IEEE P802.11
Wireless LANs

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| Proposed changes to P802.11ah D4.0 regarding the S1G Operation element |
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Abstract

This submission proposes resolutions to following CIDs of P802.11ah D4.0 LB207 regarding to the S1G Operation element.

* CID: 6069, 6070, 6071, and 6072.

R0: Initial

R1: Delete CID 6068.

## 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 TGah Draft. This introduction is not part of the adopted material.

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

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

## Proposed Changes

| **CID** | **Clause** | **Page** | **Line** | **Comment** | **Proposed Change** | **Resolution** |
| --- | --- | --- | --- | --- | --- | --- |
| 6069 | 8.4.2.209 | 180 | 29 | The S1G Operation Information is specified as field in Figure 8-575a52 and as subfield in Table 8-258a16. | Change the title of Table 8-258a16 to "S1G Operation Information field".- P132L44- P180L29 and L33- P181L1- P365L48 and L50- P366L33 | Accept. |
| 6070 | 8.4.2.209 | 180 | 24 | In 8.4.1.36 (Operating Class) of the P802.11mc D4.0, size of Operating Class field is 1 octet. | Change the size of the Operating Class subfield of Figure 8-575a52 to 1 octet, and reduce the size of the S1G Operation Information field by 1 octet. | Revise.TGah editor to make the changes shown in 11-15/0252r0 under all headings that include CID 6070. |
| 6071 | 8.4.2.209 | 180 | 20 | Both a Channel Center Frequency subfield and a Primary Channel Number subfield are necessary to specify the position of the primary channel in the S1G non-SST BSS channels.For example, a VHT STA gets the primary channel information from the HT Operation element, and has the Channel Center Frequency Segment 0/1 subfields in the VHT Operation element (See 8.4.2.158 of P802.11mc D4.0). | Add the Channel Center Frequency subfield to the S1G Operation Information field as proposed in 11-15/252. | Revise.TGah editor to make the changes shown in 11-15/0252r0 under all headings that include CID 6071. |
| 6072 | 8.4.2.160 | 132 | 43 | As specified in 10.48.3, the primary channel after the switch is announced in the New Channel Number field in the Extended Channel Switch Announcement element or Extended Channel Switch Announcement frame. The New Channel Center Frequency Segment 0 subfield of the Wide Bandwidth Channel Switch element shall indicate the Channel Center Frequency after the switch. | Replace "Primary Channel Number" with "Channel Center Frequency" in the last paragraph. See 11-15/252 also. | Revise.TGah editor to make the changes shown in 11-15/0252r0 under all headings that include CID 6072. |

### Discussion

In P802.11mc D4.0, the length of Operating Class field is one octet as specified in 8.4.1.36 (Operating Class) and 8.4.2.53 (Supported Operating Classes element). Also, ANA database (11-11/270r27) specifies the maximum value of Operating Class as 255. Hence, the length of the Operation Class subfield of the S1G Operation Information field should be one (1) to reduce size of element.

The subclause 10.48.1 (Basic S1G BSS functionality) specifies the channelization as follows:

An S1G STA shall determine the channelization based on the Channel Width and Primary Channel Number subfields of the S1G Operation Information field (see 24.3.13 (Channelization)).

The subclause 24.3.13 (Channelization) specifies the channel center frequency as follows:

*Channel center frequency = Channel starting frequency + 0.5[MHz] × ChannelCenterFrequencyIndex*

where Channel center frequency, Channel starting frequency and ChannelCenterFrequencyIndex are given by the operating class (Annex E). Channel spacing in Annex E denotes the corresponding bandwidth for S1G operation.

To calcurate the channel center frequency, the value of ChannelCenterFrequencyIndex is necessary. However, the current S1G Operation element does not contain the corresponding subfield. Also, it is necessary to specify the value of primacy channel center frequency in the subclause 24.3.13 as shown in the the following figure.

1. 4 MHz operating channel with 1 MHz primary channel

Primary channel center frequency

Channel center frequency

primary1

Secondary2

Primary channel center frequency

Channel center frequency

primary2

Secondary2

1. 8 MHz operating channel with 2 MHz primary channel

Secondary4

primary1

The simlar discussion applies to the Wide Bandwidth Channel Switch element. The subclause 10.48.3 (Channel Switching methods for an S1G BSS) specifies that the New Channel Number field in the Extended Channel Switch Announcement element or Extended Channel Switch Announcement frame identifies the primary channel after the switch. To set channel center frequency, the Wide Bandwidth Channel Switch element shall indicate the value of ChannelCenterFrequencyIndex after switch.

### Suggested Remedy (CID 6070, 6071 and 6072)

### 8.4.2.160 Wide Bandwidth Channel Switch element

*TGah Editor: replace "Primary Channel Number" with "Channel Center Frequency" in the last paragraph of 8.4.2.160 as shown in red text bellow:*

If the value of the New Operating Class field in the frame that contains this element does not indicate an S1G band, ~~T~~the subfields New Channel Width, New Channel Center Frequency Segment 0 and New Channel Center Frequency Segment 1 have the same definition, respectively, as Channel Width, Channel Center Frequency Segment 0 and Channel Center Frequency Segment 1 in the VHT Operation Information field, described in Table 8-252 (VHT Operation Information subfields). Otherwise, the subfields New Channel Width, and New Channel Center Frequency Segment 0 have the same definition, respectively, as the Channel Width, and the ~~Primary Channel Number~~Channel Center Frequency in the S1G Operation Information field, described in Table 8-258a16 (S1G Operation Information subfields). The New Channel Center Frequency Segment 1 subfield is reserved.

### 8.4.2.209 S1G Operation element

*TGah Editor: replace Figure 8-575a52 with following figure:*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Channel Width | Operating Class | Primary Channel Number | Channel Center Frequency |
| Octets: | 1 | 1 | 1 | 1 |

**Figure 8-575a52 - S1G Operation Information field**

*TGah Editor: Insert a following row to Table 8-258a16, excluding the heading row:*

|  |  |  |
| --- | --- | --- |
| Fields | Definition | Encoding |
| … |  |  |
| Channel Center Frequency | Defines the channel center frequency. | Indicates the channel index of the BSS operating channel (see 24.3.13 (Channelization)) |

### 10.48.1 Basic S1G BSS functionality

*TGah Editor: Change the fifth paragraph of 10.48.1 as follows:*

An S1G STA shall determine the channelization based on the Channel Width ~~and~~, Primary Channel Number, and Channel Center Frequency subfields of the S1G Operation Information field (see 24.3.13 (Channelization)).

### 24.3.13 Channelization

*TGah Editor: Insert a following text at the end of 24.3.13:*

The center frequency of the primary 1 MHz or primary 2 MHz channel is defined as:

*Primary channel center frequency = Channel starting frequency + 0.5[MHz] × Primary Channel Number*

**References:**

[1] 11-11/270r27 “ANA database”

[2] 11-13/1207r1 “CID 205 BSSID Color Bits”

[3] 11-15/0261r2 “TGah LB207 comments on D4.0”