IEEE P802.11
Wireless LANs

|  |
| --- |
| LB254 Comment Resolution for 11bd D2.0 Clause 4 |
| Date: 2021-11-09 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Stephan Sand | German Aerospace Center (DLR) |  |  | stephan.sand@dlr.de |
|  |  |  |  |  |

Abstract

This submission discusses resolutions to the following 9 CIDs from WG LB 254 of TGbd D2.0 related to Clause 4.

Th CID list is: 2051, 2053, 2078, 2128, 2223, 2230, 2238, 2240, 2259

Proposed changes in this document are with reference to TGbd D2.1.

Revisions:

* Rev 0: Initial version of the document
* Rev 1: CIDs 2078 and 2051 corrected reference to P20L46-L49

Proposed comment resolution

Presented and discussed, no open discussion points

Under discussion

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 2238 | 19.14 | The definition of an NGV STA in the first two paragraphs of this clause needs some improvement:- it requires that a 60 GHz NGV STA also support 5.9 GHz. I think it is unrealistic to expect a single STA to support both bands, and it is not what the PAR requires.- The first sentence is too long. It should be divided into multiple sentences for clarity.- Clarity can be added about the fact that the double throughput and lower sensitivity need not be supported simultaneously.- There are a couple of editorial improvements. a) The name of the STA type is "NGV STA" not "Enhancements for NGV STA". b) it is preferred to replace "operating OCB" with "communicating OCB". This latter editorial improvement also applies to the 4th paragraph of the clause. | Replace the first and second paragraphs of the clause with this text:"The IEEE 802.11 Next Generation V2X (NGV) STA is a STA that provides MAC and PHY features as defined in Clause 31 (Next Generation V2X (NGV) MAC specification) and Clause 32 (Next Generation V2X (NGV) PHY specification). The NGV STA communicates outside the context of a BSS in the 5.9 GHz band and/or in the 60 GHz band. When communicating in the 5.9 GHz band, it can support at least twice the throughput and at least 3 dB lower sensitivity compared to a non-NGV STA. The double throughput characteristic is compared to the 12.0 Mb/s maximum mandatory data rate for non-NGV STAs communicating OCB in 10 MHz channels in the 5.9 GHz band. The double throughput and lower sensitivity characteristics might be supported in separate modes of communication, and not simultaneously. The US 5.9 GHz band is defined in Clause E.2.3 and the European 5.9 GHz band is defined in Clause E.2.4. The 60 GHz band is defined in Clause E.1"In the fourth paragraph of this clause, change "operating OCB" to "communicating OCB". | RevisedResolutions to CIDs 2062 and 2065 changed the definitions for 60 GHz operation (see <https://mentor.ieee.org/802.11/dcn/21/11-21-1481-02-00bd-d2-0-cr-clause-4-related-to-ngv-sta-definition-and-60-ghz-operation.docx>). Now a DMG STA communicating OCB operates in the 60 GHz band and can be co-located with an NGV STA operating in the 5.9 GHz band.Agree with comment that first sentence is too long. It has been rephrased and split into two sentences (see also CID 2053).Agree with comment that clarity can be added that double throughput and higher receiver minimum input sensitivity might not be supported simultaneously.Agree with the comment on editorial improvements (see also CIDs 2052, 2053, 2219 and 2220).**TGbd editor:**Please change the first sentence as follows (see also CID 2053):An NGV STA provides MAC and PHY features as defined in Clause 31 (Next Generation V2X (NGV) MAC specification) and Clause 32 (Next Generation V2X (NGV) PHY specification). An NGV STA supports at least twice the throughput and at least 3 dB better receiver minimum input sensitivity than a non-NGV STA when communicating OCB in high mobility channel environments in the 5.9 GHz band, as defined in subclauses E.2.3 (5.9 GHz band in the United States (5.850- 5.925 GHz)) and E.2.4 (5.9 GHz band in Europe (5.855-5.925 GHz)). The double throughput and higher receiver minimum input sensitivity might not be supported simultaneously. |
| 2259 | 19.15 | There should be a clear requirement that an NGV STA sets dot11NGVActivated to true, and that a non-NGV STA does not set dot11NGVActivated to true. Some actions are linked to NGV STAs, for example, using the Duration/ID field in 9.2.5.1. Some actions are linked to dot11NGVActivated, for example including radio environment vectors in primitives. In fact, there is no difference between an NGV STA and a STA for which dot11NGVActivated is true | At the end of the first paragraph of this clause insert: "An NGV STA shall set dot11NGVActivated to true. A non-NGV STA shall with the MIB attribute dot11NGVActivated shall set it to false. A STA whose MIB does not include the dot11NGVActivated attribute operates as if the attribute is false. | RevisedAgree with comment.**TGbd editor:**Please please add the following sentences at the end of the first pargraph:An NGV STA shall set dot11NGVActivated to true. A non-NGV STA with the MIB attribute dot11NGVActivated shall set the attribute to false. A STA whose MIB does not include the dot11NGVActivated attribute operates as if the attribute is false. |
| 2053 | 19.17 | Lower sensitivy is probably inaccurate. The number that represents the sensitivity is lower (more negative) but the sensitivty is higher (more sensitive). Also, specific implementations vary and it might be that a non-NGV STA implementation is more sensitive than an NGV STA implementation. What this really refers to is the minimum sensitivity required to be compliant. This applies to "at least twice the throughput" as well; implemtantions vary. | Change the first sentence so that it reads "An IEEE 802.11 NGV STA provides MAC and PHY features defined in .... that provide modes of operation with at least twice the throughput and a minimum receive sensitivity that is 3 dB better than a non-NGV STA operating OCB." | RevisedAgree with comment.As several changes have been agreed in CIDs 2052, 2219 and 2220 and CID 2238 requires further changes the paragraph is rephrased as below.**TGbd editor:**Please change the first sentence as follows (see also 2238):An NGV STA provides MAC and PHY features as defined in Clause 31 (Next Generation V2X (NGV) MAC specification) and Clause 32 (Next Generation V2X (NGV) PHY specification). An NGV STA supports at least twice the throughput and at least 3 dB better receiver minimum input sensitivity than a non-NGV STA when communicating OCB in high mobility channel environments in the 5.9 GHz band, as defined in subclauses E.2.3 (5.9 GHz band in the United States (5.850- 5.925 GHz)) and E.2.4 (5.9 GHz band in Europe (5.855-5.925 GHz)). The double throughput and higher receiver minimum input sensitivity might not be supported simultaneously. |
| 2078 | 19.27 | The sentence "Additionally, if an NGV STA is co-located with a STA that supports Fine Time Management .... It may optionally support ... outside the 5.9 GHz frequency band" appears no value added to the NGV STA or not clear about the point trying to convey. It is not clear about the relationship of the NGV STA and the co-located STA? | Remove it to avoid confusion or modify it to convey the missing point if any. | RevisedAgree with comment.Paragraph on P19L38-42 will be removed see CID 2223.Similar CID 2051**TGbd editor:**Please remove paragraph on P19L38-42 and update sentence on P20L46-L49 as follows:An NGV STA may be co-located with a STA operating outside the 5.9 GHz band that supports fine timing measurement procedure as defined in 11.21.6 (Fine timing measurement (FTM) procedure). |
| 2051 | 19.28 | It is not the NGV STA that supports fine timing measurement, it is the (co-located) STA operating outside the 5.9 GHz band that supports fine timing measurement. Also, there is only one type of fine timing measurement so "as defined in" is not necessary. "Additionally" is probably not appropriate. This seems to imply that only NGV STAs that support NGV ranging may be co-located with STAs that support FTM. | Change the sentence to read "An NGV STA may be co-located with a STA operating outside the 5.9 GHz band that supports fine timing measurement (see 11.21.6)." | RevisedAgree with comment.Paragraph on P19L38-42 will be removed see CID 2223.Similar CID 2078**TGbd editor:**Please remove paragraph on P19L38-42 and update sentence on P20L46-L49 as follows:An NGV STA may be co-located with a STA operating outside the 5.9 GHz band that supports fine timing measurement procedure as defined in 11.21.6 (Fine timing measurement (FTM) procedure). |
| 2230 | 19.40 | In the reply to my comment on D1.0, the response included the following statement: "As OCB operation does not limit the use of other PHY format in any unlicensed bands, e.g. VHT/HE PPDU. V2X use of OCB operation in unlicensed bands should already be allowed in 802.11-20162020." (See also CAD Section 4.2 comments) This is not acceptable; 802.11bd is supposed to be for use in Intelligent Transportation Systems (such as DSRC) and includes collision avoidance use cases, which must have a higher priority than regular Wi-Fi transmissions. In addition, typical usage of Wi-Fi in the unlicensed bands permits transmissions that reserve the medium such as RTS/CTS, TXOP, and CTS-to-Self. These types of medium reservation signals, which are commonly used in Wi-Fi, would disrupt timely delivery of safety related OCB transmissions such as used in DSRC. In addition, Wi-Fi chipsets based on 802.11n/ac/ax/be were not designed for use at vehicular speeds; there have been no detailed studies to my knowledge of the performance or suitability of these systems at the target speed of 250km/h. In addition - and most critically - there has been no analysis or simulation of the performance of OCB transmissions, especially DSRC, mixed with conventional Wi-Fi traffic in an unlicensed band. | Note that operation of 802.11 in the unlicensed bands, whether U-NII-3, U-NII-4, or other unlicensed or license exempt bands is not recommended for Intelligent Transpiration Systems use cases and was not evaluated in this standard. | RejectedFirst, CID 2230 refers to an unsatisfactory resolution of CID 1178 with respect to D1.0. CID 2230 does not propose any changes to 11bd D2.0 and states that the proposed response “is not acceptable”, but there is no proposed change that allows to determine what is an acceptable resolution for the commentor.Please note 11bd PAR scope defines:This amendment defines modifications to both the IEEE 802.11 Medium Access Control layer (MAC) and Physical Layers (PHY) for vehicle to everything (V2X) communications for 5.9 GHz band as defined in clauses E.2.3 and E.2.4 of IEEE Std 802.11(TM)-2016; Hence CID 1178 is out of scope of the 11bd PAR. CID 1178 would requie to change the scope of 11bd PAR, but there has been no support from TGbd to do this.  |
| 2128 | 20.04 | The non-NGV duplicate operation is a main MAC feature distinguishing an NGV STA from a non-NGV STA. Please add the following bullet as fifth bullet on line 14 to the bullet list on main MAC features of an NGV STA that are not present in a non-NGV-STA:"Mandatory support for non-NGV duplicate operation for NGV STA supporting 20 MHz non-NGV duplicate PPDUs" | as in comment | RevisedAccording to Subclause 31.2.5 (Non-NGV duplication operation) and P68L65 non-NGV duplicate operation and non-NGV duplicate PPDU are optional features. See also CID 2127.**TGbd editor:**Please add the following bullet at the end of the bullet list “main MAC features of an NGV STA”:- Optional support for 20 MHz non-NGV duplicate operation |
| 2240 | 20.09 | Our PHY and MAC requirements are inconsistent about support for 20 MHz. PHY support is optional (p. 19, line 57). MAC support is listed as mandatory on line 9 and optional on line 22. | Change "Mandatory support for 20 MHz channel access ..." to "Optional support for 20 MHz channel access ..." to align with the other PHY and MAC requirements in this clause | RevisedAccording to P20L33 and CR CID #2222, 20 MHz OCB communication is optional. If an NGV STA uses 20 MHz OCB communication, the 20 MHz channel access with 10 MHz primary and 10 MHz secondary channel is mandatory.**TGbd editor:**Please change the bullet startin on P20L21 as follows:— Mandatory support for 20 MHz channel access with 10 MHz primary and 10 MHz secondary channel for 20 MHz OCB communication |
| 2223 | 20.29 | There is no need to state that the NGV STA supports positioning twice (once on page 19 line 27 and then again in more detail on page 20 line 29). The support of positioning should only be provided once in clause 4. | Delete: "An NGV STA may support positioning based on NGV Ranging, which consists of a subset of Fine timing Measurement (FTM) functionalities as defined in 11.21.6 (Fine timing measurement (FTM) procedure) and P.3 (Differential Distance Computation using Fine Timing Measurement frames):-- Fine Timing Measurement procedure negotiation and termination for Non-TB Ranging as defined in 11.21.6.3 (Fine Timing Measurement procedure negotiation) and Non-TB Ranging as described in 11.21.6.4.4 (Non-TB Ranging measurement exchange)-- Differential distance computation as detailed in Annex P.3 (Differential Distance Computation using Fine Timing Measurement frames)Additionally, if an NGV STA is co-located with a STA that supports Fine Timing Measurement (FTM) functionalities as defined in 11.21.6 (Fine timing measurement (FTM) procedure), it may optionally support a Fine Timing Measurement procedure outside the 5.9 GHz frequency band." | RevisedAgree with comment. CID 2223 is similar to CIDs 2051, 2055, 2078 and 2080.**TGbd editor:**Please remove the paragraph on P19L38-L42 and use same resolution as for CIDs 2051 and 2078. |