP with 80+80 MHz operational bandwidth might be sending FD frame in a non-HT duplicate format over a bandwidth of 80 MHz (primary 80 MHz only). | Add a "channel center frequency segment 1" similar to Fig in 802.11ac D5.0. Or something that uniquely specifies the secondary 80MHz. |

This contribution proposes a resolution to address the comment above.

# Conventions

In this contribution, the proposed 802.11ai Specification Document text will be presented as changes to the current TGai draft specification, 11ai/D1.1[Ref-3]. The following format conventions are used:

1. The newly added text is marked as blue underline text;
2. The deleted text is marked as ~~red strikethrough text~~;
3. The unchanged text stays in black text;
4. The editorial instruction is marked as *italic text highlighted by Yellow*; and
5. The corresponding comments are included by square bracketed green text like [CID nnnn], where nnnn is the CID number as given in the TGai WGLB comment database, 11-13-1076-15-00ai-tgai-lb-198-comments-for-d1-0.

# Discussion

The commenter raised a valid issue for transmitting FD frame as non-HT duplicate PPDUs at 11ac 80+80 channel bandwidth, where the center frequency of Segment 1 needs to be signalled to the receiving STAs.

The proposed resolution includes:

1. Introduce an optional field in FD frame, named as Channel Center frequency segment 1, which should be present if the FD frame is transmitted as non-HT duplicate PPDUs at 80+80 channel bandwidth;
2. Add a presence indicator in FD control field to indicate the presence of the field of Channel center frequency segment 1;
3. Add a sentence in section 10.44.2, specifying the use of Channel center frequency segment 1.

The detailed text changes are provided in Section 4 of this document.

# Proposed Changes to 802.11ai/D1.1 Specification Text

*Instructions to the editor: insert a new row, as shown below, in Table 8-221f right after the “Primary Channel” row and change the Order numbers of all the followed rows accordingly.*

**Table 8-221f—FILS Discovery frame format**

|  |  |  |
| --- | --- | --- |
| **Order** | **Information** | **Notes** |
| .. | ……. | ……… |
| 9 | Primary Channel | The 1-octet Primary Channel field is present and set to the channel number of the primary channel if the FD frame is transmitted as a non-HT duplicate PPDUs; otherwise the field is not present. The presence of the field is indicated by a 1-bit Primary Channel Presence Indicator in the FD Frame Control field. |
| 10 | Channel Center Frequency Segment 1 | The 1-octet Channel Center Frequency Segment 1 (CCFS-1) field is present and set to the channel center frequency of the frequency segment 1 for an 80+80 MHz VHT BSS, if the FD frame is transmitted as a non-HT duplicate PPDUs at an 80+80 MHz channel bandwidth; otherwise the field is not present. The presence of the field is indicated by a 1-bit Channel Center Frequency Segment 1 Presence Indicator in the FD Frame Control field. |
| ~~10~~ 11 | RSNE | The RSNE, as specified in 8.4.2.27, is optionally present in FD frame generated by STAs that have dot11RSNAActivated equal to true. |
| ~~11~~ 12 | Reduced Neighbor Re~~;~~port | The Reduced Neighbor Report element, as specified in 8.4.2.176, is optionally present. |
| ~~12~~ 13 | FILS Indication element | The FILS Indication element, as specified in 8.4.2.185 (FILS Indication element), is optionally present. |
| Last | Vendor-specific | One or more, optionally present. |

*Instructions to the editor: in Figure 8-502I, change the Reserved bit between “ANO Presence indicator” and “Primary Channel Presence Indicator”, to “Channel Center Frequency Segment 1 (CCFS-1) Presence Indicator”, as shown below.*



**Figure 8-502l—FD Frame Control field format**

*Instructions to the editor: insert the following paragraph in line 48 page 65 in TGai/D1.1.*

The CCFS-1 presence indicator is 1 bit in length. If it is set to 1, it indicates the 1-octet Channel Center Frequency Segment 1 field is present in the FD frame; otherwise, it is not present.

*Instructions to the editor: append the following text at the end of the paragraph in line 65 page 90 in TGai/D1.1.*

If an FD frame is transmitted as non-HT duplicate PPDUs at an 80+80 MHz channel bandwidth, the Channel Center Frequency Segment 1 (CCFS-1) field is present in the FD frame and is set to the channel center frequency of the frequency segment 1 for an 80+80 MHz VHT operating channel.

# References

1. IEEE Std 802.11mc/D1.5
2. IEEE Std 802.11ai/D1.0
3. IEEE Std 802.11ai/D1.1
4. 11-13-1076-15-00ai-tgai-lb-198-comments-for-d1-0