IEEE P802.11
Wireless LANs

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| PDT-EHT-preamble-EHT-SIG for D0.4 |
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Abstract

This document contains proposed draft text update for EHT-preamble-EHT-SIG. Try to remove all TBDs and Editor’s notes so far.

R0: initial version

**36.3.11.8 EHT-SIG**

**36.3.11.8.1 General**

36.3.11.8.2 EHT-SIG content channels

A STA only needs to process up to one 80 MHz segment of the pre-EHT preamble to get all the assignment information for itself. No 80 MHz segment change is needed while processing L-SIG, U-SIG, and EHT-SIG.

The EHT-SIG content channel format is shown in Figure 36-35 (EHT-SIG content channel format for OFDMA transmission if bandwidth is 20/40/80 MHz), Figure 36-36 (EHT-SIG content channel format for OFDMA transmission if bandwidth is 160 MHz), Figure 36-37 (EHT-SIG content channel format for OFDMA transmission if bandwidth is 320 MHz), Figure 36-38 (EHT-SIG content channel format for non-OFDMA transmission to a single user), Figure 36-39 (EHT-SIG content channel format for EHT sounding NDP), and Figure 36-40 (EHT-SIG content channel format for non-OFDMA transmission to multiple users).

36.3.11.8.3 Common field for OFDMA transmission

**Table 36-24—Common field for OFDMA transmission**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Bit** | **Subfield** | **Number of subfield** | **Number of bits per subfield** | **Description** |
| B0–B3 | Spatial Reuse | 1 | 4 | Indicates whether or not spatial reuse modes are allowed during the transmission of this PPDU.Set to a value from Table 27-22 (Spatial Reuse field encoding for an HE SU PPDU, HE ER SU PPDU, and HE MU PPDU), see 26.11.6 (SPATIAL\_REUSE) and 26.10 (Spatial reuse operation) |
| B4–B5 | GI+LTF Size | 1 | 2 | Indicates the GI duration and EHT-LTF size: Set to 0 to indicate 2 LTF + 0.8 µs GI.Set to 1 to indicate 2 LTF + 1.6 µs GI. Set to 2 to indicate 4 LTF + 0.8 µs GI. Set to 3 to indicate 4 LTF + 3.2 µs GI.The values shall be the same in different 80MHz subblock. |
| B6–B8 | Number Of EHT- LTF Symbols | 1 | 3 | Indicate the number of EHT-LTF symbols: Set to 0 to indicate 1 EHT-LTF symbol.Set to 1 to indicate 2 EHT-LTF symbols. Set to 2 to indicate 4 EHT-LTF symbols. Set to 3 to indicate 6 EHT-LTF symbols. Set to 4 to indicate 8 EHT-LTF symbols. Other values are Validated.The values shall be the same in different 80MHz subblock. |
| B9 | LDPC Extra Symbol Segment | 1 | 1 | Indicates the presence of the LDPC extra symbol segment:Set to 1 if an LDPC extra symbol segment is present.Set to 0 if an LDPC extra symbol segment is not present. |
| B10–B11 | Pre-FEC Padding Factor | 1 | 2 | Indicates the pre-FEC padding factor:Set to 0 to indicate a pre-FEC padding factor of 4.Set to 1 to indicate a pre-FEC padding factor of 1.Set to 2 to indicate a pre-FEC padding factor of 2.Set to 3 to indicate a pre-FEC padding factor of 3.The values shall be the same in different 80MHz subblock. |
| B12 | PE Disambiguity | 1 | 1 | Indicates PE disambiguity as defined in[36.3.13 (Packet extension)](#bookmark222).The values shall be the same in different 80MHz subblock. |

For RU/MRU larger than 484-tone RU, for each EHT-SIG content channel, the first 9-bit RU Allocation subfield referring to the RU/MRU may use values in the range 80–303 (001010y2y1y0–100101y2y1y0 in binary representation) as in Table 36-26 (RU Allocation subfield) with y2y1y0 indicating the number of User fields signaled in the corresponding content channel, while the remaining 9-bit RU Allocation subfields referring to the RU/MRU shall be set as follows:

**Table 36-26—RU Allocation subfield *(continued)***

|  |  |  |
| --- | --- | --- |
| 296-303 (100101y2y1y0) | **MRU of 996-996-484-[]** | **8** |
| 304-511 (100110y2y1y0 -111111y2y1y0) | **Disregard** | **26****8** |
| 　 If signaling RUs or MRUs of size greater than or equal to 242 subcarriers, y2y1y0 = 000–111 indicates the number of User fields in the EHT-SIG content channel that contains the corresponding 9-bit RU Allocation subfield. The binary vector y2y1y0 indicates *Nuser*(r, c) = 22 × y2 + 21 × y1 + y0 + 1 users multiplexed in the RU or MRU. |

When devices read the RU allocation subfield value of Disregard state, they shall skip the number of User fields corresponding to the field value and continue to process the EHT-SIG.

For an MU-MIMO allocation of RU/MRU size greater than 242 subcarriers, the dynamic split of User fields between EHT-SIG content channel 1 and EHT-SIG content channel 2 per 80 MHz is decided by the AP (on a per case basis) and signaled by the AP using the RU Allocation subfields in each EHT-SIG content channel.

36.3.11.8.4 Common field for non-OFDMA transmission

Table 36-27—Common field for non-OFDMA transmission to a single user and non-OFDMA transmission to multiple users

|  |  |  |  |
| --- | --- | --- | --- |
| Bit | Subfield | Number of bits  | Description |
| B0-B3 | Spatial reuse | 4 | Indicates whether or not spatial reuse modes are allowed during the transmission of this PPDU.Set to a value from Table 27-22 (Spatial Reuse field encoding for an HE SU PPDU, HE ER SU PPDU, and HE MU PPDU), see 26.11.6 (SPATIAL\_REUSE) and 26.10 (Spatial reuse operation) |
| B4-B5 | GI+LTF size | 2 | Indicates the GI duration and EHT-LTF size:set to 0 to indicate 2x LTF + 0.8us GI ;set to 1 to indicate 2x LTF + 1.6us GI;set to 2 to indicate 4x LTF + 0.8us GIset to 3 to indicate 4x LTF + 3.2us GI; |
| B6-B8 | Number of EHT-LTF symbols | 3 | Indicates the number of EHT-LTF symbols:set to 0 to indicate 1 EHT-LTF symbol;set to 1 to indicate 2 EHT-LTF symbols;set to 2 to indicate 4 EHT-LTF symbols;set to 3 to indicate 6 EHT-LTF symbols;set to 4 to indicate 8 EHT-LTF symbols;other values are Validated |
| B9 | LDPC extra symbol segment | 1 | Indicates the presence of the LDPC extra symbol segment:Set to 1 if an LDPC extra symbol segment is presentSet to 0 if an LDPC extra symbol segment is not present. |
| B10-B11 | Pre-FEC padding factor | 2 | Indicates the pre-FEC padding factor.Set to 0 to indicate a pre-FEC padding factor of 4Set to 1 to indicate a pre-FEC padding factor of 1Set to 2 to indicate a pre-FEC padding factor of 2Set to 3 to indicate a pre-FEC padding factor of 3 |
| B12 | PE Disambiguity | 1 | Indicates PE disambiguity as defined in 36.3.13 (Packet extension). |
| B13-B16 | Disregard | 4 | Disregard and set to 1 |
| B17-B19 | Number Of Non-OFDMA Users | 3 | Indicates the number of non-OFDMA users.Set to *n* to indicate *n*+1 non-OFDMA users. |

Table 36-23A Common field for EHT Sounding NDP

|  |  |  |  |
| --- | --- | --- | --- |
| Bit | Subfield | Number of bits per subfield | Description |
| B0-B3 | Spatial reuse | 4 | Indicates whether or not spatial reuse modes are allowed during the transmission of this PPDU.Set to value 0 or 15 from Table 27-22 (Spatial Reuse field encoding for an HE SU PPDU, HE ER SU PPDU, and HE MU PPDU), see 26.11.6 (SPATIAL\_REUSE) and 26.10 (Spatial reuse operation) |
| B4-B5 | GI+LTF size | 2 | Indicates the GI and size of EHT-LTF:set to 0 to indicate 2x LTF + 0.8us GI ;set to 1 to indicate 2x LTF + 1.6us GI;value 2 is Validated.set to 3 to indicate 4x LTF + 3.2us GI; |
| B6-B8 | Number of EHT-LTF symbols | 3 | Indicates the number of EHT-LTF symbols:set to 0 to indicate 1 EHT-LTF symbol;set to 1 to indicate 2 EHT-LTF symbols;set to 2 to indicate 4 EHT-LTF symbols;set to 3 to indicate 6 EHT-LTF symbols;set to 4 to indicate 8 EHT-LTF symbols;other values are Validated |
| B9-B12 | NSS | 4 | Indicates the number of spatialStreams:Set to the number of spatial streams minus 1 for up to 8 spatial streams;other values are Validated. |
| B13 | Beamformed | 1 | Set to 1 if a beamforming steering matrix is applied to the EHT modulated fields.Set to 0 otherwise.If the Beamformed field in EHT-SIG of an EHT sounding NDP is 1, then the receiver of the EHT sounding NDP should not perform channel smoothing when generating the compressed beamforming feedback report. |
| B14-B15 | Disregard | 2 | Disregard and set to 1 |
| B16-B19 | CRC | 4 | CRC for bits 0–15 of the EHT-SIG field (see 27.3.11.7.3 (CRC computation)).The CRC is calculated over bits B0-B15 |
| B20-B25 | Tail | 6 | Used to terminate the trellis of the convolutional decoder. Set to 0 |

36.3.11.8.5 User Specific field

Table 36-31—User field format for a non-MU-MIMO allocation

|  |  |  |  |
| --- | --- | --- | --- |
| Bit | Subfield | Number of bits | Description |
| B0–B10  | STA-ID | 11  | Indicate the STA-ID related information. |
| B11–B14 | MCS | 4 | If the STA-ID subfield is not 2046, indicates the modulationand coding scheme:Set to n for EHT-MCS n, where n = 0, 1, 2, …, 14 and 15Set to an arbitrary value if the STA-ID subfield is 2046 |
| B15 | Reserved  | 1 |

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|  |

Reserved and set to 1.If the STA-ID matches, the Reserved bit is Validate bit. If STA-ID doesn’t match, the Reserved bit is Disregard bit |
| B16- B19 | NSS | 4 | Indicate the number of space-time streams i.e., 1 to 16 streams and is set to the number of spatial streams minus 1. |
| B20 | Beamformed  | 1 | If the STA-ID subfield is not 2046, used in transmitbeamforming:Set to 1 if a beamforming steering matrix is applied to the waveform in a non-MU-MIMO allocation.Set to 0 otherwise.Set to an arbitrary value if the STA-ID subfield is 2046 |
| B21 | Coding  | 1 | If the STA-ID subfield is not 2046, indicates whetherBCC or LDPC is used:Set to 0 for BCCSet to 1 for LDPCSet to an arbitrary value if the STA-ID subfield is 2046. |

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| Table 36-32—User field format for a MU-MIMO allocation   |
| Bit | Subfield | Number of bits | Description |
| B0–B10  | STA-ID | 11 | Indicate the STA-ID related information. |
| B11–B14 | MCS | 4 | If the STA-ID subfield is not 2046, indicates the modulationand coding scheme:Set to n for EHT-MCS n, where n = 0, 1, 2, …, 13Values 14 and 15 are not used.Set to an arbitrary value if the STA-ID subfield is 2046 |
| B15 | Coding  | 1 | If the STA-ID subfield is not 2046, indicates whetherBCC or LDPC is used:Set to 0 for BCCSet to 1 for LDPCReserved and set to 1 if RU size is larger than 242. If the STA-ID matches, the Reserved bit is Validate bit. If STA-ID doesn’t match, the Reserved bit is Disregard bit.Set to an arbitrary value if the STA-ID subfield is 2046. |

The user ordering identified by the column headers *NSS**s* *s* =1 2 3 in [Table 36-33 (Spatial](#bookmark120) [Configuration subfield encoding)](#bookmark120)  shall be the same as the user index *u*, *u*= 0 1 2 in Equation (36-31), Equation (36-48), and Equation (36-73), i.e., .

36.3.11.8.6 Encoding and modulation

$Γ\_{M\_{20}^{r}\left(k\right)}$ is the phase rotation value for EHT-SIG field PAPR reduction. If the EHT-SIG field is modulated with EHT-SIG-MCS field set to 3 (EHT-SIG MCS0 +DCM), $ Γ\_{M\_{20}^{r}\left(k\right)}=1$. For all the other modulation schemes: