IEEE P802.11
Wireless LANs

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| Comment Resolutions for 11bd D0.3 PHY Service Interface Section  |
| Date: 2020-05-18 |
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Abstract

This submission provisions with resolutions to the following 5 CIDs related to PHY Service Interface of IEEE P802.11bd D0.3 (unapproved), including suggested spec text modification to IEEE P802.11bd D0.30 to TGbd editor:

* CIDs: 247, 128, 254, 359, 360

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

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

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

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| **CID** | **Pg/Ln** | **Clause** | **Comment** | **Proposed Changed** | **Resolution** |
| 247 | 27.09 | 32.2.2 | NON\_HT\_MODULATION parameter should be defined in the Table 32-1. Figure 32-1 and Figure 32-2 should be updated with this modification. And coresponding subclause should be added. Subclause L-SIG includes the concept of a non-HT duplicate PPDU. | as in comment | **Revised****Discussion:**Since NGV supports both 10 MHz and 20 MHz operation, a non-HT duplicate PPDU could be helpful in access control and protection, as Liwen suggested, “RTS/CTS exchange can improve the throughput by avoiding the collision of long data PPDU. We should keep the duplicate 10MHz 11p PPDUs for RTS/CTS. The responding Ack/BA solicited by 20MHz PPDU should also be in duplicate 10MHz 11p PPDUs to avoid EIFS recovery”. Therefore the author of this CR agrees with the commenter that 11bd should support duplicate Non-NGV PPDU operation. **TGbd Editor:** Please implement the proposed spec text modification as part of resolution to CID 247 as in document 11-20/0790r0. |
| 128 | 29.43 | 32.2.2 | The "APEP\_LENGTH" and "PSDU\_LENGTH" are missing in Table 32-1. | Add entires for "APEP\_LENGTH" and "PSDU\_LENGTH". | **Revised****Discussion:**Agree on the comment. Refer to consensus in the 11bd spec framework document (11-19/0497r6):“*11bd enables both A-MSDU and A-MPDU operation to work for unicast OCB and not to exceed the constraints on A-MSDU in A-MPDU as defined in 802.11ac.* *[ [4] Motion #36*]”PSDU\_LENGTH is used for MAC to calculate padding and APEP\_LENGTH is used by PHY to construct PPDU.**TGbd Editor:** Please implement the proposed spec text modification as part of resolution to CID 128 as in document 11-20/0790r0.  |

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| **CID** | **Pg/Ln** | **Clause** | **Comment** | **Proposed Changed** | **Resolution** |
| 128 | 29.43 | 32.2.2 | The "APEP\_LENGTH" and "PSDU\_LENGTH" are missing in Table 32-1. | Add entires for "APEP\_LENGTH" and "PSDU\_LENGTH". | **Revised****Discussion:**Agree on the comment. Refer to consensus in the 11bd spec framework document (11-19/0497r6):“*11bd enables both A-MSDU and A-MPDU operation to work for unicast OCB and not to exceed the constraints on A-MSDU in A-MPDU as defined in 802.11ac.* *[ [4] Motion #36*]”PSDU\_LENGTH is used for MAC to calculate padding and APEP\_LENGTH is used by PHY to construct PPDU.**TGbd Editor:** Please implement the proposed spec text modification as part of resolution to CID 128 as in document 11-20/0790r0.  |

*---------------------------****Proposed Spec Text Modifications for CID 247/128****----------------------------------*

***TGbd Editor: please implement following modification to Table 32-1 (TXVECTOR and RXVECTOR parameters) in sub-clause 32.2.2 (TXVECTOR and RXVECTOR) in IEEE P802.11bd D0.3 as proposed below as part of resolution to CID 247/128.***

**Table 32-1 -- TXVECTOR and RXVECTOR parameters**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Condition** | **Value** | **TXVECTOR** | **RXVECTOR** |
| FORMAT |  | Determines the format of the PPDU.Enumerated type:NON\_NGV\_10 indicates Clause 17 PPDU format for 10 MHz channel spacing or Non-NGV duplicate PPDU format. *[CID# 247]*NGV indicates NGV PPDU format as defined in Clause 32.d |  |  |
| NON\_NGV\_MODULATION | FORMAT is NON\_NGV\_10 | In TXVECTOR, indicates the format of the transmitted Non-NGV PPDU.In RXVECTOR, indicates the estimated format of the received Non-NGV PPDU.Enumerated type:OFDM indicates Clause 17 (Orthogonal frequency division multiplexing (OFDM) PHY specification) format;NON\_NGV\_10\_DUP\_OFDM indicates Non-NGV duplicate PPDU format. | Y | Y |
| Otherwise | Not present *[CID# 247]* | N | N |
| ... | ... | ... | ... |  |
| APEP\_LENGTH | FORMAT is NGV | Indicates the number of octets in the range 0 to 1 048 575 in the A-MPDU pre-EOF padding (see 10.12.2 (A-MPDU length limit rules)) carried in the PSDU. | Y | N |
| Otherwise | Not present *[CID# 128]* | N | N |
| PSDU\_LENGTH | FORMAT is NGV | Indicates the number of octets in the range 0 to aPSDUMaxLength octets (see Table 32-xx (NGV PHY characteristics)) in the NGV PSDU.  | N | Y |
| Otherwise | Not present*[CID# 128]* | N | N |
|  | …… |  |  |  |
|  |  |  |  |  |
| NOTE 1—In the “TXVECTOR” and “RXVECTOR” columns, the following apply:Y = Present;N = Not present;O = Optional; |

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***TGbd Editor: please implement the modification to sub-clause 32.3.4 (Effects of CH\_BANDWIDTH parameter on PPDU format) and Table 32-2 in IEEE P802.11bd D0.3 as proposed below as part of resolution to CID 247.***

**32.2.4 Effects of CH\_BANDWIDTH parameter on PPDU format**

Table 32-2 (Interpretation of FORMAT, NON\_NGV\_MODULATION and CH\_BANDWIDTH parameters) shows the valid combinations of the FORMATV, NON\_NGV\_MODULATION and CH\_BANDWIDTH parameters and the corresponding PPDU format.

**Table 32-2— Interpretation of FORMAT, NON\_NGV\_MODULATION and CH\_BANDWIDTH parameters**

|  |  |  |  |
| --- | --- | --- | --- |
| **FORMAT** | **NON\_NGV\_MODULATION** | **CH\_BANDWIDTH** | **PPDU format** |
| NGV | N/A | CBW10 | The STA transmits an NGV PPDU(when FORMAT is NGV) of 10MHz bandwidth. |
| NGV | N/A | CBW20 | The STA transmits an NGV PPDU of 20 MHz bandwidth. |
| NON\_NGV\_10 | OFDM | CBW10 | The STA transmits a non-NGV PPDU of 10 MHz bandwidth. |
| NON\_NGV\_10 | NON\_NGV\_10\_DUP\_OFDM | CBW20 | The STA transmits a NON\_NGV\_10 PPDU with NON\_NGV\_MODULATION set to NON\_NGV\_10\_DUP\_OFDM using two adjacent 10 MHz channels as defined in 32.3.8.11 (Non-NGV duplicate transmission). The one 10 MHz channel higher in frequency is rotated +90º relative to the 10 MHz channel lowest in frequency as defined in Equation (32-5). |

***TGbd Editor: please replace Figure 32-1 and Figure 32-2 in IEEE P802.11bd D0.3 with following alternatives. as part of resolution to CID 247.***

32.2.5 Support for NON\_NGV format

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**Figure 32-1—PHY interaction on transmit for various PPDU formats**



**Figure 32-2—PHY interaction on receive for various PPDU formats**

*[CID# 247]*

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***TGbd Editor: please add sub-clause 32.3.8.11 (Non-NGV duplicate transmission) into IEEE P802.11bd D0.3 as proposed below as part of resolution to CID 247.***

32.3.8.11 Non-NGV duplicate transmission

When the TXVECTOR parameter FORMAT is NON\_NGV\_10 and the TXVECTOR parameter NON\_NGV\_MODULATION is NON\_NGV\_10\_DUP\_OFDM, the transmitted PPDU is a non-NGV duplicate. Non-NGV duplicate transmission is used to transmit to STAs that support non-NGV OFDM and may be present in a part of a 20 MHz channel (see Table 32-2 (Interpretation of FORMAT, NON\_NGV\_MODULATION, CH\_BANDWIDTH, and CH\_OFFSET parameters)). The RL-SIG, NGV-SIG, RNGV-SIG, NGV-STF and NGV-LTF fields are not transmitted. The L-STF, L-LTF, and L-SIG fields shall be transmitted in the same way as in the NGV transmission, with the exceptions for the Rate and Length fields which shall follow 17.3.4 (SIGNAL field).

*[CID# 247]*

***TGbd Editor: please add sub-clause 32.4.4 (NGV PHY) into IEEE P802.11bd D0.3 as proposed below as part of resolution to CID 128.***

**32.4.4 NGV PHY***[CID# 128]*

The static NGV PHY characteristics, provided through the PLME-CHARACTERISTICS service primitive, shall be as shown in Table 17-21 (OFDM PHY characteristics) with 10 MHz channel spacing unless otherwise listed in Table 32-xx (NGV PHY characteristics). The definitions for these characteristics are given in 6.5.4 (PLME-CHARACTERISTICS.confirm).

Table 32-xx -- NGV PHY characteristics

|  |  |
| --- | --- |
| Characteristics | Value  |
| aSlotTime | If dot11OperatingClassesRequired is false, 13 µsIf dot11OperatingClassesRequired is true, 13 µs plus any coverage-class-dependent aAirPropagationTime (see Table 9-97 (Coverage Class field parameters)) |
| aCCAMidTime | 45 µs |
| aPPDUMaxTime | 5.484 ms |
| aPSDUMaxLength | 121, 320 octets (see NOTE 1) |
| aRxPHYStartDelay | 96 µs (see NOTE 2) |
| NOTE 1—This is the maximum length in octets for a NGV PPDU with a bandwidth of 20 MHz, NGV-MCS 9, and 2 spatial streams, and limited by 674 possible data symbols in aPPDUMaxTime. This is the maximum PSDU length an NGV PHY could support assuming no restrictions in MAC. See 10.3.2 (Procedures common to the DCF and EDCAF) and 9.2.4.7.1 (General) for additional restrictions on the maximum number of octets the MAC could support.NOTE 2—This value arises from the time to the end of NGV-LTF (see Figure 32-4 (NGV PPDU format)) plus the need to decode the first symbol of the Data field in order to extract the SERVICE field and check the CRC it contains. |

-------------------- ***End of proposed changes for resolution to CID 247/128*** *--------------------------*

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| **CID** | **Pg/Ln** | **Clause** | **Comment** | **Proposed Changed** | **Resolution** |
| 359 | 66.54 | 32.4.1 | fill TBD | as in comment | **Revised****Discussion:**Agree in principle. **TGbd Editor:** Please implement the proposed spec text modification as part of resolution to CID 359 as in document 11-20/0790r0. |

*---------------------------****Proposed Spec Text Modifications for CID 359****----------------------------------*

***TGbd Editor: please update sub-clause 32.4.1 (PLME-SAP) in IEEE P802.11bd D0.3 as proposed below as part of resolution to CID 359.***

**32.4.1 PLME-SAP**

~~<TBD>~~

Table 32-xx (NGV PHY MIB attributes) lists the MIB attributes that may be accessed by the PHY entities and

the intralayer of higher level LMEs. These attributes are accessed via the PLME-GET, PLME-SET, PLME-

RESET, and PLME-CHARACTERISTICS primitives defined in 6.5 (PLME SAP interface).

Table 32-xx—NGV PHY MIB attributes

|  |  |  |
| --- | --- | --- |
| Managed object | Defaultvalue/range | Operationalsemantics |
| dot11PHYOperationTable |
| dot11PHYType | ngv | Static |
| dot11PHYTxPowerTable |
| dot11NumberSupportedPowerLevelsImplemented | Implementation dependent | Static |
| dot11TxPowerLevel1 | Implementation dependent | Static |
| dot11TxPowerLevel2 | Implementation dependent | Static |
| dot11TxPowerLevel3 | Implementation dependent | Static |
| dot11TxPowerLevel4 | Implementation dependent | Static |
| dot11TxPowerLevel5 | Implementation dependent | Static |
| dot11TxPowerLevel6 | Implementation dependent | Static |
| dot11TxPowerLevel7 | Implementation dependent | Static |
| dot11TxPowerLevel8 | Implementation dependent | Static |
| dot11CurrentTxPowerLevel | Implementation dependent | Static |
| dot11TxPowerLevelExtended | Implementation dependent | Static |
| dot11CurrentTxPowerLevelExtended | Implementation dependent | Static |
| dot11PHYNGVTable |
| dot11CurrentChannelWidth | Implementation dependent | Dynamic |
| dot11CurrentPrimaryChannel | Implementation dependent | Dynamic |
| dot11CurrentSecondaryChannel | Implementation dependent | Dynamic |
| dot11NGVDCMImplemented | Implementation dependent | Static |
| dot11NGVMidambleRxMaxNSS | Implementation dependent | Static |
| dot11NGVDYN20MAllowed | Implementation dependent | Static |

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-------------------- ***End of proposed changes for resolution to CID 359*** *---------------------*

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| **CID** | **Pg/Ln** | **Clause** | **Comment** | **Proposed Changed** | **Resolution** |
| 254 | 29.60 | 32.2.3 | dot11CurrentChannelWidth should be defined in 32.3 (PHY MIB) with NGV PHY MIB attributes | make a table called NGV PHY MIB attributes and define it | **Revised****Discussion:**Agree in principle. **TGbd Editor:** Please implement the proposed spec text modification as part of resolution to CID 254 as in document 11-20/0790r0. |
| 360 | 66.59 | 32.4.2 | fill TBD | as in comment | **Revised****Discussion:**Agree in principle. **TGbd Editor:** Please implement the proposed spec text modification as part of resolution to CID 360 as in document 11-20/0790r0. |

*---------------------------****Proposed Spec Text Modifications for CID 254/360****---------------------------------*

***TGbd Editor: please update sub-clause 32.4.2 (PHY MIB) in IEEE P802.11bd D0.3 as proposed below as part of resolution to CID 254/360 respectively.***

**32.4.2 PHY MIB**

~~<TBD>~~

NGV PHY MIB attributes are defined in Annex C with specific values defined in Table 32-xx (NGV PHY MIB attributes). The “Operational semantics” column in Table 32-xx (NGV PHY MIB attributes) contains two types: static and dynamic.

— Static MIB attributes are fixed and cannot be modified for a given PHY implementation.

— Dynamic MIB attributes are interpreted according to the MAX-ACCESS field of the MIB attribute.

When MAX-ACCESS is read-only, the MIB attribute value may be updated by the PLME and read from the MIB attribute by management entities. When MAX-ACCESS is read-write, the MIB attribute may be read and written by management entities but shall not be updated by the PLME.

-------------------- ***End of proposed changes for resolution to CID 254/360*** *---------------------*

**References:**

1. **IEEE P802.11bd/D0.3, Apr 2020.**