IEEE P802.11
Wireless LANs

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| Comment Resolutions for 11be D0.3 Clause 36.2 Part 2 |
| Date: 2021-04-02 |
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Abstract

This submission provisions with resolutions to the following 6 CIDs related to clause 36.2 of IEEE P802.11be D0.3 in WG CC 34, including suggested spec text modification to IEEE P802.11be D0.3 to TGbd editor:

* CIDs: 1276, 1278, 1539, 1540, and 2991

Revisions:

* R0, comment resolutions initial draft.

Interpretation of a Motion to Adopt

A motion or majority supported straw poll to approve this submission means that the editing instructions and any changed or added material are actioned in the TGbe Draft. When the baseline spec draft is an unapproved version, a majority supported straw poll to approve this submission means that the editing instructions and any changed or added material are actioned in the unapproved 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** | **Pg/Ln** | **Clause** | **Comment** | **Proposed Changed** | **Resolution** |
| 1539 | 169.40 | 36.2.3 | some of the parameters are already defined. Reflect the defined value per each parameter in table 36-2--TRIGVECTOR parameters. | as in comment. | **Revised****Discussion:**Agree on the issue the comment raised. An updated Table 36-2 is proposed as part of the resolution. **TGbe Editor:** Please implement the proposed spec text modification as part of resolution to CID 1539 as in document **https://mentor.ieee.org/802.11/dcn/21/11-21-0636-00-00be-cr-d0-3-clause-36-2-misc.docx**. |
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*-----------------------****Proposed Spec Text Modifications for CID 1539****--------------------------*

***TGbe Editor: please implement following proposed modification to Table 36-2 (TRIGVECTOR parameters) in sub-clause 36.2.3 (TRIGVECTOR parameters) in IEEE P802.11be D0.3 as proposed below as part of resolution to CID 1539.***

**36.2.3 TRIGVECTOR parameters**

The TRIGVECTOR is carried in a PHY-TRIGGER.request primitive and provides the PHY of the AP with the parameters needed to receive an EHT TB PPDU over each assigned RU. The parameters in Table 36-2 (TRIGVECTOR parameters) are defined as part of the TRIGVECTOR parameter list in the PHY-TRIGGER.request primitive.

**Table 36-2 -- TRIGVECTOR parameters**

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| **Parameter** | **Value** |
| CH\_BANDWIDTH | ~~TBD~~Indicates the bandwidth in the EHT-SIG of the expected EHT TB PPDU(s).Enumerated type:CBW20 for 20 MHzCBW40 for 40 MHzCBW80 for 80 MHzCBW160 for 160 MHzCBW320-1 for 320-1 MHzCBW320-2 for 320-2 MHz |
| UL\_LENGTH | ~~TBD~~Indicates the value of the L-SIG LENGTH field of the expected EHT TB PPDU(s). |
| ~~GI\_AND\_~~EHT\_LTF\_TYPE | ~~TBD~~Indicates the EHT-LTF type of the expected EHT TB PPDU(s).Enumerated type:1xEHT-LTF indicates a 1x EHT-LTF2xEHT-LTF indicates a 2x EHT-LTF4xEHT-LTF indicates a 4x EHT-LTF |
| ~~MU\_MIMO\_EHT\_LTF\_MODE~~ | ~~TBD~~ |
| NUM\_EHT\_LTF\_SYMBOLS | ~~TBD~~Indicates the number of OFDM symbols present in the EHT-LTF field of the expected EHT TB PPDU(s).Set to 0 for 1 OFDM symbolSet to 1 for 2 OFDM symbolsSet to 2 for 4 OFDM symbolsSet to 3 for 6 OFDM symbolsSet to 4 for 8 OFDM symbolsSet to 5 for 16 OFDM symbols |
| ~~MIDAMBLE\_PERIODICITY~~ | ~~TBD~~ |
| LDPC\_EXTRA\_SYMBOL | TBDIndicates the status of the LDPC extra symbol segment in the expected EHT TB PPDU(s).Set to 1 if LDPC extra symbol segment is present.Set to 0 otherwise. |
| PRE\_FEC\_PADDING\_FACTOR | Indicates the pre-FEC padding factor for the expected EHT TB PPDU.Value range ~~TBD~~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. |
| PE\_DISAMBIGUITY | Indicates the PE disambiguity of the expected EHT TB PPDU.Value range ~~TBD~~Set to 0 to indicate no PE disambiguity.Set to 1 to indicate PE disambiguity. |
| ~~DOPPLER~~ | ~~TBD~~ |
| AID12\_LIST | ~~TBD~~Each entry of AID12\_LIST is (12-bit) AID of the corresponding EHT TB PPDU.See the AID12 subfield description in 9.3.1.22.1.2.2 (EHT variant User Info field) and Table 9-29h (AID12 subfield encoding) for more information of each entry. |
| RU\_ALLOCATION\_LIST | TBD8 bits are used per STA to indicate the RU allocated in the whole bandwidth. See the RU\_ALLOCATION\_LIST subfield description in 9.3.1.22.1.2.2 (EHT variant User Info field) for more information of each entry. |
| FEC\_CODING\_LIST | ~~TBD~~Each entry of FEC\_CODING\_LIST indicates the coding type of the corresponding EHT TB PPDU from an EHT STA. See the UL FEC Coding Type subfield description in 9.3.1.22.1.2.2 (EHT variant User Info field) for more information of each entry. |
| EHT\_MCS\_LIST | ~~TBD~~Each entry of EHT\_MCS\_LIST indicates the EHT-MCS of the corresponding EHT TB PPDU from an EHT STA. See the UL EHT-MCS subfield description in 9.3.1.22.1.2.2 (EHT variant User Info field) for more information of each entry. |
| ~~UL\_DCM\_LIST(TBD)~~ | ~~TBD~~ |
| SS\_ALLOCATION\_LIST | ~~TBD~~Each entry of SS\_ALLOCATION\_LIST indicates the spatial streams of the corresponding EHT TB PPDU from an EHT STA. See the SS Allocation subfield description in 9.3.1.22.1.2.2 (EHT variant User Info field) for more information of each entry. |
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*-----------------------****End of proposed Spec Text Modifications for CID 1539****--------------------------*

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| **CID** | **Pg/Ln** | **Clause** | **Comment** | **Proposed Changed** | **Resolution** |
| 1540 | 170.29 | 36.2.4 | EHT Capabilities element should be defined. Define the EHT Capabilities element in9.4.2.295c.1 | as in comment. | **Revised****Discussion:**The EHT Capabilities element is defined as in sub-clause 9.4.2.295c as in IEEE P802.11be D0.3 and beyond. An update to the red text addressed by this comment is proposed as part of the resolution. Along with the resolution to this comment, the TBD in Table 36-3 and brief introduction before the table was added as well. **TGbe Editor:** Please implement the proposed spec text modification as part of resolution to CID 15490 as in document **https://mentor.ieee.org/802.11/dcn/21/11-21-0636-00-00be-cr-d0-3-clause-36-2-misc.docx**. |

*-----------------------****Proposed Spec Text Modifications for CID 1540****------------------------*

***TGbe Editor: please implement following proposed modification to sub-clause 36.2.4 (PHY CONFIG\_VECTOR) in IEEE P802.11be D0.3 as proposed below as part of resolution to CID1540.***

**36.2 EHT PHY service interface**

**36.2.4 PHY CONFIG\_VECTOR**

The PHYCONFIG\_VECTOR carried in a PHY-CONFIG.request primitive for an EHT PHY contains an OPERATING\_CHANNEL parameter, which identifies the operating or primary channel. The PHY shall set dot11CurrentPrimaryChannel to the value of this parameter.

The PHYCONFIG\_VECTOR carried in a PHY-CONFIG.request primitive for an EHT PHY contains a CHANNEL\_WIDTH parameter, which identifies the operating channel width and takes one of the values 20 MHz, 40 MHz, 80 MHz, 160 MHz, and 320 MHz. The PHY shall set dot11CurrentChannelWidth to the value of this parameter. The PHY shall set dot11EHTCurrentChannelWidthSet to a value that is obtained from the Supported Channel Width Set subfield of a transmitted ~~EHT Capabilities element (TBD)~~ EHT Capabilities element (see sub-clause 9.4.2.295c EHT Capabilities element).

The PHYCONFIG\_VECTOR carried in a PHY-CONFIG.request primitive for an EHT PHY contains a CENTER\_FREQUENCY\_SEGMENT parameter, which identifies the center frequency of the channel and takes a value between 1 and 255. The PHY shall set dot11CurrentChannelCenterFrequencyIndex0 to the value of this parameter.

**36.2.5 Effect of CH\_BANDWIDTH parameter on PPDU format**

***Editor’s Note: It is a placeholder subclause.***

Table 36-3 (Interpretation of FORMAT, NON\_HT\_MODULATION and CH\_BANDWIDTH parameters) shows the valid combinations of the FORMAT, NON\_HT\_MODULATION and CH\_BANDWIDTH parameters and the corresponding PPDU format and value of CH\_OFFSET (if applicable). Other combinations are reserved.

**Table 36-3 -- Interpretation of FORMAT, NON\_HT\_MODULATION and CH\_BANDWIDTH parameters ~~(TBD)~~**

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| **FORMAT** | **NON\_HT\_MODULATION** | **CH\_BANDWIDTH** | **CH\_OFFSET** | **PPDU format** |
| EHT | N/A | CBW20 | N/A | The STA transmits an EHT PPDU of 20 MHz bandwidth. If the BSS bandwidth is wider than 20 MHz, then the transmission shall use the primary 20 MHz channel. |
| EHT | N/A | CBW40 | N/A | The STA transmits an EHT PPDU of 40 MHz bandwidth. If the BSS bandwidth is wider than 40 MHz, then the transmission shall use the primary 40 MHz channel. |
| EHT | N/A | CBW80 | N/A | The STA transmits an EHT PPDU of 80 MHz bandwidth. If the BSS bandwidth is wider than 80 MHz, then the transmission shall use the primary 80 MHz channel. |
| EHT | N/A | CBW160 | N/A | The STA transmits an EHT PPDU of 160 MHz bandwidth. If the BSS bandwidth is wider than 160 MHz, then the transmission shall use the primary 160 MHz channel. |
| EHT | N/A | CBW320-1 | N/A | The STA transmits an EHT PPDU of 320-1 MHz bandwidth. |
| EHT | N/A | CBW320-2 | N/A | The STA transmits an EHT PPDU of 320-2 MHz bandwidth. |
| HE | See Table 27-3 (Interpretation of FORMAT, NON\_HT\_MODULATION, CH\_BANDWIDTH parameters)  |
| VHT | See Table 21-2 (Interpretation of FORMAT, NON\_HT\_MODULATION, CH\_BANDWIDTH, and CH\_OFFSET parameters) |
| HT\_MF, HT\_GF | See Table 19-2 (Interpretation of FORMAT, CH\_BANDWIDTH and CH\_OFFSET parameters) |
| NON\_HT | If INACTIVE\_SUBCHANNELS is not present, see Table 21-2 (Interpretation of FORMAT, NON\_HT\_MODULATION, CH\_BANDWIDTH, and CH\_OFFSET parameters) and Table 19-2 (Interpretation of FORMAT, CH\_BANDWIDTH and CH\_OFFSET parameters) |
| NON\_HT | If INACTIVE\_SUBCHANNELS is present, see Table 27-4 (Interpretation of CH\_BANDWIDTH and INACTIVE\_SUBCHANNELS parameters when FORMAT is equal to NON\_HT and NON\_HT\_MODULATION is equal to NON\_HT\_DUP\_OFDM) |

*-----------------------****End of proposed Spec Text Modifications for CID 1540****--------------------------*

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| **CID** | **Pg/Ln** | **Clause** | **Comment** | **Proposed Changed** | **Resolution** |
| 1276 | 170.60 | 36.2.6.1 | "An EHT STA logically contains Clause 15 (DSSS PHY specification for the 2.4 GHz band designated forISM applications), Clause 16 (High rate direct sequence spread spectrum (HR/DSSS) PHY specification),Clause 17 (Orthogonal frequency division multiplexing (OFDM) PHY specification), Clause 18 (ExtendedRate PHY (ERP) specification), Clause 19 (High Throughput (HT) PHY specification), Clause 21 (Very High Throughput (VHT) PHY specification), Clause 27 (High Efficiency (HE) PHY specification), andClause 36 (Extremely high throughput (EHT) PHY specification) PHYs." is an oversimplication given that some PHYs are not required in some bands | Perhaps prefix by "Except where a clause is not defined for the operating band of the STA, ...". Also, at P171L10.5, after "and Clause 27 () PHY service interfaces " insert "as applicable". Finally, at the end of the paragraph, at P171L13, insert "These figures show all possible PHY clauses, not all of which are applicable to any given band." | **Revised****Discussion:**Agree on the comment. With introduction of 6 GHz band and with the limitation of 11ac only working on 5 GHz band, it’s more accurate to add application limitation to this general description. **TGbe Editor:** Please implement the proposed spec text modification as part of resolution to CID 1276 as in document **https://mentor.ieee.org/802.11/dcn/21/11-21-0636-00-00be-cr-d0-3-clause-36-2-misc.docx**. |

*-----------------------****Proposed Spec Text Modifications for CID 1276****------------------------*

***TGbe Editor: please implement following proposed modification to sub-clause 36.2.6.1 (General) in IEEE P802.11be D0.3 as proposed below as part of resolution to CID1276.***

**36.2.6 Support for non-HT, HT, VHT, and HE formats**

**36.2.6.1 General**

When an EHT STA is working on a frequency band that is applicable to a PHY clause, the~~An~~ EHT STA logically contains Clause 15 (DSSS PHY specification for the 2.4 GHz band designated for ISM applications), Clause 16 (High rate direct sequence spread spectrum (HR/DSSS) PHY specification), Clause 17 (Orthogonal frequency division multiplexing (OFDM) PHY specification), Clause 18 (Extended Rate PHY (ERP) specification), Clause 19 (High Throughput (HT) PHY specification), Clause 21 (Very High Throughput (VHT) PHY specification), Clause 27 (High Efficiency (HE) PHY specification), and Clause 36 (Extremely high throughput (EHT) PHY specification) PHYs. The MAC interacts with the PHYs via the Clause 36 (Extremely high throughput (EHT) PHY specification) PHY service interface, which in turn interacts with the Clause 15 (DSSS PHY specification for the 2.4 GHz band designated for ISM applications), Clause 16 (High rate direct sequence spread spectrum (HR/DSSS) PHY specification), Clause 17 (Orthogonal frequency division multiplexing (OFDM) PHY specification), Clause 18 (Extended Rate PHY (ERP) specification), Clause 19 (High Throughput (HT) PHY specification), Clause 21 (Very High Throughput (VHT) PHY specification), and Clause 27 (High Efficiency (HE) PHY specification) PHY service interfaces when applicable as shown in Figure 36-1 (PHY interaction on transmit for various PPDU formats), Figure 36-2 (PHY interaction on receive for various PPDU formats), and Figure 36-3 (PHY-CONFIG and CCA interaction with various PPDU formats).

Note, these figures show all possible PHY clauses, not all of which are applicable to any given band.

*-----------------------****End of proposed Spec Text Modifications for CID 1276****--------------------------*

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| **CID** | **Pg/Ln** | **Clause** | **Comment** | **Proposed Changed** | **Resolution** |
| 2991 | 172.13 | 36.2.6.2 | 320 MHz non-HT DUP transmission and requirements are defined in section 36. (e.g. spectrum mask) | Add reference for 320 MHz Non-HT DUP. | **Revised****Discussion:**Agree on the issue of inaccuracy of current spec text the comment addresses. An update of the text is proposed to add a sub-bullet to address 320 MHz non-HT DUP transmission as part of the resolution . **TGbe Editor:** Please implement the proposed spec text modification as part of resolution to CID 2991 as in document **https://mentor.ieee.org/802.11/dcn/21/11-21-0636-00-00be-cr-d0-3-clause-36-2-misc.docx**. |
| 1278 | 172.14 | 36.2.6.2 | References to clause 21 at L13 and L16 do not account for 16SS or 320MHz | Update these references to EHT clauses | **Revised****Discussion:**Agree on the issue of inaccuracy of current spec text the comment addresses. An update of the text is proposed to add a sub-bullet to address 16SS and 320 MHz cases as part of the resolution. **TGbe Editor:** Please implement the proposed spec text modification as part of resolution to CID 1278 as in document **https://mentor.ieee.org/802.11/dcn/21/11-21-0636-00-00be-cr-d0-3-clause-36-2-misc.docx**. |
| 3040 | 172.14 | 36.2.6.2 | Non-HT dup PPDU can be 320MHz in 11be.The current reference in section 21 doesn't cover the 320mHz BW | add reference for 320MHz non-HT dup support | **Revised****Discussion:**Agree on the issue of inaccuracy of current spec text the comment addresses. An update of the text is proposed to add a sub-bullet to address 320 MHz non-HT DUP transmission as part of the resolution . **TGbe Editor:** Please implement the proposed spec text modification as part of resolution to CID 3040 as in document **https://mentor.ieee.org/802.11/dcn/21/11-21-0636-00-00be-cr-d0-3-clause-36-2-misc.docx**. |
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*-----------------------****Proposed Spec Text Modifications for CID 2991/1278/3040****------------------------*

***TGbe Editor: please implement following proposed modification to the first paragraph under sub-clause 36.2.6.2 (Support for non-HT format) in IEEE P802.11be D0.3 as proposed below as part of resolution to CID2991/1278/3040.***

**36.2.6 Support for non-HT, HT, VHT, and HE formats**

**......**

**36.2.6.2 Support for non-HT format**

The behavior of the EHT PHY on receipt of a PHY-TXSTART.request(TXVECTOR) primitive with the FORMAT parameter equal to NON\_HT and the NON\_HT\_MODULATION parameter not equal to NON\_HT\_DUP\_OFDM is defined in Clause 15 (DSSS PHY specification for the 2.4 GHz band designated for ISM applications), Clause 16 (High rate direct sequence spread spectrum (HR/DSSS) PHY specification), Clause 17 (Orthogonal frequency division multiplexing (OFDM) PHY specification), and Clause 18 (Extended Rate PHY (ERP) specification) and depends on the parameter NON\_HT\_MODULATION. If the parameter NON\_HT\_MODULATION is OFDM or NON\_HT\_DUP\_OFDM, then the following additional requirements apply:

— The requirements in 21.3.9.1 (Transmission of 20 MHz NON\_HT PPDUs with more than one transmit chain)

— The requirements in 21.3.17.1 (Transmit spectrum mask) instead of the requirements in 17.3.9.3 (Transmit spectrum mask)

— The requirements in 27.3.19.3 (Transmit center frequency and symbol clock frequency tolerance) instead of the requirements in 17.3.9.7.2 (Transmitter center frequency leakage)

— The requirements in 36.3.1.3 (Additional restrictions of preamble puncturing for non-HT duplicate PPDU) *[CID# 2991/1278/3040]*

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-------------------- ***End of proposed changes for CID 2991/1278/3040 ---------------------------------------***

**References:**

1. **IEEE P802.11be/D0.3, Dec 2020.**