IEEE P802.11
Wireless LANs

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| LB1001 NSS BW and EST TPUT CIDs |
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Abstract

This document proposes a resolution for some CIDs relating to NSS BW and Estimated Throughput of TGm Draft 5.0 LB1001.

**REVISION NOTES:**

R0: initial

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGmc Draft. This introduction is not part of the adopted material.

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

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

**CID LIST:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 7093 | author | 1053.52 | 9.4.2.158.2 | The insertion here makes a special case out of the Extended NSS BW Support field and Supported Channel Width Set fields. All the other fields are fully defined the table 9-245. | Move this text into Table 9-245 against definition of one or more of these fields. | Revised – delete the cited text and note that changes introduced by resolution to CID 7674 clarify the text already present within the cited table. |
| 7114 | author | 3618.45 | R.7 | The units of RSSI and P\_adjust are not specified. Note, a separate comment has been submitted on the editorial style of these equations. | Specify them. | Revised – TGmc editor shall add “in units of dBm” to the end of the RSSI definition and add “in units of dBm” to the end of the P\_adjust definition and add “dBm” to the term “10” of the denominator of the exponent of the equation for SNR\_tone |
| 7113 | Author | 3617.40 | R.7 | The equations starting at the cited location do not follow IEEE-SA equation style very closely. There is inconsistency between underscore and subscripting. The showing of units in equations is not done elsewhere in this standard. | Rework equations to bring closer to IEEE-SA style and to others in the Standard. Specifically: remove any units embedded in the equations, use "underscore" versus subscripts consistently, and certainly when referring to the same variable. Use shorter variable names, and put the explanation of what they represent into the variable list. | Revised – TGmc editor shall make changes as indicated under all headings including CID 7113 within 11-16-0426r0. |
| 7187 | Author | 716.05 | 9.4.1.53 | Does the Extended NSS BW Support stuff apply to HT PPDUs too? | Add a table NOTE to say it only applies to VHT PPDUs | Revise – TGmc editor shall add, to table 9-74 Setting of the Channel Width subfield and Dynamic Extended NSS BW subfieldat a VHT STA transmitting the Operating Mode field, a note with the text “All NSS support signaled by settings in this table apply only to VHT PPDU formats. NSS support for PPDU formats that are not VHT are indicated in other fields and subfields.” |
| 7192 | Author | 3617.60 | R.7 | "MPDU\_pA\_MPDU" is clearly nothing to do with the number of MPDUs per A-MPDU (look at the units!), though it's not clear what it is | Change to "mysterious\_quantity" (3 instances, all on this page) | Revise - TGmc editor shall make changes as indicated under all headings including CID 7192 within 11-16-0426r0 |
| 7195 | Author | 3617.51 | R.7 | "min(BA\_WIN\_Size, max(1,MPDU\_pA\_MPDU))" is unitally inconsistent (dimensionless, dimensionless, "s/b") | I really have no idea what's going on here | Revise - TGmc editor shall make changes as indicated under all headings including CID 7195 within 11-16-0426r0 |
| 7665 | Author | 1056.37 | 9.4.2.158.3 | "the Extended NSS BW Support bits" -- what bits?  Of what? | Change to "the Extended NSS BW Supportsubfield in the <something>".  Also change "bits" to "subfield" at 1053.42, 717.23 and 1056.39, and for the last two also add the missing "Support" before that | Revised – TGmc editor shall change “capable of interpreting the Extended NSS BW Support bits” to “capable of interpreting the Extended NSS BW Support bits of the VHT CapabilitiesInformation field of the VHT Capabilities Information elementand the Dynamic Extended NSSBW Support field of the Operating Mode field” |
| 7223 | RISON, Mark | 1453.04 | 10.32.3 | "An HT beamformer may use the following worst-case parameters to estimate the duration of the expected frame that contains the feedback response: Basic HT-MCS, HT-Mixed Format, Supported Grouping." -- what about a VHT beamformer | Add an equivalent statement to the VHT BF subclause (10.34.5) | Revise – TGmc editor shall add “A VHT beamformer may use the following worst-case parameters to estimate the duration of the expected frame that contains the feedback response: lowest rate in basic VHT-MCS set, VHT-mixed format, no grouping.” As a new paragraph to appear immediately after the paragraph that begins “A VHT beamformer that transmits a VHT NDP Announcement frame with more than one STA Info field should transmit any Beamforming Report Poll frames used to retrieve VHT Compressed Beamformingfeedback from the intended VHT beamformees in the same TXOP.” In subclause 10.34.5.2 Rules for VHT sounding protocol sequences |
| 7762 | RISON, Mark | 1449.30 | 10.32.3 | "The procedures in this subclause apply only to HT and non-HT PPDUs for which the HT Control field, ifpresent, is the HT variant HT Control field." -- is this sufficiently clear that the subclause is only for non-VHT STAs?  VHT STAs can sent HT variant HTCs, after all | As it says in the comment | Decline – the rules in the HT explicit beamforming subclause are applicable to HT-style operations initiated by either an HT STA or a VHT STA, i.e. a VHT STA may perform these operations, typically with an HT non-AP STA for example |
| 7763 | RISON, Mark | 1453.44 | 10.33.1 | "The procedures in this subclause apply only to HT and non-HT PPDUs for which the HT Control field, ifpresent, is the HT variant HT Control field." -- is this sufficiently clear that the subclause is only for non-VHT STAs?  VHT STAs can sent HT variant HTCs, after all | As it says in the comment | Decline – the rules in the HT explicit beamforming subclause are applicable to HT-style operations initiated by either an HT STA or a VHT STA, i.e. a VHT STA may perform these operations, typically with an HT non-AP STA for example |
| 7193 | RISON, Mark | 3618.20 | R.7 | "MPDU\_pPPDU" is not defined | Change to "MPDU\_pA\_MPDU"? | Revise - TGmc editor shall make changes as indicated under all headings including CID 7193 within 11-16-0426r0 |
| 7197 | RISON, Mark | 3617.40 | R.7 | "A<sub>MSDU<sub>B" is not defined | Change to "A\_MSDU\_B" | Revise - TGmc editor shall make changes as indicated under all headings including CID 7197 within 11-16-0426r0 |
| 7198 | RISON, Mark | 3617.60 | R.7 | What do the vertical bars indicate? Absolute value? None of the quantities can be negative | Delete the vertical bars | Revise - TGmc editor shall make changes as indicated under all headings including CID 7198 within 11-16-0426r0 |
| 7190 | RISON, Mark | 3617.47 | R.7 | It says "is in units of s/s" | Change to "is unitless" | Accept |
| 7199 | RISON, Mark | 3618.10 | R.7 | I have no idea what this example means. The size of the MAC header is variable | Delete ", e.g. 50" | Accept |
| 7222 | RISON, Mark | 1453.04 | 10.32.3 | What does "An HT beamformer may use the following worst-case parameters to estimate the duration of the expected frame that contains the feedback response: Basic HT-MCS, HT-Mixed Format, Supported Grouping." mean? Also the cases are wrong | Change to "An HT beamformer may use the following worst-case parameters to estimate the duration of the expected frame that contains the feedback response: lowest rate in basic HT-MCS set, HT-mixed format, no grouping." | Accept |
| 7671 | RISON, Mark | 1050.29 | 9.4.2.158 | How does the new extended NSS BW support stuff interact with STBC? ? E.g. what happens if Max VHT NSS for some MCSes ends up being less than implied by Rx STBC? | Add "subject to any extended NSS BW support constraint" to the rightmost cell | Accept |
| 7679 | RISON, Mark | 1049.47 | 9.4.2.158.2 | "Together with the ExtendedNSS BW Support subfield andSupported VHT-MCS and NSSSet field," -- not if it's a TVHT STA | Add "(for non-TVHT STAs)" | Accept |
| 7681 | RISON, Mark | 1052.48 | 9.4.2.158.2 | This would be clearer with the Meaning column split into 3, one for 20/40/80, one for 160 and one for 80+80, where the cell can say "not supported", "supported" or "supported at [half/twice] Max VHT NSS" | As it says in the comment |  |
| 7682 | RISON, Mark | 716.37 | 9.4.1.53 | If Max VHT NSS is 5, is this combination allowed? If so, does it mean 8? | Add a "NOTE 5---Twice Max NSS is equal to equal to double Max VHT NSS, limited to 8." at the end of the table | Revise – TGmc editor shall add as a note at the end the table, the following text: “NOTE 5---Twice Max NSS is equal to double Max VHT NSS, limited to 8.” |
| 7683 | RISON, Mark | 1053.24 | 9.4.2.158.2 | If Max VHT NSS is 5, is this combination allowed? If so, does it mean 8? | Add a "NOTE 5---Twice Max NSS is equal to equal to double Max VHT NSS, limited to 8." at the end of the table | Revise – TGmc editor shall add as a note at the end the table, the following text: “NOTE 5---Twice Max NSS is equal to double Max VHT NSS, limited to 8.” |
| 7684 | RISON, Mark | 1332.17 | 10.7.12.2 | If Max VHT NSS is 5, is this combination allowed? If so, does it mean 8? | Add a "NOTE 5---Twice Max NSS is equal to equal to double Max VHT NSS, limited to 8." at the end of the table | Revise – TGmc editor shall add as a note at the end the table, the following text: “NOTE 5---Twice Max NSS is equal to double Max VHT NSS, limited to 8.” |

**NEEDS TO BE RE-RESOLVED as shown:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 7189 | Rison | 3617.63 | R.7 | It says "s/b" | Change to "seconds/bit" for consistency with other lines | Revised – the units are incorrect, tgmc editor shall change the description to “is dimensionless” |

**Discussion:**

Blah blah blah.

**Proposed changes**

The more blah.

**CID 7113, 7190, 7192, 7195, 7193, 7197, 7198, 7190, 7199**

**R.7 Calculating Estimated Throughput**

***TGmc editor: within the equation for ESTAirtimeFraction change the term AMSDUB to A\_MSDU\_B***

***TGmc editor: change the description of ESTAirtimeFraction to be “is dimensionless”***

***TGmc editor: in the equation for MPDU\_pA\_MPDU, change the vertical bars to be ceiling symbols***

***TGmc editor: in the equation for MPDU\_pA\_MPDU, change the term PPDUR to “PPDUR x DataRate”***

***TGmc editor: change the definition of MPDU\_pA\_MPDU to “is dimesionless”***

***TGmc editor: change the term MPDU\_SS to MPDUSS throughout R.7***

***TGmc editor: change the definition of MPDUSS (formerly MPDU\_SS) to “is in units of seconds”***

***TGmc editor: change the definition of PPDUR to be “is the PPDU Payload duration and is in units of seconds”***

***TGmc editor: change the definition of DataRate to include “and is in units of b/s” at the end of the definition***

***TGmc editor: change the equation for PPDUDur to include “+ PHDUR”***

***TGmc editor: within the equation for PPDUDur change the term MPDU\_pPPDU to MPDUpPPDU***

***TGmc editor: change all variable names that include \_Dur to use subscript “Dur” instead of the non-subscripted “\_Dur”***

***TGmc editor: within the equation for MACHdr, remove the text “, e.g., 50”***

***TGmc editor: throughout R.7, change A\_MSDUB,TX to A\_MSDU\_BTX***

***TGmc editor: throughout R.7, change A\_MSDUB,RX to A\_MSDU\_BRX***

A VHT beamformer that sets the Feedback Type subfield of a STA Info field to MU shall set the Nc Index subfield of the same STA Info field to a value less than or equal to the minimum of both of the following:

**4.3.13 Television very high throughput (TVHT) STA**

***TGmc editor: add a new item to the list of TVHT replacments within subclause 4.3.13 Television very high throughput (TVHT) STA:***

* “dot11TVHTExtendedNSSBWSignaling” replaces “dot11VHTExtendedNSSBWSignaling”.

***TGmc editor: modify some of the text within subclause 9.34.5.2 Rules for VHT sounding protocol sequences as shown:***

**9.34.5.2 Rules for VHT sounding protocol sequences**

A VHT beamformer that sets the Feedback Type subfield of a STA Info field to MU shall set the Nc Index subfield of the same STA Info field to a value less than or equal to the minimum of both of the following:

***TGmc editor: modify some of the text from 10.4.2 TSPEC construction as shown:***

**10.4.2 TSPEC construction**

TSPECs and DMG TSPECs are constructed at the SME, from application requirements supplied via the SME, and with information specific to the MAC layer.

The value of the Minimum PHY Rate in a TSPEC shall satisfy the following constraints:

***TGmc editor: add the following new MIB variables to the dot11StationConfig group and add corresponding values in the group’s SEQUENCE definition and add appropriate entries to the dot11VHTMACAdditions Object-group:***

**C.3 MIB Detail**

dot11VHTExtendedNSSBWSignaling OBJECT-TYPE

SYNTAX Integer {0..3}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This is a capability variable.

Its value is determined by device capabilities.

This attribute indicates that the IEEE 802.11 VHT Extended NSS BW Support Signaling option is implemented. The value 0 means that the device support same NSS at all its supported bandwidths. When dot11VHTChannelWidthOptionImplemented is 0, the value 1 of dot11VHTExtendedNSSBWSignaling means 20/40/80MHz at Max VHT NSS, 160MHz at the ceil of Max VHT NSS divided by 2, and no support of 80+80MHz. When dot11VHTChannelWidthOptionImplemented is 0, the value 2 of dot11VHTExtendedNSSBWSignaling means 20/40/80MHz at Max VHT NSS, 160/80+80MHz at the ceil of Max VHT NSS divided by 2. When dot11VHTChannelWidthOptionImplemented is 0, the value 3 of dot11VHTExtendedNSSBWSignaling means 20/40/80MHz at Max VHT NSS, 160/80+80MHz at the ceil of ¾\*Max VHT NSS.

When dot11VHTChannelWidthOptionImplemented is 1, the value 1 of dot11VHTExtendedNSSBWSignaling means 20/40/80/160MHz at Max VHT NSS, 80+80MHz at the ceil of Max VHT NSS divided by 2. When dot11VHTChannelWidthOptionImplemented is 1, the value 2 of dot11VHTExtendedNSSBWSignaling means 20/40/80/160MHz at Max VHT NSS, 80+80MHz at the ceil of three fourths of the Max VHT NSS. When dot11VHTChannelWidthOptionImplemented is 1, the value 3 of dot11VHTExtendedNSSBWSignaling means 20/40/80MHz at 2\*Max VHT NSS, 160/80+80MHz at the Max VHT NSS.

When dot11VHTChannelWidthOptionImplemented is 2, the value 3 of dot11VHTExtendedNSSBWSignaling means 20/40/80/160MHz at 2\*Max VHT NSS, 80+80MHz at the Max VHT NSS"

DEFVAL { false }

::= { dot11StationConfigEntry <ANA> }

dot11VHTExtendedNSSBWCapable OBJECT-TYPE

SYNTAX Truthvalue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This is a capability variable.

Its value is determined by device capabilities.

This attribute, when true, indicates that the IEEE 802.11 VHT Extended NSS BW Support Signaling option is implemented.

DEFVAL { false }

::= { dot11StationConfigEntry <ANA> }