IEEE P802.11
Wireless LANs

|  |
| --- |
| Resolution Clause 3 comments for LB-251 |
| Date: 2020-12-7 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Joseph LEVY | InterDigital, Inc. | 111 W 35th St., NY, New York | +1 631.622.4239 | joseph.levy@interdigital.com |
|  |  |  |  |  |
|  |  |  |  |  |

Abstract

This document provides proposed comment resolutions for some comments submitted in response to the 802.11 TGbd D1.0 WG letter ballot #251. CIDs: 1196, 1197, 1240, 1250, 1255, 1258, 1378, 1380, 1381, 1382, 1383, 1384, 1385, 1439, 1507, 1508, 1515, 1516, 1689, 1732, 1733, 1734, and 1735 are addressed.

The comments are available in: <https://mentor.ieee.org/802.11/dcn/20/11-20-0701-01-00bd-tgbd-d0-3-comments.xlsx>. The proposed resolutions are grouped by clause, page and line number.

**CIDs for Clause 3.1, Page 15, line 10:**

|  |  |  |  |
| --- | --- | --- | --- |
| **CID** | **Comment** | **Proposed Change** | **Resolution** |
| 1255 | The definition of non-NGV duplicate is not very clear and should align with other similar definitions in 802.11 | Change the definition to be: "A transmission format of the physical layer (PHY) thatduplicates a 10 MHz non-NGV transmission in two adjacent 10 MHz channels and allows a station (STA) operating in the outside the context of a basic service set (BSS) (OCB) mode on any one of the 10 MHz channels to receive the transmission." | **Accepted:**Note: the expansion of V2X is provided in other CIDs – this resolution only addresses the definition portion of the definition, not the phrase being defined. |
| 1258 | The definition currently in clause 3.1 should be in clause 3.2. Both the existing definitions: "dynamic bandwidth operation" and "bandwidth signaling transmitter address" are currently in clause 3.2 in 802.11md D5.0. These definitions should not be moved to 3.1. Also the definition for non-NGV duplicate should be in clause 3.2. | Move all the definitions currently shown in clause 3.1 to be in clause 3.2. | **Revised:**Agree in principle. It is not in the scope of TGbd to change the location of legacy definitions (the change of location of legacy definition should be considered by TGm). Only the definition for non-NGV duplicate is new (non-legacy) Move the definition of non-NGV duplicate to clause 3.2.Note: CID 1732, and1689 also move the non-NGV duplicated definition to clause 3.2 |
| 1515 | he term "Next Generation V2X (NGV)". The amendment name is Next Genration Vehicular Communication" The use of the term V2X is not justified here and need to use the name of the amensment which can also be abbreviated as NGV | as in comment. | **Revised:**The PAR Amendment title is: “Enhancements for Next Generation V2X”. The Amendment title should be aligned with the PAR. Therefore, change the page 1 line 30 to read: “Amendment 5: Enhancements for Next Generations V2X”.  |
| 1516 | has V2X defined anywhere? I know it is a public slang but need to define precisely hat does it mean. | Add V2X defintion and abbreviation | **Revised:**A definition for V2X is not required as V2X is a well know technical term that is commonly used in the technical publications. But all abbreviations in a definition should be expanded. Replace “V2X” with “vehicle to everything (V2X)”. Note: CID 1254 suggests this change as an editorial and CID 1009 request adding a definition for V2X. Also note: V2X is defined at first use: in the amendment Abstract: “… vehicle to everything (V2X) …” (2.2) and in the Introduction “… vehicle to everything (V2X) …” (3.12). |
| 1689 | The definition of "non-next generation V2X (non-NGV) duplicate" is an IEEE 802.11 specific one and should be moevd to clause 3.2 | Move the definition paragraph of "non-next generation V2X (non-NGV) duplicate" from clause 3.1 to 3.2. | **Accepted**Note: the resolution of CID 1258, and 1732 also calls to move this definition to 3.2 |

**CIDs for Clause 3.1, Page 15, line 11:**

|  |  |  |  |
| --- | --- | --- | --- |
| **CID** | **Comment** | **Proposed Change** | **Resolution** |
| 1138 | The non-NGV duplicate transmission format should be the definition specified to IEEE 802.11 | move the definition to section 3.2 | **Accepted**Note: the resolution of CID 1258 and 1732 also call to move this definition to 3.2 |
| 1139 | The non-NGV duplicate transmission format is same as the non-NGV duplicate PPDU in section 31.2.5 | Change the defining word to 'non-next generation V2X (non-NGV) duplicated PPDU' and modify the corresponding description to non-NGV duplicated PPDU | **Rejected:**Agree with the commentor that the non-NGV duplicate transmission format is the format of a non-NGV duplicate PPDU. However, looking at how the 802.11 specification deals with non-HT duplicate, the specification defines: non-HT duplicate, non-HT duplicate frame, and non-HT duplicate PPDU. Therefore, there should be a definition for non-NGV duplicate. Discuss added a definition for a non-NGV duplicate PPDU, see below.  |
| 1250 | "duplicates a 10 MHz non-NGV transmission on two adjacent10 MHz channels" what is a non-NGV transmission? there is no definitionof such a transmission thus an HT, VHT, HE are all transmission non-NGV transmissions. | define 10MHz no NGV transmission to be an OFDM transmissionin accordance with clause 17 and then define a "non NGV Duplicate" asduplicate 10MHz transmission of that. Similar to non-HT Duplicate format of VHT and HT. | **Revised:**Agree with the commentor that there is no definition for “10 MHz non-NGV”. But it may be better to follow the style of non-HT duplicate.Add the following to the end of the definition:“The non-HT duplicate format replicates a non-NGV 10 MHz format PPDU in two adjacent 10 MHz Channels.”See discussion below. |
| 1378 | A non-NGV STA will only be able to receive the transmission if it supports 10 MHz transmissions. Is this intended for 1/2 clocked OFDM STAs? HE STAs that support 106-tone ER PPDUs? | State in the definition which STAs will be able to receive the transmission on one of the 10 MHz channels | **Rejected:**All STAs that support OCB in the 5.9 GHz band operating on one or both channels should be able to receive at least one of the non-NGV duplicate 10 MHz PPDUs. Hence, there is no need to specify which STAs will be able to receive the transmissions.  |

**Discussion on CID 1139:**

The definition of the non-NGV duplicate is in line with current 802.11 practice. Hence, it should be defined. The term and its derivatives are not used widely thought out the standard, so it is not necessary to provide a definition for all the variants of the term: non-NGV duplicate PPU. See addition discussion related to CID 1250, below.

**Discussion on CID 1250:**

The current non-NGV duplicate definition closely follows the current non-HT duplicate definition. Hence, it is basically aligned with the style and content of the current 802.11 specification. (See the definitions below.)

The current 802.11bd D1.0 definition is:

**non-next generation V2X (non-NGV) duplicate:** A transmission format of the physical layer (PHY) that duplicates a 10 MHz non-NGV transmission on two adjacent 10 MHz channels and allows a non-NGV station (STA) or next generation V2X (NGV) station on either one of the 10 MHz channels to receive the transmission

802.11 specification currently defines non-HT duplicate as follows:

**non-high-throughput (non-HT) duplicate:** A transmission format of the physical layer (PHY) that duplicates a 20 MHz non-HT transmission in two or more 20 MHz channels and allows a station (STA) in a non-HT basic service set (BSS) on any one of the 20 MHz channels to receive the transmission. A non-HT duplicate format is a transmission format of the PHY that replicated a 10 MHz one of the following:

a) 40 MHz non-HT duplicate: A transmission format of the PHY that replicates a 20 MHz non-HT transmission in two adjacent 20 MHz channels.

b) 80 MHz non-HT duplicate: A transmission format of the PHY that replicates a 20 MHz non-HT transmission in four adjacent 20 MHz channels.

c) 160 MHz non-HT duplicate: A transmission format of the PHY that replicates a 20 MHz non-HT transmission in eight adjacent 20 MHz channels.

d) 80+80 MHz non-HT duplicate: A transmission format of the PHY that replicates a 20 MHz non-HT transmission in two frequency segments of four adjacent 20 MHz channels where the two frequency segments of channels are not adjacent.

However, the non-NGV duplicate definition does not provide any information on the format of the PPDUs used in the 10 MHz channels. This should probably be added.

Propose to add: “The non-HT duplicate format replicates a non-NGV 10 MHz format PPDU in two adjacent 10 MHz Channels.”

**CIDs for Clause 3.2, Page 15, line 28:**

|  |  |  |  |
| --- | --- | --- | --- |
| **CID** | **Comment** | **Proposed Change** | **Resolution** |
| 1073 | NGV transmission needs to be added to the list of 20 MHz mask PHY PPDUs and 20 MHZ PHY PPDUs | Add the NGV transmissions to the 2 paragraphs related to 20 MHZ mask PHY PPDUs and 20 MHz PHY PPDUs. | **Rejected:**The terms 20 MHz Mask PHY PPDU and 20 MHz PHY PPDU are not used in the NGV amendment, therefore there is no need to add the NGV transmissions types to the legacy definitions.  |

**CIDs for Clause 3.2, Page 15, line 38:**

|  |  |  |  |
| --- | --- | --- | --- |
| **CID** | **Comment** | **Proposed Change** | **Resolution** |
| 1074 | 10 MHz PPDU definition is missing | Add definition for 10 MHz PHY PPDU and 10 MHz mask PHY PPDU | **Rejected:**The terms 10 MHz Mask PHY PPDU and 10 MHz PHY PPDU are not used in the NGV amendment, therefore there is no need to provide these definitions. |

**CIDs for Clause 3.2, Page 15, line 43:**

|  |  |  |  |
| --- | --- | --- | --- |
| **CID** | **Comment** | **Proposed Change** | **Resolution** |
| 1009 | Definition of V2X is missing | Add definition. | **Rejected:**A definition for V2X is not required as V2X is a well know technical term that is commonly used in the technical publications. Note: All abbreviations in a definition should be expanded. Replace “V2X” with “vehicle-to-everything (V2X)”. Note: CID 1254 suggests this change as an editorial and CID 1516 request adding a definition for V2X. Also note: V2X is defined at first use: in the amendment Abstract: “… vehicle to everything (V2X) …” (2.2) and in the Introduction “… vehicle to everything (V2X) …” (3.12). |

**CIDs for Clause 3.2, Page 15, line 45:**

|  |  |  |  |
| --- | --- | --- | --- |
| **CID** | **Comment** | **Proposed Change** | **Resolution** |
| 1196 | The definition of non-NGV PPDU is restricted to "the 5.9 GHz" band. That restriction should be removed. Whereever NGV and non-NGV (10 MHz OCB) PPDUs share spectrum they should be coexistent. FCC rules will soon prohibit both types of PPDUs from the US 5.9 GHz band, but there may be other spectrum they can use. | Omit "in 5.9 GHz band" from definition of non-NGV PPDU | **Rejected:**Non-NGV PPDUs are legacy 802.11 5.9 GHz band 10 MHz PPDUs (802.11p based PPDUs) and the term is used in the NGV specification to address coexistence requirements for NGV and non-NGV transmissions. If future bands are defined for NGV, there is no reason to have to discuss legacy PPDUs as there are no legacy PPDUs outside the 5.9 GHz band. |

**CIDs for Clause 3.2, Page 15, line 48:**

|  |  |  |  |
| --- | --- | --- | --- |
| **CID** | **Comment** | **Proposed Change** | **Resolution** |
| 1010 | It is not clear what an NGV STA is. Is it a STA that supports 11p but not 11bd or is it a STA that supports anything but 11bd? Please clarify. | As in comment. | **Rejected:**The comment points at the non-NGV STA definition and seems to comment on it, but uses the term “NGV STA”, this resolution assumes that the commentor is discussing the non-NGV STA definition.The definition of a non-NGV STA clearly defines the STA capabilities, as a STA that can receive and transmit non-NGV PPDUs (which are legacy 802.11p type PPDUs) and cannot transmit NGV PPDUs. (802.11bd type PPDUs).  |
| 1168 | The definition of non-next generation V2X STA could apply to any 802.11 STA, which it not the assumed intent. | Assume this is meant to apply to what is commonly called "802.11p." Definition should be restricted to a STA that has the OCB bit set (dot11OCBActivated), whether NGV or non-NGV. | **Rejected:**The definition of a non-NGV STA clearly states that it is a STA that can receive and transmit non-NGV PPDUs. A non-NGV PPDU is defined as PPDU that is transmitted OCB. If the PPDU is transmitted OCB in must have the OCB bit set. |
| 1380 | This definition is confusing. All STAs that are not NGV STAs are able to transmit and receive non-NGV PPDUs | Delete "that may transmit or receive non-NGV phys-ical (PHY) protocol data units (PPDUs) and " and change "that is not able to transmit" to "that does not support transmission or reception of" | **Rejected:**A non-NGV STA is not STA that just does not support NGV transmission, it is a specific type of STA that operates in OCB mode in the 5.9 band in a 10 MHz wide channel. This STA type is defined for coexistence purposes (addressing “802.11p” legacy devices). Hence, the definition restricts the STA to one that transmits and receives non-NGV PPDUs (which are “802.11p” PPDUs) and does not transmit NGV PPDUs. While it is possible to include the suggested text “that does not support transmission or reception of”, it is not necessary as stating that it does not support transmission is adequate.Note Cid 1197 also proposes stating “not able to transmit or receive”. |
| 1381 | This definition is confusing. All STAs that are not NGV STAs are able to transmit and receive non-NGV PPDUs | Change the definition to "A STA that is not an NGV STA." | **Rejected:**A non-NGV STA is not STA that just does not support NGV transmission, it is a specific type of STA that operates in OCB mode in the 5.9 band in a 10 MHz wide channel. This STA type is defined for coexistence purposes (addressing “802.11p” legacy devices). Hence, the definition restricts the STA to one that transmits and receives non-NGV PPDUs (which are “802.11p” PPDUs).  |
| 1382 | We don't need definition of "non-<PHY> STA" | Delete the definition | **Rejected:**The term non-NGV STA is used in Clause 17 in several notes to provide clarity of the differences between legacy 802.11p STAs and NGV STAs behavior. Therefore, the definition is necessary. Note: similar to CID 1733  |
| 1732 | Non-NGV duplicate is defined in 3.1 Definitions. But it should be in 3.2 Definitions specific to IEEE Std 802.11. | Move the definition of non-NGV duplicate from 3.1 to 3.2 | **Accepted:**Note: CIDs 1258, and1689 also move this definition to clause 3.2 |
| 1733 | A non-NGV STA is defined here. But the conventional specs do not define non-XX STAs. If such definition is necessary, it can be written in 4.3.17a in contrast with an NGV STA. | Delete the definition of non-NGV STA from 3.2 | **Rejected:**The term non-NGV STA is used in Clause 17 in several notes to provide clarity of the differences between legacy 802.11p STAs and NGV STAs behavior. Therefore, the definition is necessary. Note: similar to CID 1382 |

**CIDs for Clause 3.2, Page 15, line 49:**

|  |  |  |  |
| --- | --- | --- | --- |
| **CID** | **Comment** | **Proposed Change** | **Resolution** |
| 1197 | This may seem a nit, but the following STA description seems to fit the definitions of both NGV STA and non-NGV STA: a STA that supports reception of protocol data units conformant to Clauses 31 and 32. It is not desirable to have an overlap in the two definitions, so we should consider revising one or both so they are mutually exclusive | In the definition of non-NGV STA change "not able to transmit" to "not able to transmit or receive" | **Rejected:**While it is possible to include the suggested text that it does not support transmission or reception of NGV PPDUs, it is not necessary, stating that it does not support transmission is adequate.Note: this proposed change is also in CID1380 |
| 1507 | In the following sentence, "A STA that may transmit or receive non-NGV physical (PHY) protocol data units (PPDUs) and that is not able to transmit next generation V2X (NGV) PPDUs.", the word "may" could be interpreted as there is another option other than transmitting/receiving non-NGV PPDUs. | Delete "may" from the sentence and rephrase the sentence as follows: "A STA that transmits or receives..." or "A STA that supports non-NGV ..." | **Revised:**Accept in principle.Change: “A STA that may transmit or receive non-NGV …”To: “A STA that transmits or receives non-NGV …” |

**CIDs for Clause 3.2, Page 15, line 52:**

|  |  |  |  |
| --- | --- | --- | --- |
| **CID** | **Comment** | **Proposed Change** | **Resolution** |
| 1508 | The definition "next generation V2X (NGV) physical layer (PHY) protocol data unit (PPDU): A Clause 32 (Next Generation V2X (NGV) PHY specification) PPDU" doesn't provide any useful information to readers. The definition should at least have a short description what it is or indicate how the TXVECTOR parameter is set. | Please rewrite the definition by at least including the TXVECTOR parameter FORMAT equal to NGV. | **Revised:**Agree in principle most PPDU definitions provide some TXVECTOR parameters.Replace: “A Clause 32 (Next Generation V2X (NGV) PHY specification) PPDU.”With: “A Clause 32 (Next Generation V2X (NGV) PHY specification) PPDU with the TXVECTOR FORMAT equal to NGV or Non\_NGV\_10.”This definition includes all Clause 32 PPDUs, hence may not be necessary to make this change. |

**CIDs for Clause 3.2, Page 15, line 56:**

|  |  |  |  |
| --- | --- | --- | --- |
| **CID** | **Comment** | **Proposed Change** | **Resolution** |
| 1734 | An NGV STA is defined here. But 4.3.17a will be enough. The conventional specs do not define XX STAs. | Delete the definition of NGV STA from 3.2. | **Accepted:**Generic STA types are not defined, e.g., HT STA and VHT STA are not defined, though specific types of these STAs are. |

**CIDs for Clause 3.2, Page 15, line 61:**

|  |  |  |  |
| --- | --- | --- | --- |
| **CID** | **Comment** | **Proposed Change** | **Resolution** |
| 1383 | ", which isdesignated by MLME primitives and/or MIB access," does not clarify anything and is slightly confusing | Delete the cited text | **Revised:**The primary and secondary OCB channels are defined and managed by a higher layer entity (outside the scope of 802.11). This external management allows NGV operation to only consider the CS of the primary channel when accessing the WM, without concern of impacting STAs on the secondary channel.Replace: “A 10 MHz channel, which is designated by MLME primitives and/or MIB access, in which both a physical carrier sense (CS) and virtualCS are applied to determine the current state of use of the 10 MHz wireless medium (WM) for the transmissionof a 20 MHz next generation vehicle-to-everything (V2X) (NGV) physical layer (PHY) protocol data unit (PPDU).”With: “A 10 MHz channel that is defined and managed by a higher layer entity (via MLME primitives and/or MIB parameters). The state of the Physical carrier sense (CS) and virtual CS of the OCB primary channel is used to assess the availability of the wireless media (WM) for the transmission of 20 MHz next generation vehicle to everything (V2X) (NGV) physical layer (PHY) protocol data units (PPDUs).”Note: it may be necessary to align the OCB secondary channel definition with the OCP primary channel definition. |
| 1384 | This definition is confusing. For a 20 MHz transmission, not only the primary 10 MHz CS should be considered | Change "20 MHz" to "10 MHz" at the end of the definition | **Revised:**NGV 20 MHz operation only considers the CS state of the primary channel when determining the availability of the 20 MHz WM. Note: channel use/management in NGV is controlled by a higher layer entity, it is assumed that higher layer entity understands NGV channel access rules and will ensure collision do not happen on the secondary channel.Replace: “A 10 MHz channel, which is designated by MLME primitives and/or MIB access, in which both a physical carrier sense (CS) and virtualCS are applied to determine the current state of use of the 10 MHz wireless medium (WM) for the transmissionof a 20 MHz next generation vehicle-to-everything (V2X) (NGV) physical layer (PHY) protocol data unit (PPDU).”With: “A 10 MHz channel that is defined and managed by a higher layer entity (via MLME primitives and/or MIB parameters). The state of the Physical carrier sense (CS) and virtual CS of the OCB primary channel is used to assess the availability of the wireless media (WM) for the transmission of 20 MHz next generation vehicle to everything (V2X) (NGV) physical layer (PHY) protocol data units (PPDUs).” Note: it may be necessary to align the OCB secondary channel definition with the OCP primary channel definition. |
| 1385 | This definition does not seem to follow the usual definition of primary channels | Follow the baseline convention for description of primary channels | **Rejected:**NGV primary channels are not like usual 802.11 primary channels. As, NGV 10 MHz primary channels are used to assess the availability of the NGV 20 MHz channel, this is possible because the use/management NGV channels is controlled by a higher layer entity. It is assumed that higher layer entity understands NGV channel access rules and will ensure collision do not happen on the secondary channel. |

**CIDs for Clause 3.2, Page 16, line 1:**

|  |  |  |  |
| --- | --- | --- | --- |
| **CID** | **Comment** | **Proposed Change** | **Resolution** |
| 1011 | These definitions seem to be more generic than the intended purpose. OCB Primary channel and OCB secondary channel. Perhaps add a 10M or smth to specify that these are 10 MHz channels. | As in comment | **Rejected:**The concept of OCB primary and secondary channels are being introduced in NGV. Therefore, there is no need to provide any additional specificity the terms are unique. |

**CIDs for Clause 3.2:**

|  |  |  |  |
| --- | --- | --- | --- |
| **CID** | **Comment** | **Proposed Change** | **Resolution** |
| 1735 | The definition of non-NGV should be present. | Add "non-next generation V2X (non-NGV): A modifier meaning not next generation V2X (NGV)." in 3.2. | **Rejected:**The proposed definition adds no additional understanding of non-NGV, beyond expanding out the abbreviations.Note: Non-NGV does not simply mean not next generation V2X – it is used in the specification to describe legacy the implemented “802.11p” used by existing ITS systems: OCB mode in the 5.9 GHz band in a 10 MHz wide channel. |
| 1240 | non-next generation V2X usage seems odd. If this Amendment is defining next generation V2X, then use the existing terms for the non-next generation V2X items | Delete definitions "non-next generation V2X" p15 line 43; p15 line 48; | **Rejected:**The use of non-NGV is “odd” relative to past usage of non-XXX in 802.11. As the term is being used to define a specific type of operation not just operation that does not support NGV features which would include most 802.11 operation. The term is used to describe a specific type of operation that exist only in OCB mode in the 5.9 band in a 10 MHz wide channel (802.11p legacy operation). This type is defined for coexistence purposes to allow the specification to address the protection of these legacy devices. |
| 1439 | "20 MHz NGV STA" is not defined | Add a definition: an NGV STA that supports 20 MHz channel width | Rejected:All NGV STAs support 20 MHz channel width operation. See MIB OF4.14.5. Therefore, there is no need to add a definition for a 20 MHz NGV STA. |

**References:**

1. [2014 IEEE Standards Style Manual](https://development.standards.ieee.org/myproject/Public/mytools/draft/styleman.pdf): <https://development.standards.ieee.org/myproject/Public/mytools/draft/styleman.pdf>
2. IEEE Std 802.11-2016: <https://ieeexplore.ieee.org/document/7786995>
3. IEEE Std 802.11md D3.0: <http://www.ieee802.org/11/private/Draft_Standards/11md/Draft%20P802.11REVmd_D3.0.pdf>
4. IEEE Std 802.11bd D0.3: <http://www.ieee802.org/11/private/Draft_Standards/11bd/Draft%20P802.11bd_D0.3.pdf>
5. [802.11-20/0701r1](https://mentor.ieee.org/802.11/dcn/20/11-20-0701-01-00bd-tgbd-d0-3-comments.xlsx), TGbd-D0.3-comments, https://mentor.ieee.org/802.11/dcn/20/11-20-0701-01-00bd-tgbd-d0-3-comments.xlsx