IEEE P802.11  
Wireless LANs

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| |  |  |  |  |  | | --- | --- | --- | --- | --- | | LB 272 CR for CIDs on Reporting – Part 1 | | | | | | Date: 2023-06-15 | | | | | | Author(s): | | | | | | Name | Affiliation | Address | Phone | email | | Mahmoud Kamel | InterDigital |  |  | mahmoud.kamel@interdigital.com | | Rui Yang | InterDigital |  |  |  | | Zinan Lin | InterDigital |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |

Abstract

This submission proposes resolutions for 20 CIDs (1026, 1873, 1171, 1172, 1595, 1423, 1425, 1426, 2056, 1591, 1592, 1593, 1594, 1784, 2270, 2020, 2170. 2171, 2269, 2257) in subclause 9.4.1.75 in P802.11bf D1.1:

NOTE – Set the Track Changes Viewing Option in the MS Word to “All Markup” to clearly see the proposed text edits.

**Revision History:**

R0: Initial version

R1: Editorial changes and updated resolutions to some CIDs

R2: Added CID 2257

## CIDs: 1026, 1873, 2257

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 1026 | 9.4.1.75.2.2 | 92.16 | The scaling factor \gamma(t, r) definition is not clear. It is a positive factor, but is it an integer, a float? Its encoding appears later in subclause 9.4.1.75.4: so either a reference must be done here to help the reader (preferred option) or it must be stated that it is encoded on 12 bits and how those are encoded | As in comment, clarify the nature of the scaling factor and add a reference to where its encoding is defined in this subclaure | **Revise**  The scaling factor is already defined in the reference the commenter proposed to add. The reference is added.  TGbf editor: please incorporate changes shown in 11-23/0759r2 below under the tag (#1026). |
| 1873 | 9.4.1.75.2.2 | 92.19 | For clarification, it is useful to indicate that the scaling factor is signaled in the Sensing Measurement Report field (not in the Sensing Measurement Report Control field) | Add: "... to avoid an overflow. The value of \gamma(t,r) is signaled in the Sensing Measurement Report field for t=1,...,NTx and r=1,...,NRx. The sensing receiver selects ...." | **Revise**  Agree in principle with the comment.  A reference is made to the corresponding subclause.  TGbf editor: please incorporate changes shown in 11-23/0759r2 below under the tag (#1873). |
| 2257 | 9.4.1.75.4 | 96.35 | It's not clear "12-bit positive scaling factor" are all integer or how many integers and fractions. If 12bits are all integers, it's inefficient since the scaling factor usually won't be so large | Define how many integers and fractions | **Reject**  The comment does not provide a specific change. |

***TGbf editor: please make the following change in subclause 9.4.1.75, P53L8 in D1.1***

b) For a given tuple of transmit and receive antennas, , the positive scaling factor (see 9.4.1.75.4 Sensing Measurement Report field) (#1026, #1873) is selected to avoid overflow when scaling and quantizing the measured CSI using Equation (9-5c) and Equation (9-5d). The value of may be used in the selection of the to avoid an overflow. The sensing receiver selects the exact value of the scaling factor.

## CID: 1171

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 1171 | 9.4.1.75.3 | 94.64 | Meaning of "best fit" is not clear. | Delete the sentence "The sensign receiver... on its implementation." | **Revise**  Agree in principle with the comment. The sentence is removed.  TGbf editor: please incorporate changes shown in 11-23/0759r2 below under the tag (#1171). |

***TGbf editor: please make the following change in subclause 9.4.1.75, P54L50 in D1.2***

Rx\_OP\_Gain\_Type is reported by the sensing receiver to indicate the type of index reported in the

Rx\_OP\_Gain\_Index field. The same type of index is indicated for all receive antennas, and it can be an OP

index, a gain index, or invalid. (#1171)

## CIDs: 1172, 1595

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| 1172 | 9.4.1.75.4 | 95.05 | The meaning of "Sensing Measurement Report information" is unclear. The connection/relation between the SM Report field and the SM Report information must be defined explicitly. | As noted. | **Revise**  Agree in principle with the comment. The sentence is edited.  TGbf editor: please incorporate changes shown in 11-23/0759r2 below under the tag (#1172). |
| 1595 | 9.4.1.75.4 | 95.03 | The size of the Sensing Measurement Report field depends on the values in the Sensing Measurement Report Control field if the sensing measurement report is not segmented, otherwise the size of the CSI is what depends on the values in the Sensing Measurement Report Control field. | Remove the sentence "The size of the Sensing Measurement Report field depends on the values in the Sensing Measurement Report Control field." or fix it according to the current specs. | **Revise**  Agree in principle with the comment. The sentence is edited.  TGbf editor: please incorporate changes shown in 11-23/0759r2 below under the tag (#1595). |

***TGbf editor: please make the following change in subclause 9.4.1.75, P56L21 in D1.1***

The size of the measured CSI (#1595) depends on the values in the Sensing Measurement Report Control field. The Sensing Measurement Report field contains the measured CSI (#1172) or successive segments of the measured CSI(#1172) in the case of segmented sensing measurement report (see 11.55.1.5.3.4 (Rules for generating segmented sensing measurement reports)).

## CID: 1423, 1425, 1591, 1784

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 1423 | 9.4.1.75.4 | 95.17 | Nrx has 3 bits and is "Set to the number of receive antennas minus 1" in Table 9-127h. And Ntx has 3 bits and is "Set to the number of transmit antennas minus 1" in Table 9-127h. But the indexing in Table 9-127j contradicts these definitions. | Change indexing in Table 9-127j following Ntx and Nrx defination by adding fields entries with transmit antenna index 0 and/or receive antenna index 0. | **Revise**  Agree in principle with the comment.  Another way to fix this issue is to change the name of the fields in Table 9-127h as follows:  N\_{TX} is renamed to N\_{t}  N\_{RX} is renamed to N\_{r}  TGbf editor: please incorporate changes shown in 11-23/0759r2 below under the tag (#1423). |
| 1425 | 9.4.1.75.4 | 95.46 | Nb is 1 bit and is defined in Table 9-127h. Set to 0 for an 8-bit word size. Set to 1 for a 10-bit word size. | Replace Nb with another symbol, for example Sb, to represent number of bits in Table 9-127j. Define Sb. Or change definition of Nb. | **Revise**  Agree in principle with the comment. Another name is suggested for the indicator field.  **TGbf editor: please incorporate changes shown in 11-23/0759r2 below under the tag (#1425).** |
| 1591 | 9.4.1.75.3 | 93.46 | Setting of the subfield I\_Ng is not specified for the bandwidth 320 MHz | Specify the setting of the subfield I\_Ng for the bandwidth 320 MHz | **Revise**  Agree in principle with the comment.  **TGbf editor: please incorporate changes shown in 11-23/0759r2 below under the tag(#1591).** |
| 1784 | 9.4.1.75.3 | 93.48 | It is not clear what Ng value to set for 320MHz? Is Ng=16 only used for 320MHz case? | as in the comment | **Revise**  Agree in principle with the comment.  **TGbf editor: please incorporate changes shown in 11-23/0759r2 below under the tag(#1784).** |

***TGbf editor: please make the following change in subclause 9.4.1.75, P54L3 in D1.1***

Note to the Editor: Please change all occurrences of where should be used instead in D1.2:

1. Figure 9-1002ax—Sensing Measurement Parameters field format
2. *P71L7*
3. *P71L16*
4. *P136L37 (3 occurences)*

* Sensing Measurement Report Control field

The fields of the Sensing Measurement Report Control field are specified in Table 9-127h (Sensing Measurement Report Control field definition).

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| * Sensing Measurement Report Control field definition | | | |
| Field | Size (bits) | Definition | Meaning |
| Report Control Length | 8 | Indicates the number of octets in the Sensing Measurement Report Control field, including the one octet for the Report Control Length field | Set to the number of octets in the Sensing Measurement Report Control field. |
| Presence and Control Bitmap | 8 | Includes fields to indicate presence of optional fields in the Sensing Measurement Report Control field, or other control bits | The fields of the Presence and Control Bitmap field are specified in Figure 9-144m (Presence and Control Bitmap field format) |
| BW | 3 | Bandwidth | Set to a value that corresponds to the bandwidth as defined in Table 9-127i (BW field format). |
| Nt(#1423) | 3 | Indicates the number of transmit antennas | Set to the number of transmit antennas minus 1. |
| Nr(#1423) | 3 | Indicates the number of receive antennas | Set to the number of receive antennas minus 1. |
|  | 1 | Indicates the number of bits for each CSI value | Set to 0 for equals to 8 . Set to 1 for equals to 10 .(#1425) |
|  | 1 | Indicates the subcarrier grouping setting | Set to 0 to indicate a subcarrier grouping of except when there are five or more transmit antennas and the bandwidth is greater than or equal to 160 MHz  Set to 0 to indicate a subcarrier grouping of when there are five or more transmit antennas and the bandwidth is greater than or equal to 160 MHz.  Set to 1 to indicate a subcarrier grouping of  Note: is optionally supported |
| Rx\_OP\_Gain\_Type | 2 | Indicates the type of report in Rx\_OP\_Gain\_Index | Set to 0 to indicate neither Rx OP index nor Rx gain index is reported(#1160).  Set to 1 to indicate the Rx OP index is reported and the value set in the Rx\_OP\_Gain\_Index field(s) represent an RX OP index mapping(#1160).  Set to 2 to indicate the Rx gain index is reported and the value set in the Rx\_OP\_Gain\_Index field(s) represent an RF/Analog Gain Index field and a Digital Gain Index field(#1160).  The value of 3 is reserved(#1160). |
| Reserved | 3 |  |  |
| Reference Timestamp | 0 or 32 | Optionally present, inclusion signaled by the Timestamp Present field within the Presence and Control Bitmap field. | Optionally present, inclusion signaled by the Timestamp Present field within the Presence and Control Bitmap field. |







## CIDs: 1426, 2056

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 1426 | 9.4.1.75.4 | 105.22 | EQ 9-5f needs to follow definitions of Nrx, Ntx, and Nb in Table 9-127h. | Replace Nb with Sb, repalce Ntx with Ntx+1, replace Rx with Rx+1 | **Revise**  Agree in principle with the comment. The field names are changed such that there is no need to modify the equation.  TGbf editor: No further changes are required 0759r2 |
| 2056 | 9.4.1.75.4 | 105.22 | Nrx, Ntx, and Nb should follow the definition in Table 9-127h. | Nb should be replaced with Sb. Ntx should be replaced with Ntx+1. Rx should be replaced with Rx+1. | **Revise**  Agree in principle with the comment. The field names are changed such that there is no need to modify the equation.    TGbf editor: No further changes are required0759r2 |

## CIDs: 1592, 1593, 1594

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 1592 | 9.4.1.75.4 | 98.20 | Table 9-127n is not needed since Ng = 4 is not specified for BW = 320 MHz | Remove this table | **Reject**  Ng = 4 is specified for all bandwidths |
| 1593 | 9.4.1.75.4 | 97.01 | Table 9-127k indicates the number of subcarriers for bandwidths 160 and 320 MHz for Ng = 4, while this subgrouping is not supported for those bandwidths. | Remove the rows in bandwidths 160 and 320 MHz corresponding to Ng = 4 | **Reject**  Ng = 4 is specified for all bandwidths |
| 1594 | 9.4.1.75.4 | 97.41 | The table headers are mis formatted and not clear | Change 'bandwidth' to "Bandwidth" and 'Meaning' to "Subcarrier Indices" | **Accept** |

## CID: 2270

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 2270 | 9.4.1.75.3 | 93.27 | The fields name NTX NRX are indexed from 0 while in Table 9-127j Ntx, NRX are indexed from 1 | Change the field name to be different from NTX and NRX | **Revise**  Agree in principle with the comment. The field names are changed.  TGbf editor: No further changes are required |

## CID: 2020

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 2020 | 9.4.1.75.2.2 | 92.10 | It appears there in no mandatory use for m(t, r). See P92L18: "The value of m(t, r) may be used in the selection of the gamma(t, r)". Why specify m(t, r) then? It appears gamma(t, r) could equally be based on other things that are not specified in the amendment. | See comment | **Reject**  The comment failed to identify a specific change. |

## CID: 2170, 2269

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 2170 | 9.4.1.75.4 | 0.00 | In Table 9-127j, the encoded CSI He is not illustrated in the order of subcarriers. Reader may think that CSI values can be given in arbitrary order by the text "k in {1, 2, ..., Nsc}". Although texts specify the order of subcarriers, this rule is not clear from the table. It is better to expand the table to show e.g., He(1,1,1), He(1,1,2),... He(1,1,Nsc) | As in the comment | **Reject**  It is obvious that the CSI values is encoded in an increasing order of subcarriers and not an arbitrary order. |
| 2269 | 9.4.1.75.4 | 96.10 | Sensing Measurement Report information may not be not whole number of bytes | add padding field before the first RSSI field | **Accept** |

***TGbf editor: please make the following change in subclause 9.4.1.75, P56L63 in D1.1***

|  |  |  |
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| * Sensing Measurement Report information | | |
| Field | Size (bits) | Meaning |
|  | 12 | Scaling factor for transmit antenna 1 and receive antenna 1. |
|  | 12 | Scaling factor for transmit antenna 1 and receive antenna 2. |
| … | … | … |
|  | 12 | Scaling factor for transmit antenna 1 and receive antenna . |
|  | 12 | Scaling factor for transmit antenna 2 and receive antenna 1. |
|  | 12 | Scaling factor for transmit antenna 2 and receive antenna 2. |
| … | ... | … |
|  | 12 | Scaling factor for transmit antenna 2 and receive antenna . |
| … | ... | … |
|  | 12 | Scaling factor for transmit antenna and receive antenna 1. |
|  | 12 | Scaling factor for transmit antenna and receive antenna 2. |
| … | ... | … |
|  | 12 | Scaling factor for transmit antenna and receive antenna . |
| Padding | 0 or 4 | The Padding field is used so that the next field is aligned on an octet boundary. |
|  |  | CSI for transmit antenna 1 and receive antenna 1, for subcarrier |
|  |  | CSI for transmit antenna 1 and receive antenna 2, for subcarrier |
| … | … | … |
|  |  | CSI for transmit antenna 1 and receive antenna , for subcarrier |
|  |  | CSI for transmit antenna 2 and receive antenna 1, for subcarrier |
|  |  | CSI for transmit antenna 2 and receive antenna 2, for subcarrier |
| … | … | … |
|  |  | CSI for transmit antenna 2 and receive antenna , for subcarrier |
| … | … | … |
|  |  | CSI for transmit antenna  and receive antenna 1, for subcarrier |
|  |  | CSI for transmit antenna  and receive antenna 2, for subcarrier |
|  |  | CSI for transmit antenna  and receive antenna , for subcarrier |
| Padding (#2269) | 0 or 4 | The Padding field is used so that the next field is aligned on an octet boundary. |
|  | 8 | RSSI at receive antenna 1 |
|  | 8 | RSSI at receive antenna 2 |
| … | … | … |
|  | 8 | RSSI at receive antenna |
| Rx\_OP\_Gain\_Index(1) | 8 | If the Rx\_OP\_Gain\_Type field is 1, the Rx\_OP\_Gain\_Index(1) field contains the Rx OP index for receive antenna 1.  If the Rx\_OP\_Gain\_Type field is 2, the Rx\_OP\_Gain\_Index(1) field contains the Rx gain index for receive antenna 1.  If the Rx\_OP\_Gain\_Type field is 0 or 3, the Rx\_OP\_Gain\_Index(1) field is reserved(#1160). |
| Rx\_OP\_Gain\_Index(2) | 8 | If the Rx\_OP\_Gain\_Type field is 1, the Rx\_OP\_Gain\_Index(2) field contains the Rx OP index for receive antenna 2.  If the Rx\_OP\_Gain\_Type field is 2, the Rx\_OP\_Gain\_Index(2) field contains the Rx gain index for receive antenna 2.  If the Rx\_OP\_Gain\_Type field is 0 or 3, the Rx\_OP\_Gain\_Index(2) field is reserved(#1160). |
| … | … | … |
| Rx\_OP\_Gain\_Index | 8 | If the Rx\_OP\_Gain\_Type field is 1, the Rx\_OP\_Gain\_Index( ) field contains the Rx OP index for receive antenna.  If the Rx\_OP\_Gain\_Type field is 2, the Rx\_OP\_Gain\_Index( ) field contains the Rx gain index for receive antenna.  If the Rx\_OP\_Gain\_Type field is 0 or 3, the Rx\_OP\_Gain\_Index( ) field is reserved(#1160). |

## CID: 2171

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 2171 | 9.4.1.75.4 | 97.38 | In the caption of Table 9-127l and Table 9-127m, "Sensing CSI" field is not specified in the Sensing Measurement Report Information. Please clarify the meaning of a Sensing CSI field. | As in the comment | **Revise**  Agree with the comment in principle.  The caption of Table 9-127l can be changed to “**Table 9-127l— Subcarrier indices for bandwidth of 160 MHz and Ng = 8**” and the caption of Table 9-127l can be changed to “**Table 9-127l—Subcarrier indices for unpunctured channels with**  **bandwidth of 320 MHz and Ng = 8**”  TGbf editor: please apply the changes as specified above |