IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| D3.0 Comment Resolutions for 32.3.11 (Receiver Specification) | | | | |
| Date: 2022-01-20 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | Email |
| Rui Cao | NXP | 350 Holger Way, San Jose,CA |  | [rui.cao\_2@nxp.com](mailto:rui.cao_2@nxp.com) |

Abstract

This submission proposes resolution to the comments received on subsection 32.3.11 (Receiver specification) in TGbd D3.0. The following is the list of 5 CIDs:

* 3067, 3068, 3066, 3069, 3070

Revisions:

* r0: initial version
* r1: modified based on group discussion.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 3067 | 32.3.11 | 112.12 | "The requirements ... [in the next few subclauses] ... apply to PPDUs that meet all the following conditions:(#2199) -- 1.6 µs GI is used. -- NGV-LTF-2x is used. -- LDPC is used. -- The PPDU is an NGV PPDU." If the PPDU is an NGV PPDU, then isn't LDPC automatically used? It seems so from 32.1.1 (69.34) and 32.3.9.4 (103.13). Therefore, it is superfluous (and confusing) to call out LDPC here. | Delete "-- LDPC is used." | Revised  Agree with the commenter in principle. Also remove “1.6us GI” as it is the only GI format.    TGbd editor: please make the changes as in:  [https://mentor.ieee.org/802.11/dcn/22/11-22-0152-01-00bd-d3-0-cr-for-receive-specification.docx](https://mentor.ieee.org/802.11/dcn/22/11-22-0152-00-00bd-d3-0-cr-for-receive-specification.docx) |
| 3068 | 32.3.11 | 112.12 | ""The requirements ... [in the next few subclauses] ... apply to PPDUs that meet all the following conditions: ... -- NGV-LTF-2x is used." However, compare 99.64 (32.3.8.10): "When BPSK-DCM is applied to the NGV Data field of PPDU in 10 MHz, the NGV-LTF symbol uses NGV-LTF-2x-Repeat regardless of the value of the LTF Format subfield in the NGV-SIG field." Isn't this a contradiction? | Change "NGV-LTF-2x is used" to "NGV-LTF-2x-Repeat is used for BPSK-DCM in 10 MHz; NGV-LTF-2x is used otherwise" | Revised  Agree with the commenter in principle. Rephrase the sentence with clarification of NGV-LTF format.  TGbd editor: please make the changes as in:  [[https://mentor.ieee.org/802.11/dcn/22/11-22-0152-01-00bd-d3-0-cr-for-receive-specification.docx](https://mentor.ieee.org/802.11/dcn/21/11-21-1529-00-00bd-d3-0-comment-resolution-for-phy-introduction.docx)](https://mentor.ieee.org/802.11/dcn/22/11-22-0152-00-00bd-d3-0-cr-for-receive-specification.docx) |
| 3066 | 32.3.11 | 112.24 | "The requirements on receiver minimum input sensitivity in 32.3.11.1 (Receiver minimum input sensitivity), adjacent channel rejection in 32.3.11.2 (Adjacent channel rejection) and nonadjacent channel rejection in 32.3.11.3 (Nonadjacent channel rejection) are derived from the corresponding requirements for VHT PPDUs specified in 21.3.18 (VHT receiver specification)." Apparently, this statement functions as an explanatory note (since there is no normative statement in it). However, the explanation is puzzling. Clause 21.3.18 specifies minimum receiver sensitivities for VHT PPDUs that use BCC, whereas 32.3.11 specifies LDPC. Presumably, this should make a difference, but the numbers are the same for the 20 MHz case. Also, no "derivation" is given in this draft. Rather than giving a derivation, or adapting the wording, it seems simplest to delete the cited sentence. | Delete the cited sentence. | Revised  Agree that the word “derived” is not accurate, and the statement text here is not normative. Move the description to a note and change “derived” to “reference”.  TGbd editor: please make the changes as in:  [https://mentor.ieee.org/802.11/dcn/22/11-22-0152-01-00bd-d3-0-cr-for-receive-specification.docx](https://mentor.ieee.org/802.11/dcn/22/11-22-0152-00-00bd-d3-0-cr-for-receive-specification.docx) |
| 3069 | 32.3.11.1 | 112.34 | "The PSDU length shall be 2048 octets for BPSKDCM or 4096 octets for all other modulations." There is no need to distinguish BPSK DCM from other modulations in this way. It is true that BPSK-DCM \*in 10 MHz\* cannot specify 4096 octets, as that would exceed the maxuimum PPDU duration. However, that does not explain why BPSK-DCM in 20 MHz also specifies 2048 octets. One possible solution would be to add "in 10 MHz" after BPSK-DCM here. However, the simpler and better solution, and the one proposed here, is to define the same reference length, 2048 octets, for all modulation types. Plotting error probabilitiy curves versus received signal power at 2048 octets and 4096 octets for any normal device will produce curves that differ by tiny amounts (perhaps a couple of tenths of a dB) and that are separated by a vast gulf (10 dB or more) from the minimum receiver senstivity requirement, and so there is no material change in performance. | Change the cited sentence to "The PSDU length shall be 2048 octets." | Rejected.  The current 11bd defines shorter PSDU length of 2048 octets for BPSK-DCM due to the limitation of max LSIG Length (for 10MHz/Nss1). The generalization for BPSK-DCM is trying to spell out the different requirement for the new modulation of BPSK-DCM, so readers can easily pick up the information when reading the spec. This is the same definition practice as 11ax.  Generally agree that the sensitivity difference between 2048 octets and 4096 octets is likely not significant, however, if the 11bd spec further generalize 2048 octets for all MCS/NSS/BW, while 4096 octets is used for all other PHY amendments as the baseline PSDU length, it will likely cause confusion and trigger more questions from readers. Prefer to keep the consistency, and indicate the difference only for new MCS. |
| 3070 | 32.3.11.1 | 112.46 | The minimum receiver sensitivity requirement for BPSK-DCM in 20 MHz (-82 dBm) is identical to the minimum receiver sensitivity requirement for BPSK in 20 MHz. This is jarring: it would be natural for BPSK-DCM, with half the data rate, to have a requirement 3 dB lower than for BPSK, as in the proposed resolution. Note: a similar comment in the last round was rejected based on reasons dealing with preamble processing (no 3 dB boost, and no NGV-LTF-2x-Repeated, unlike the 10 MHz case). But this is essentially irrelevant for the minimum receiver sensitivity \*requirement\*, which is much, much looser than typical minimum receiver sensitivity performance (e.g., typical performance of -91 dBm or so for 11a/g 6 Mbps, versus -82 dBm requirement, and the preamble processing not the limiting factor even there). The minimum receiver sensitivity \*requirement\* simply sets a very loose lower limit on acceptable performance for all modes. If we are to bother specifying these at all, the values should at least be reasonable. A value of -85 dBm should still provide large margins for devices. | In Table 32-15, change the entry for BPSK-DCM for 20 MHz from "-82" to "-85". | Rejected  Agree that most products on the market can do better than -82dBm for BPSK. The number in the table serves as a guideline to reflect the difference among MCS, BW, etc. As the regular preamble is designed to match MCS0 sensitivity, the 3dB better sensitivity of BPSK-DCM needs preamble definition support of power boost and LTF repetition. For 20 MHz transmission, there is no preamble power boost or NGV LTF repetition, the spec should not define 3dB lower sensitivity as a baseline requirement. In addition, this is the same definition practice for 11ax DCM. Better keep the consistency unless there is strong reason to change globally in Maintenence amendment. |

*TGbd Editor: Please make the following changes staring from L13 in P112 in Section 32.3.11 of D3.0.*

The requirements on receiver minimum input sensitivity in 32.3.11.1 (Receiver minimum input sensitivity), adjacent channel rejection in 32.3.11.2 (Adjacent channel rejection) and nonadjacent channel rejection in 32.3.11.3 (Nonadjacent channel rejection) apply to NGV PPDUs. NGV-LTF-2x-Repeat format is used if the NGV PPDUs are modulated with MCS 15 and Nss=1 in 10 MHz, otherwise, NGV-LTF-2x format is used.

(#3067, #3068)

NOTE — Similar receiver minimum input sensitivity requirements, adjacent channel rejection requirements and nonadjacent channel rejection requirements are defined for VHT PPDUs specified in 21.3.18 (VHT receiver specification). (#3066)