IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| D1 Comment Resolution, brianh, part 9 | | | | |
| Date: 2011-11-04 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Brian Hart | Cisco Systems | 170 W Tasman Dr, San Jose, CA 95134, USA |  | [brianh@cisco.com](mailto:brianh@cisco.com) |

##### Baseline is 11ac D1.2. Changes indicated by a mixture of Word track-changes and instructions. For equation changes, Latex notation is sometimes used. E.g. a\_{xyz}^b denotes axyzb

MU CIDs re-addressed: 2186, 2262, 3469

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2186 | Dehghan, Hossein | 8.4.1.38 | 36.54 | scidx() is never formally defined | Provide definition of scidx() | **Accept in principle. See 11/xxxxr0** |

***Change: At the end of Table 8-ac7—VHT Compressed Beamforming Report field, insert new note as shown below***

|  |  |  |
| --- | --- | --- |
| Beamforming Feedback Matrix V for subcarrier k = scidx(Ns-1) | Na\* ( bphi +bpsi)/2 | Compressed beamforming feedback matrix as defined in Table 8-ac5 (Order of angles in the Compressed Beamforming Feedback Matrix subfield) |
| NOTE – scidx(.) is defined in Table 8-ac8 (Subcarriers for which a Compressed Beamforming Feedback Matrix subfield is sent back) | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 2262 | Edgar, Richard | | ` | 32.01 | Limiting feedback to compressed V precludes low-complexity implementations at stations with a low number of antennas. For 1-antenna stations, the benefit of compressing the V feedback versus simply quantising the V feedback per 20.3.12.2.4 is small.  Furthermore, limiting beamforming feedback to a single method greatly increases the risk of unavoidable 'essential IP' being asserted in that respect. | Add a clause to allow [single-antenna] stations to transmit the VHT beamforming report using noncompressed beamforming feedback per 20.3.12.2.4.  Add a table similar to Table 8-ac7, describing the VHT Non Compressed Beamforming Report field. | **Declined: The comment resolution committee could not agree on any changes that would satisfy this comment.** |
| 3469 | Shi, Wei | 8.4.1.38 | | 33.00 | It seems to me that there is a bit of overhead in compressing a feedback matrix at a beamformee. For a single- or two-antenna beamformee compressing the feedback matrix may not be very beneficial. Non-compressed beamforming seems like a viable option certainly for a beamformee with a small receive antenna set. Also, a VHT STA includes HT functionality and in HT non-compressed beamforming is an option. | Please allow non-compressed beamforming as an option. | **Declined: The comment resolution committee could not agree on any changes that would satisfy this comment.** |

***Discussion:***

Concerns raised included

* A desire not to repeat the 11n experience, where fragmented sounding feedback led to (relative) market failure for the BFing component of the 11n amendment.
* Consequently, TGac has expressed for some time a strong desire to have a single method for sounding, and a single method for sounding feedback as expressed in §3.2.5 (VHT Sounding PPDU) and §6.3.6.1 (Sounding feedback frame) of the Specification Framework Document, 09/992r21.
* Minutes in 11/1010r2 quantify the will of the group as follows:

“Strawpoll 1

Specify in the standard that non-compressed feedback format support as described in slides 4 and 5 of 11/935r1 is mandatory at a beamformer; and is optional at a  beamformee.

Yes : 3

No : 23

Abstain : 17

Strawpoll 2

Specify in the standard that non-compressed feedback format support as described in slides 4 and 5 of 11/935r1 is the only option if Nc ≤ 2, where Nc is the number of columns of a feedback matrix. For Nc > 2, compressed feedback format remains the only option.

Yes : 3

No : 20

Abstain: 16”