IEEE P802.11  
Wireless LANs

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| **LB271 CR for 9.3.1.22.4** | | | | |
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| **Author(s):** | | | | |
| **Name** | **Affiliation** | **Address** | **Phone** | **Email** |
| Yanjun Sun | Qualcomm |  |  |  |
| Alfred Asterjadhi |  |  |  |  |
| Steve Shellhammer |  |  |  |  |
| George Cherian |  |  |  |  |
| Abhishek Patil |  |  |  |  |
| Youhan Kim |  |  |  |  |
| Bin Tian |  |  |  |  |
| Duncan Ho |  |  |  |  |
| Gaurang Naik |  |  |  |  |
| Abdel Karim Ajami |  |  |  |  |
|  |  |  |  |  |

Abstract

This submission proposes resolutions for following CIDs received for TGbe LB271:

* 17446, 17447, 17448, 17449, 17450.

**Revisions:**

* Rev 0: Initial version of the document.

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 TGbe Draft. This introduction is not part of the adopted material.

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

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

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| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 17446 | Brian Hart | 9.3.1.22.4 | 181.50 | This NOTE is not intended to be normative but covers things that need to be dealt with normatively | Add a xref to the clause 9/26 language where these requirements are is actually defined | Revised –  Agree in principle with the comment. Added reference to 9.3.1.22.1.  **TGbe editor: please implement changes as shown in 11-23/518r0 tagged 17446.** |
| 17447 | Brian Hart | 9.3.1.22.4 | 182.02 | Missing article | "indicates \*a\* 20 MHz, 40 MHz or 80 MHz PPDU". Or for consistency with the next sentence, no article but no "PPDU" either. | Revised –  Agree in principle. Going with the second option.  **TGbe editor: please implement changes as shown in 11-23/518r0 tagged 17447.** |
| 17448 | Brian Hart | 9.3.1.22.4 | 182.06 | Lack of clarity "and set to 1" | "and is set to" | Accepted |
| 17449 | Brian Hart | 9.3.1.22.4 | 182.06 | Normally we write "Blo-Bhi" so B7-B1 reads weirdly. This may date back to when RU Alloc was a binary expression, but those days are long gone. | Change to "B1-B7" 3x on this page (though 1 is auto-generated). Ditto P185, P186, P196, P197 (i.e., search/replace everywhere) | Rejected –  The comment fails to identify a technical issue. Please note that this convention is used extensively across amendments. E.g., please refer to Table 9-38, 9-40 of REVme, and so on. |
| 17450 | Brian Hart | 9.3.1.22.4 | 183.48 | All other "User Info" fields are changed ot "HE variant User Info" but not here | Presumably change to "HE variant User Info". Ditto P183L64, P183L65, P184L29, P184L41, P184L54, P185L27 | Revised –  Agree in principle. Proposed resolution accounts for the suggested changes.  **TGbe editor: please implement changes as shown in 11-23/518r0 tagged 17450.** |

**Discussion: *None.***

* + - * 1. **HE variant User Info field**

***Move the 25th–46th paragraphs of subclause 9.3.1.22.1 as this new subclause and change as follows (including adding a NOTE after*** [***Table 9-51 (AID12 subfield encoding)***](#bookmark55)***:***

The HE variant User Info field is defined in [Figure 9-90 (HE variant User Info field format)](#bookmark54) for all Trigger frame variants except the NFRP Trigger frame and the MU-RTS TXS Trigger frame, which ~~is~~are defined in [9.3.1.22.13 (NFRP Trigger frame format)](#bookmark72) and [9.3.1.22.9 (MU-RTS Trigger frame format)](#bookmark67), respectively.

B0 B11 B12 B19 B20 B21 B24 B25 B26 B31 B32 B38 B39

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| AID12 | RU  Allocation | UL FEC  Coding Type | UL HE- MCS | UL DCM | SS Allocation/ RA-RU  Information | UL Target Receive Power | Reserved | Trigger Dependent User Info |

Bits: 12 8 1 4 1 6 7 1 variable

**Figure 9-90—HE variant User Info field format**

The AID12 subfield in the User Info field is encoded as defined in [Table 9-51 (AID12 subfield encoding)](#bookmark55):

**Table 9-51—AID12 subfield encoding**

|  |  |
| --- | --- |
| **AID12 subfield** | **Description** |
| 0 | User Info field allocates one or more contiguous RA-RUs for associated STAs |
| 1–2007 | User Info field is addressed to an associated STA whose AID is equal to the value in the AID12 subfield |
| 2008–2044 | Reserved |
| 2045 | User Info field allocates one or more contiguous RA-RUs for unassociated STAs |
| 2046 | Unallocated RU |
| 2047–4094 | Reserved |
| 4095 | ~~Start of Padding field~~ Disallowed in a User Info field as it indicates the start of the Padding field |
| NOTE—The Padding field, if present in a Trigger frame, is a field with all padding bits set to 1. The Padding field, if present, has a length of at least two octets and is located between the User Info List field and the FCS field (see 9.3.1.22.1 (General)).*[#17446]* | |

NOTE—The value 2007 in the AID12 subfield can be used for an HE variant User Info field if the Trigger frame is gen- erated by a non-EHT HE AP, whereas the value 2007 in the AID12 subfield cannot be used for an HE variant User Info field if the Trigger frame is generated by an EHT AP (see [9.3.1.22.3 (Special User Info field)](#bookmark48)) for details).

If the AID12 subfield is equal to 2046, then the remaining subfields in the HE variant User Info field are reserved except for the RU Allocation subfield, which indicates the RU location of the unallocated RU.

~~If the AID12 subfield is 4095, then the remaining subfields in the User Info field are not present.~~

The RU Allocation subfield in an HE variant User Info field along with the UL BW subfield in the Common Info field identifies the size and the location of the RU. If the UL BW subfield indicates 20 MHz, 40 MHz or 80 MHz, *[#17447]* then B0 of the RU Allocation subfield is set to 0. If the UL BW subfield indicates 80+80 MHz or 160 MHz, then B0 of the RU Allocation subfield is set to 0 to indicate that the RU allocation applies to the primary 80 MHz channel and is set*[#17448]* to 1 to indicate that the RU allocation applies to the second- ary 80 MHz channel. The mapping of B7–B1 of the RU Allocation subfield for a Trigger frame that is not an MU-RTS Trigger frame is defined in [Table 9-52 (B7–B1 of the RU Allocation subfield in an HE variant](#bookmark56) [User Info field)](#bookmark56). See [9.3.1.22.9 (MU-RTS Trigger frame format)](#bookmark67) for the encoding of the RU Allocation sub- field in an MU-RTS Trigger frame.

**Table 9-52—B7–B1 of the RU Allocation subfield in an HE variant User Info field**

|  |  |  |  |
| --- | --- | --- | --- |
| **B7–B1 of the RU Allocation subfield** | **UL BW subfield** | **RU size** | **RU Index** |
| 0–8 | 20 MHz, 40 MHz, 80 MHz,  80+80 MHz or 160 MHz | 26 | RU1 to RU9, respectively |
| 9–17 | 40 MHz, 80 MHz, 80+80 MHz  or 160 MHz | RU10 to RU18, respectively |
| 18–36 | 80 MHz, 80+80 MHz or  160 MHz | RU19 to RU37, respectively |
| 37–40 | 20 MHz, 40 MHz, 80 MHz,  80+80 MHz or 160 MHz | 52 | RU1 to RU4, respectively |
| 41–44 | 40 MHz, 80 MHz, 80+80 MHz  or 160 MHz | RU5 to RU8, respectively |
| 45–52 | 80 MHz, 80+80 MHz or  160 MHz | RU9 to RU16, respectively |
| 53, 54 | 20 MHz, 40 MHz, 80 MHz,  80+80 MHz or 160 MHz | 106 | RU1 and RU2, respectively |
| 55, 56 | 40 MHz, 80 MHz, 80+80 MHz  or 160 MHz | RU3 and RU4, respectively |
| 57–60 | 80 MHz, 80+80 MHz or  160 MHz | RU5 to RU8, respectively |
| 61 | 20 MHz, 40 MHz, 80 MHz,  80+80 MHz or 160 MHz | 242 | RU1 |
| 62 | 40 MHz, 80 MHz, 80+80 MHz  or 160 MHz | RU2 |
| 63, 64 | 80 MHz, 80+80 MHz or  160 MHz | RU3 and RU4, respectively |
| 65 | 40 MHz, 80 MHz, 80+80 MHz  or 160 MHz | 484 | RU1 |
| 66 | 80 MHz, 80+80 MHz or  160 MHz | RU2 |

**Table 9-52—B7–B1 of the RU Allocation subfield in an HE variant User Info field**

|  |  |  |  |
| --- | --- | --- | --- |
| **B7–B1 of the RU Allocation subfield** | **UL BW subfield** | **RU size** | **RU Index** |
| 67 | 80 MHz, 80+80 MHz or  160 MHz | 996 | RU1 |
| 68 | 80+80 MHz or 160 MHz | 2×996 | RU1 |
| NOTE—If the UL BW subfield indicates 80+80 MHz or 160 MHz, the description indicates the RU index for the pri- mary 80 MHz channel or secondary 80 MHz channel as indicated by B0 of the RU Allocation subfield. | | | |

If the UL BW subfield indicates 20 MHz, the mapping of the RU index to RU is defined in Table 27-7 (Data and pilot subcarrier indices for RUs in a 20 MHz HE PPDU and in a non-OFDMA 20 MHz HE PPDU) in increasing order.

If the UL BW subfield indicates 40 MHz, the mapping of the RU index to RU is defined in Table 27-8 (Data and pilot subcarrier indices for RUs in a 40 MHz HE PPDU and in a non-OFDMA 40 MHz HE PPDU) in increasing order.

If the UL BW subfield indicates 80 MHz, 160 MHz or 80+80 MHz, the mapping of the RU index to RU is defined in Table 27-9 (Data and pilot subcarrier indices for RUs in an 80 MHz HE PPDU and in a non- OFDMA 80 MHz HE PPDU) in increasing order.

If the UL BW subfield indicates 160 MHz or 80+80 MHz, B7–B1 of the RU Allocation subfield is set to 68 and B0 is set to 1 to indicate a 2×996-tone RU. A non-AP STA ignores B0 for 2×996-tone RU indication.

If the AID12 subfield is in the range 1 to 2007, then the RU Allocation subfield indicates the RU allocated to the STA identified by the AID12 subfield. If the AID12 subfield is 0 or 2045, then the RU Allocation sub- field indicates the starting RU of one or more contiguous RA-RUs allocated by the HE variant User Info field. If the AID12 subfield is 2046, then the RU Allocation subfield indicates an unallocated RU.

If there is more than one RA-RU (i.e., the Number Of RA-RU subfield of this HE variant User Info field has a value greater than 0), then the allocated RUs are contiguous and the RU sizes of all RA-RUs are the same and equal to the size of the first RU. Further, all the remaining subfields of the HE variant User Info field apply to all the RA-RUs.

The UL FEC Coding Type subfield of the HE variant User Info field indicates the code type of the solicited HE ~~HE~~ TB PPDU. The UL FEC Coding Type subfield is set to 0 to indicate BCC and set to 1 to indicate LDPC.*[#17450]*

The UL HE-MCS subfield of the HE variant User Info field indicates the HE-MCS of the solicited HE TB PPDU. The encoding of the UL HE-MCS subfield is defined in 27.3.7 (HE modulation and coding schemes (HE-MCSs)).

The UL DCM subfield of the HE variant User Info field indicates DCM of the solicited HE TB PPDU. The UL DCM subfield is set to 1 to indicate that DCM is used in the solicited HE TB PPDU as defined in

27.3.12.15 (Dual carrier modulation). The UL DCM subfield is set to 0 to indicate that DCM is not used. The UL DCM subfield is set to 0 if the UL STBC subfield of the Common Info field is set to 1.

If the AID12 subfield is either 0 or 2045, then B26–B31 of the HE variant User Info field is the RA-RU Information subfield, otherwise B26–B31 of the User Info field is the SS Allocation subfield.*[#17450]*

The SS Allocation subfield of the HE variant User Info field indicates the spatial streams of the solicited HE TB PPDU and the format is defined in [Figure 9-91 (SS Allocation subfield format of an HE variant User](#bookmark57) [Info field)](#bookmark57).

B26 B28 B29 B31

Number Of Spatial Streams

Starting Spatial Stream

Bits: 3 3

**Figure 9-91—SS Allocation subfield format of an HE variant User Info field**

The Starting Spatial Stream subfield indicates the starting spatial stream and is set to the starting spatial stream minus 1 (see 26.5.2.3.3 (TXVECTOR parameters for HE TB PPDU response to Trigger frame)) with a maximum value of 7 (see 36.1.1 (Introduction to the EHT PHY)). The Starting Spatial Stream subfield val- ues above 7 are reserved for a STA. The Starting Spatial Stream subfield is set to 0 if the corresponding RU or MRU is not allocated for MU-MIMO.

The Number Of Spatial Streams subfield indicates the number of spatial streams, and is set to the number of spatial streams minus 1 with a maximum value of 3 (see 36.1.1 (Introduction to the EHT PHY)).

The RA-RU Information subfield of the HE variant User Info field indicates the RA-RU information and the format is defined in [Figure 9-92 (RA-RU Information subfield format)](#bookmark58).*[#17450]*

B26 B30 B31

More RA-RU

Number Of RA-RU

Bits: 5 1

**Figure 9-92—RA-RU Information subfield format**

The Number Of RA-RU subfield indicates the number of contiguous RUs allocated for UORA. The value of the Number Of RA-RU subfield is equal to the number of contiguous RA-RUs minus 1. A non-AP STA determines whether an RA-RU indicated by the Number Of RA-RU subfield is an eligible RA-RU as defined in 26.5.4.2 (Eligible RA-RUs).

NOTE—The starting spatial stream and the number of spatial streams of the HE TB PPDU transmitted on each RA-RU are 1.

The More RA-RU subfield is set to 1 to indicate that RA-RUs of the type indicated by the AID12 subfield in this HE variant User Info field (see [Table 9-51 (AID12 subfield encoding)](#bookmark55)) are allocated in subsequent Trigger frames that are sent until the end of the TWT SP in which the Trigger frame carrying this field is sent. Otherwise, the subfield is set to 0. The More RA-RU subfield is reserved if the More TF field in the Common Info field is set to 0.*[#17450]*

The UL Target Receive Power subfield indicates the expected receive signal power, measured at the AP's antenna connector and averaged over the antennas, for the HE portion of the HE TB PPDU transmitted on the assigned RU and is defined in [Table 9-53 (UL Target Receive Power subfield in Trigger frame)](#bookmark59).

**Table 9-53—UL Target Receive Power subfield in Trigger frame**

|  |  |
| --- | --- |
| **UL Target Receive Power subfield** | **Description** |
| 0–90 | The expected receive signal power, in units of dBm, is  *Targetpwr* = –110 + *Fval*, where *Fval* is the subfield value |
| 91–126 | Reserved |
| 127 | The STA transmits the ~~HE~~ TB PPDU at the STA’s maxi- mum transmit power for the assigned ~~HE-~~MCS.  The expected receive signal power is then the STA’s maximum transmit power for the assigned ~~HE-~~MCS minus the path loss. |

The Trigger Dependent User Info subfield in the User Info field is optionally present based on the value of the Trigger Type field (see [9.3.1.22.6 (Basic Trigger frame format)](#bookmark65) to [9.3.1.22.13 (NFRP Trigger frame for-](#bookmark72) [mat)](#bookmark72)).