IEEE P802.11
Wireless LANs

|  |
| --- |
| **CC40 CR for CID 487** |
| **Date:** 2022-12-19 |
| **Author(s):** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Affiliation** | **Address** | **Phone** | **Email** |
| Dongguk Lim  | LG Electronics | 19, Yangjae-daero 11gil, Seocho-gu, Seoul 137-130, Korea  |   | dongguk.lim@lge.com  |
| Insun Jang |  | insun.jang@lge.com |
| Sanggook Kim |  | sanggook.kim@lge.com |
| Jinsoo Choi |  | js.choi@lge.com |
| Dibakar Das | Intel |  |  | dibakar.das@intel.com |

Abstract

This submission proposes the resolutions for following 1CIDs:

* 487, 585, 654

The resolution is based on the 11bf D0.5.

Revisions:

* Rev 0: Initial version of the document.
* Rev 1 : add two CIDs ( 585 and 654 )
* Rev 2 : Update by received comment during the presentation
* Rev 3 : add the normative text for Ng and Nb

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 TGbf D0.4 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGbf D0.4 Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

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

#### *CID 487, 585, 654*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 487 | 9.4.2.317 | 33.28 | There are no parameters yet defined in Figure 9-1002av - Sensing Measurement Parameters field format related to NDP transmission, such as Ng, scale factor, feeback bit resolution, etc., which may not be expected to be carried in the NDP Announcement frame. | Define required parameters by specifying the TBD field of the Sensing Measurement Parameters field format. | Revised.Agree with the commenter in principle. Related feedback information which was defiend in the sensing measurement report control field should be negotiated between sensing intiator and sensing responder(s). For this, those parameters can be defined in the sensing measurement parameter field in the Sensing Measurement Parameters Element. Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22-2195-03-00bf-CC40-CR-for-CID 487.docx |
| 585 | 9.4.2.317 | 33.22 | Instance independent parameters, e.g., feedback parameters (e.g. Ng), scheduling information (mandatory for TB, optional for non-TB) and is required. | Add a sensing scheduling and a feedback parameters field. | Revised.Agree with the commenter in principle. Related feedback information which was defiend in the sensing measurement report control field should be negotiated between sensing intiator and sensing responder(s). For this, those parameters can be defined in the sensing measurement parameter field in the Sensing Measurement Parameters Element. Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22-2195-03-00bf-CC40-CR-for-CID 487.docx |
| 654 | 9.4.2.317 | 33.24 | The Sensing Measurement Parameters field in the Sensing Measurement Parameters element does not include all necessary parameters. | Add "Bandwidth", '"Punctured Channel Indication", "Nc", "Nr", "Nb", "Ng", "Delay Report", "Partial BW Info", "Threshold Value" fields into Sensing Measurement Parameters field. | Revised.Agree with the commenter in principle. Related feedback information which was defiend in the sensing measurement report control field should be negotiated between sensing intiator and sensing responder(s). For this, those parameters can be defined in the sensing measurement parameter field in the Sensing Measurement Parameters Element. Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22-2195-03-00bf-CC40-CR-for-CID 487.docx |

P33L28 in D0.1



P50L03 in D0.4



Discussion:

As the commenter said, the parameters related to sensing measurement and reporting didn’t contain in the Sensing Measurement Parameters field of Sensing Measurement Parameters element. Also, when we discussed the contents of the STA info field of the sensing NDPA frame in the previous CC, we agreed that the information related to feedback such as BW, tone grouping, feedback bit size per tone, and antenna information, may be defined by using the sensing parameters during the sensing measurement setup.

And, regarding this information, some parameters are just defined for the Sensing Measurement Report frame, not the sensing setup request and response frame in the current 11bf spec draft.

Thus, to get the feedback that the initiator wants to receive from the sensing responder, the related feedback information should be defined in the sensing measurement setup by using the Sensing Measurement Setup Request and Response frame.

By referring to the defined Sensing Measurement Report element in the sensing measurement report frame, we can consider the following information that should be included in the Sensing Measurement Setup Request and Response frame. In addition, when the Sensing Measurement Report Type is CSI, the Sensing Measurement Report Control field in the Sensing Measurement Report element is composed as follows.



To avoid the ambigury for feedback information between sensing initiator and sensing responder and to receive the wanted feedback from the sensing responder, during the sensing measurement setup, following information can be exchanged between sensing initiator and sensing responder(s) by using the Sensing Measurement Setup Request and Response frame.

* BW, NTX, NRX, Nb, Ing

So, above information can be included in the Sensing Measurement Parameter field of the Sensing Measurement Setup Request and Response frame and is optionally present based on the value of the Sensing Measurement Report Requested subfield.

Regarding the above information, based on the resolution in DCN 1577r3, some information among the above information already has been decided to be included in the Sensing Measurement Parameters field as described in 11bf D0.5.

D0.5 P85L5



As shown in above, BW, Tx STS, and Rx STS subfield were included in the Sensing Measurement Parameters field. And, since Tx STS and Rx STS subfield can be used to interpret the number of transmit and receiver antennas, respectively, we don’t need additional signaling related to information for TX and RX antennas.

However, the information related to feedback of CSI such as Nb, Ing was not included in the Sensing Measurement Parameters field. Based on the motion and adhoc discussion related to Nb and Ing, since the sensing responder supports the various values for Nb and Ing, it needs to be defined which value for Nb and Ing is used during the sensing measurement instance in the sensing measurement setup and this information can be assigned by the sensing initiator.

Therefore, we should consider the information to indicate the number of bits for each CSI and the subcarrier grouping used for the sensing measurement report in the Sensing Measurement Setup, respectively.

***TGbf Editor : Please modified the figure 9-1002ax-*** ***Sensing Measurement Parameters field format as follows***

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Sensing Transmitter | Sensing Receiver | Sensing Measurement Report Requested | Sensing Measurement Report Type | Measurement Setup Expiry Exponent | BW | Tx Repetition | Rx Repetition | Tx STS |
| Bits: | 1 | 1 | 1 | 3 | 4 | 3 | 3 | 3 | 3 |
|  | Rx STS | Nb | INg | Reserved  | BSS Color Information |
| Bits: | 3 | 1 | 1 | 5~~7~~ | 8 |  |

***TGbf Editor : Please add the following text after P86L10 to 11bf D0.5.***

* Nb subfield indicates the number of bits for each CSI to be reported by the sensing measurement report frame. It is set to 1 to indicate that 10 bits are used for each encoded CSI value and is set to 0 to indicate that 8 bits are used for each encoded CSI value.
* INg subfield indicates the subcarrier grouping used for the sensing measurement report and is set as follows:
	+ It is set to 1 to indicate a subcarrier grouping of  , otherwise, set to 0.

The Nb and INg subfields are reserved if Sensing Receiver field is set to 0.

***TGbf Editor: Please update the figure Figure 9-1002bb (Sensing field format) as follows and add the following text after P90L22 to 11bf D0.5.***

The Sensing field is defined in Figure 9-1002bb (Sensing field format).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Invitation of Responder for Sensing | BW  | Max Tx STS ≤ 80 MHz | Max Tx STS = 160 MHz | Max Tx STS = 320 MHz |

Bits: 1 3 3 3 3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Max Rx STS ≤ 80 MHz | Max Rx STS = 160 MHz | Max Rx STS =320 MHz | Max Tx Repetition | Max Rx Repetition |

Bits: 3 3 3 3 3

|  |  |  |
| --- | --- | --- |
| Max Tx HE-LTF Total | Max Rx HE-LTF Total | Max Rx EHT-LTF Total |

Bits: 2 2 3

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Device Class | Full Bandwidth UL MU-MIMO | Max number of Supported Setups | MinTIme between measurements | Poll Required | Threshold-based Reporting |

Bits: 1 1 4 23 1 1

|  |  |
| --- | --- |
| Ng = 16 | Reserved |

Bits: 1 5~~6~~

Figure 9-1002bb—Sensing field format

***P90L22***

Ng = 16 subfield is set to 1 to indicate the support for a subcarrier grouping of 16 in the sensing measurement report and it is set to 0 otherwise.

***TGbf Editor: Please add the following text after P148L14 to 11bf D0.5.***

* The number of bits for each CSI to be reported in the sensing measurement report frame by the sensing responder, in the Nb subfield. This value shall be 10 bits when the Nb subfield is set to 1. And this value shall be 8 bits when the Nb subfield is set to 0.
* The subcarrier grouping to be used for the sensing measurement report by sensing responder, in the INg subfield. This value shall be 16 when the INg subfield is set to 1. And, this value shall be either 4 or 8 when the INg subfield is set to 0.