IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Changes to D3.2 | | | | |
| Date: 2018-11-14 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Xiaogang Chen | Intel | 2111 NE 25th Ave, Hillsboro, OR, 97124 |  | Xiaogang.c.chen@Intel.com |

Abstract

This submission proposes resolutions for comments of TGax Draft 3.2 with the following CIDs: CID 16970, 16969, 16974, 16975.

Revisions:

* Rev 0: Initial version of the document.

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

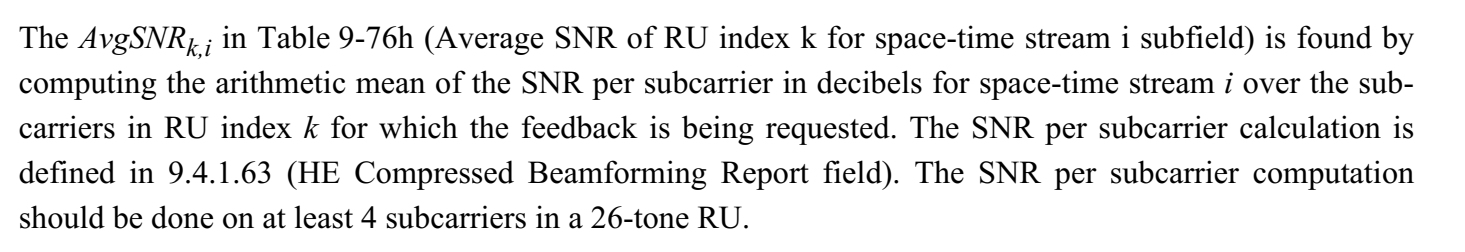
***Editing instructions formatted like this are intended to be copied into the TGax Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

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

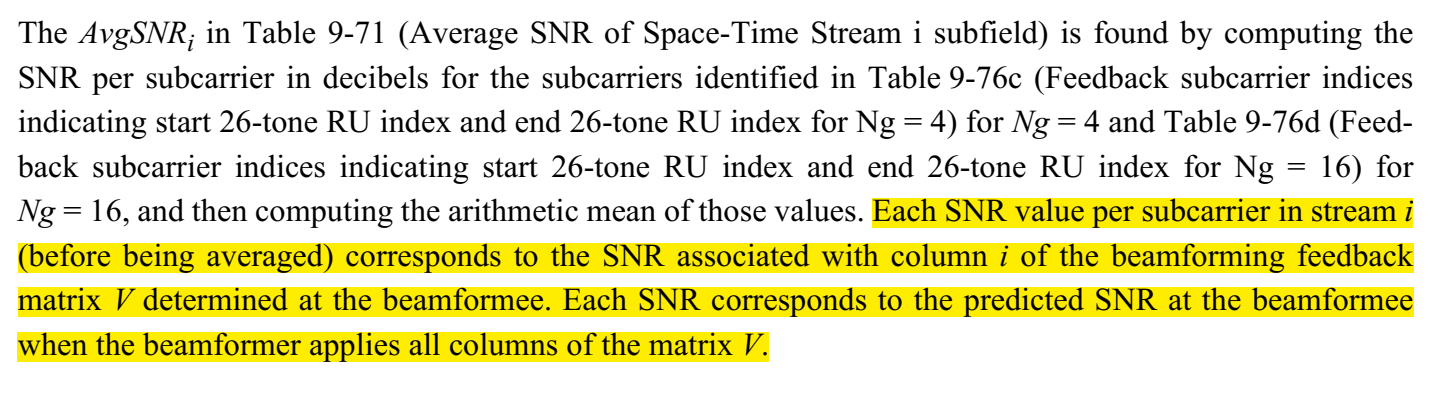
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| CID | P.L. | Clause | Comment | Proposed changes | Resolution |
| 16970 | 128.64 | 9.4.1.65 | CQI only feedback refer the SNR calculation to HE Compressed beamforming feedback. However, the SNR calculation in HE compressed BF is defined as " Each SNR value per subcarrier in stream i (before being averaged) corresponds to the SNR associated with column i of the beamforming feedback matrix V determined at the beamformee. Each SNR corresponds to the predicted SNR at the beamformee when the beamformer applies all columns of the matrix V." CQI only feedback doesn't feedback V, so which V should be referred for SNR calculation?  Also CQI only feedback cannot guarantee BFer apply the same V as BFee, so the "predicted SNR" is not applicable to CQI only FB. | Replace "The SNR per subcarrier calculation is defined in 9.4.1.63 (HE Compressed Beamforming Report field)", with "The SNR value per subcarrier in stream i (before being averaged) corresponds to the SNR associated with column i of the orthogonal matrix determined at the beamformee." | Revised  -TGax editor to make the changes shown in 11-18/2033r0 under all headings that include CID 16970. |

**Discussions:**

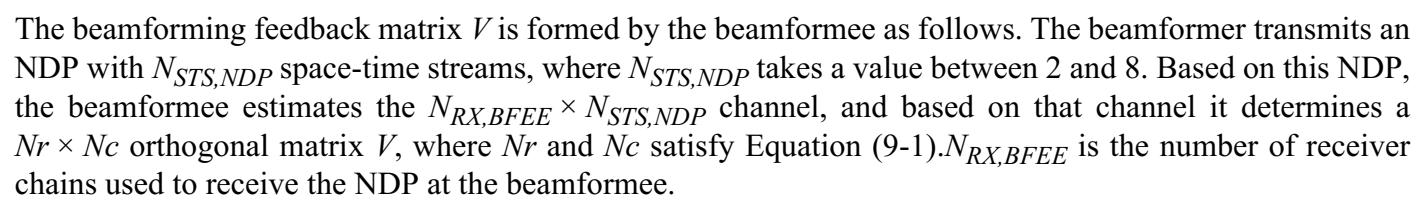
**The SNR calculation of CQI only report is defined as following:**



**The refered SNR calculation of HE compressed beamforming report is as following:**



**BF matrix V is determined by:**



The N\_STS,NDP for CQI only feedback is from 1~8 but for HE compressed feedback it’s 2~8, so refereeing to the V in HE compressed feedback is not accurate.

In addition, regarding “ Each SNR corresponds to the predicted SNR at the beamformee when the beamformer applies all columns of the matrix V”. CQI only feedback itself doesn’t feedback V, so the pre-condition “when the beamformer applies all columns of the matrix V” doesn’t stand.

**Proposed changes:**

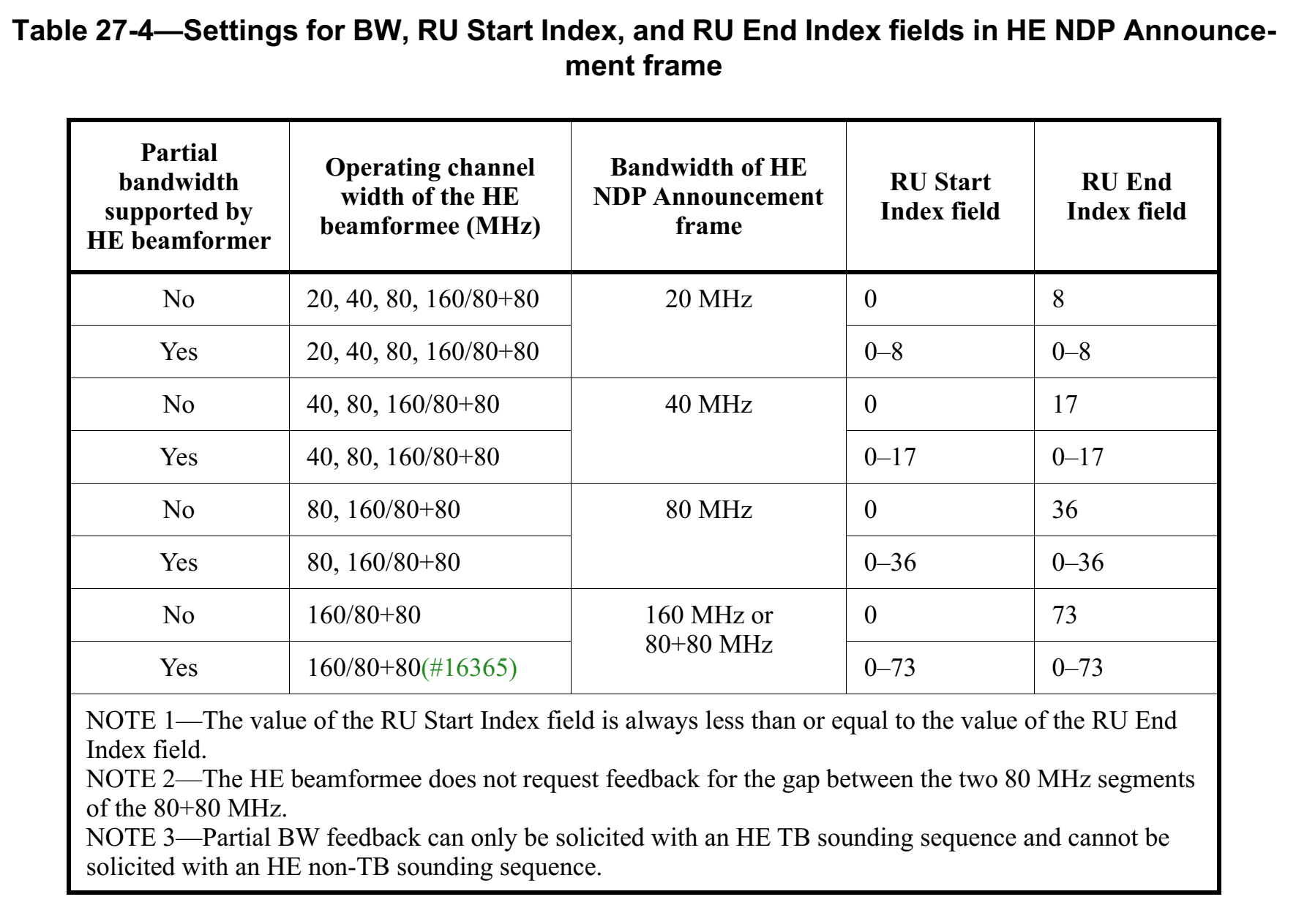
*To the TGax Editor: modify P.L. 134.62 as following (CID 16970).*

~~The SNR per subcarrier calculation is defined in 9.4.1.63 (HE Compressed Beamforming Report field).~~ The SNR value per subcarrier in stream i (before being averaged) corresponds to the SNR associated with column i of the beamforming matrix determined at the beamformee. The SNR per subcarrier computation should be done on at least 4 subcarriers in a 26-tone RU.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| CID | P.L. | Clause | Comment | Proposed changes | Resolution |
| 16969 | 303.10 | 27.6 | sounding for 20MHz operating devices are not defined in spec | define the sounding rule for 20MHz device. e.g. Keep the current RU index in NDPA and the (S,E) tone index unchanged. For the 20MHz operating devices, they only feedback the CSI for the available tones overlapped with the (S,E) tone index. Since AP knows the available tones of 20MHz device, AP can parse the feedback information w/o ambiguity. E.g. 80MHz AP request CSI for RU 9 and RU10 ( -260 : -204), 20MHz device will feedback CSI for tone -204:-250. | Revised  -TGax editor to make the changes shown in 11-18/2033r0 under all headings that include CID 16969. |
| 16974 | 304.17 | 27.6.2 | The description of full bandwidth feedback need to be refined for 20MHz operating non-AP STA. | as commented. | Revised  -TGax editor to make the changes shown in 11-18/2033r0 under all headings that include CID 16974. |
| 16975 | 308.38 | 27.6.3 | If NDPA BW is greater than 20MHz, need to include 20MHz BW in the 2nd column of table 27-4 to support 20mHz device sounding | as commented | Revised  -TGax editor to make the changes shown in 11-18/2033r0 under all headings that include CID 16975. |

**Discussions:**

The current spec doesn’t explicitly if a 20MHz operating STA can be sounded together with other 80MHz operating STAs in one PPDU. The only clue is the table 27-4, which implicitly means 20MHz operating STA can only be sounded with 20MHz NDPA. It’s better to add some clarifications.



**Proposed changes:**

*To the TGax Editor: add the following paragraph after P.L.318.22 as following (CID 16969, 16974, 16975).*

An HE beamformer shall not send an HE NDP Annoucement frame that has a bandwidth greater than 20 MHz to initiate an HE TB sounding sequence or an HE non-TB sounding sequence with a STA Info field addressed to a 20MHz operating HE beamformee.