IEEE P802.11
Wireless LANs

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| LB272-Misc-Comments-set-2 |
| Date: 2023-04-24 |
| Author(s): |
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Abstract

This document proposes resolution to several LB272 DMG related CIDs.

The list of CIDs is: 1928, 2120, 1227, 1814, 1885, 2258, 1224, 1314, 1376, 2245, 2246, 2247, 2248, 1350, 1807, 1833, 1661, 1806, 1662, 1808, 1779, 1351, 1657, 1407, 1815.

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| 1928 | 11.55.3.4 | 199.65 | replace "into" with "in" | As in comment |  Reject, “RX Beam List” is in index “into” the beam list and not part of the beam list. |

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| 2120 | 11.55.2 & 11.55.4 | 0.00 | The writing style of SBP procedure/DMG SBP procedure is different from the WLAN sensing procedure/DMG sensing procedure. | It's better to unify the writing style |  Reject, the style of writing is slightly different, however, this does not justify rewriting. The commenter fails to specify what exactly is wrong. |

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| 1227 | 11.55.3.6 | 203.55 | More than one responder may participate in the instance belonging to the specific Measurement Setup ID. At the setup, the Initiator's SME accumulates the information of the responders belonging to the same Measurement Setup ID. The Initiator's SME uses the MLME-DMG-SENSMSMTSTART primitive to initiate the DMG instance by the transmission of the DMG Sensing Request frame(s) to the responder(s). The information included in the DMG Sensing Request frame is used to configure the responder for the sounding and reporting phases.The MLME-DMG-SENSMSMTSTART primitive does not contain all parameters indicated in the DMG Sensing Request frame, for example, STA ID and Nmb of STAs in Instance, TRN parameters. It shall be defined on how the MAC uses the parameters included in the primitive to compute the parameters indicated in the frame or more parameters shall be added to the primitive. | Provide the definition and add parameters to the primitive if needed. Make the primitive applicable for any sensing type and to be used with burst and w/o |  Revise: TGbf editor: make changes specified in <https://mentor.ieee.org/802.11/dcn/23/11-23-1003-00-00bf-lb272-misc-comments-set-2.docx> |
| 1814 | 6.3.138.6.2 | 55.01 | MLME-DMG-SENSMSMTSTART.request("This primitive activates the Initiation, Sounding, and Reporting phases of DMG sensing instances as agreed in the DMG measurement setups. The MLME subsequently issues the DMG Sensing Request frames, DMG frames used for sounding, and DMG Sensing Poll frames to proceed with one or more sensing responders" 1. The primitive does not allow activation of the next instance with parameters modified as result of the report of the previous instance. It may be relevant for monostatic and for the non-Doppler measurement. | Provide a solution to enable the activation of separate instances depending on the results of the previous one. |   Revise: TGbf editor: make changes specified in <https://mentor.ieee.org/802.11/dcn/23/11-23-1003-00-00bf-lb272-misc-comments-set-2.docx> |

***TGbf Editor: Add the following text at the beginning for 11.55.3.6.1***

The SME initiates a DMG sensing instance by issuing an MLME-DMG-SENSMSMTSTART.request. The parameters of the MLME-DMG-SENSMSMTSTART.request are the list of peer STA addresses and the parameters of the DMG Sensing Request frame for each of the STAs.

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| 1885 | 3.2 | 22.04 | "EDMG multistatic sensing" should also be defined in this subclause | As in comment. |  RejectEDMG Multistatic sensing is a variant of DMG sensing and does require a specific definition in clause 3. Note: in the baseline, DMG covers both EDMG and DMG. To refer to legacy the term non-EDMG is used. |

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| 2258 | 3.2 | 22.10 | DMG sensing is a mode of sensing provided by the 802.11bf specification. It should state so. | Replace: "The use of physical layer (PHY) and medium access control (MAC) features of DMG stations (STAs) to obtain measurements that may be useful to estimate features such as range, velocity, and motion of objects in an area of interest."with: "A mode of sensing that uses the physical layer (PHY) and medium access control (MAC) features of DMG stations (STAs) to obtain measurements that may be used to estimate range, velocity, and motion of objects." | Reject The group have determined that DMG sensing stands by itself and is not a mode of (WLAN) sensing.  |

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| 1224 | 6.3.138.8.2 | 56.39 | "Timestamp As defined in the RXVECTOR." The Timestamp is not defined in RXVECTOR. It shall be the arrival time of the SYNC subfield intended for the receiving STA. | Provide definition of the Timestamp |  Revise: The offensive text is no longer part of draft 1.1 |

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| 1314 | 9.6.21.3 | 155.33 | The Table 9-571 is missing DMG Sensing Report Control element and DMG Sensing Report element. | Add DMG Sensing Report Control element and DMG Sensing Report element into Table 9-571. |  Revise: TGbf editor: make changes specified in <https://mentor.ieee.org/802.11/dcn/23/11-23-1003-00-00bf-lb272-misc-comments-set-2.docx> |

***TGbf Editor: throughout the draft (D1.1) replace “BRP Sensing Capabilities” with “BRP Sensing”***

***TGbf Editor: Modify table 9-571 as follows:***

|  |  |
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| **Order** | **Information** |
| 12 | BRP Sensing element |
| 13 | DMG Sensing Report element |

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| 1376 | 9.4.2.329.3 | 133.24 | Using receive beam Index as a receiver direction result is very limiting. A receiver can achieve much higher accuracy using interpolation or super resolution. | submission will be provided |   Revise: TGbf editor: make changes specified in <https://mentor.ieee.org/802.11/dcn/23/11-23-1003-00-00bf-lb272-misc-comments-set-2.docx> |

Discussion:

Given a receive array with *N* antennas, a receiver can perform *N* measurement (per a Transmit configuration), each with a different weight vector $w\_{n}$**.** For a specific reflection from a direction $θ$, the output of the correlator at the delay *t* of the reflection is $y\_{n}=w\_{n}^{T}a\left(θ\right)p\_{t}$. Where $a\left(θ\right)$ is the array steering vector for direction $θ$ and $p\_{t}$ is the power and the phase of the reflection in direction. Combining the results from *N* measurements, we get that $y=W^{T}a\left(θ\right)p\_{t}$, so that $a\left(θ\right)p\_{t}=\left(W^{T}\right)^{-1}y$**.** The given $a\left(θ\right)$, $θ$ can be estimated accurately given the array response for theta, especially when the array has a uniform shape.

***TGbf Editor Modify figure 9-1002cd – Axis Present field format:***

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|  | B0 | B1 | B2 | B3 | B4 | B5 | B6 | B7 |
|  | Range Axis Present | Doppler Axis present | Receiver Beam Index Present | Transmitter Beam Index Present | Phase Present | Receive Azimuth Present | Receive Elevation Present | Receive Direction Reference |
| bits: | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

***TGbf Editor: Add the following text in P95L34 (D1.1):***

The Receive Azimuth Present field indicates the presence of receive azimuth angles in the Reflection subelements.

The Receive Elevation Present field indicates the presence of receive azimuth angles in the Reflection subelements.

When either the Receive Azimuth Present field or the Receive Elevation Present field is set to 1, the Receiver Beam Index Present field is set to 0. When the Receiver Beam Index Present field is set to 1, both the Receive Azimuth Present field and the Receive Elevation Present field are set to 0.

When either the Receive Azimuth Present field or the Receive Elevation Present field is set to 1 the Receive Direction Reference is set to 1 to indicate that the azimuth and elevation axis are in earth coordinates. Otherwise, they are in an arbitrary STA coordinate system. When the Receiver Beam Index Present field is set to 1, this is field is reserved.

***TGbf Editor: Change the text in P96L1-7 (D1.1) as follows:***

The Reflection Fields field contains multiple Reflection fields. All Reflection fields within a Reflection Fields field have the same format, which can be derived from the Axis Present field. There are 4 format options: for 2 axes (Figure 9-1002cg (Reflection field format for 2 axes)), 3 axes (Figure 9-1002ch (Reflection field format for 3 axes)), 4 axes (Figure 9-1002ci (Reflection field format for 4 axes)) and 5 axes (Figure 9-1002cj (Reflection field format for 5 axes)).

The number of bits allocated for each axis is fixed and given by the axis type. The order of the axis in this field is given in Table 9-401y (Order of the axis and allocated bits in a Reflection field).

The azimuth axis is given in units of (360/4096)°. The elevation axis is given in units of (180/4096) °.

***TGbf Editor: Add the following figure after figure 9-1002ci***

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|  | Axis #1 | Axis #2 | Axis #3 | Axis #4 | Axis #5 | Reflection Power | Reflection Phase |
| bits: | S1 | S2 | S3 | S4 | S5 | 12 | 0 or 12 |

**Figure 9-1002cj** - **Reflection field format for 4 axes**

***TGbf Editor: change Table 9-401y—Order of the axis and allocated bits in a Reflection field as follows:***

|  |  |
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| **Axis**  | **Allocation (S1, S2, S3, S4, S5)** |
| Range | 16 |
| Doppler | 10 |
| Receiver Beam Index | 12 |
| Transmitter Beam Index | 12 |
| Azimuth | 12 |
| Elevation | 12 |

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| 2245 | B.4 | 232.62 | "support for the role of sensing initiator in a WLAN sensing procedure” is M? Does that mean it is Mandatory that every sensing device supports the role of sensing initiator? Or sensing initiator is mandatory in the a WLAN sensing procedure? | Please clarify it |  RejectThere is no indication in the draft text or the MIB that there are different capabilities of initiator and responder, therefore both must be supported |
| 2246 | B.4 | 233.03 | "support for the role of sensing responder in a WLAN sensing procedure" is M? Does that mean it is Mandatory that every sensing device supports the role of sensing responder? Or sensing responder is mandatory in the a WLAN sensing procedure? | Please clarify it |  RejectThere is no indication in the draft text or the MIB that there are different capabilities of initiator and responder, therefore both must be supported |
| 2247 | B.4 | 234.03 | "support for the role of sensing initiator in a DMG sensing procedure" is M? Does that mean it is Mandatory that every DMG sensing device supports the role of sensing initiator? Or sensing initiator is mandatory in the a DMG sensing procedure? | Please clarify it |  RejectThere is no indication in the draft text or the MIB that there are different capabilities of DMG initiator and responder, therefore both must be supported |
| 2248 | B.4 | 234.08 | "support for the role of sensing responder in a DMG sensing procedure" is M? Does that mean it is Mandatory that every DMG sensing device supports the role of sensing responder? Or sensing responder is mandatory in the a DMG sensing procedure? | Please clarify it |  RejectThere is no indication in the draft text or the MIB that there are different capabilities of DMG initiator and responder, therefore both must be supported |

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| 1350 | B.4.3 | 232.33 | The PICS don't follow the norm by which PICS are written in the baseline. For example it is not clear why there is a need to have CFSSTA, CFDSSTA, and CFDSPASS defined. The baseline text define CFIndepSTA which may r may not implement the sensing function. The need is to define CFSensing and define its main features. | Define CFSensing or the equivalent and list its features and when the different features are supported. |  RejectDMG sensing and WLAN sensing are different procedure performed by different type of STAs. A DMG STA is normally not a WLAN STA. Therefore, the capabilities are separated. The passive sensing in DMG is separated because it is a fully different procedure with different capabilities. |

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| 1807 | B.4.3 | 232.35 | In Status for CFSSTA, "WS" is referred but it is not an item defined in PICS but just an abbreviations. I think non-DMG STA in 11bf is supposed to support at least OFDM PHY(CFOFDM) or newer PHY. | As in the comment. |   Revise: TGbf editor: make changes specified in <https://mentor.ieee.org/802.11/dcn/23/11-23-1003-00-00bf-lb272-misc-comments-set-2.docx> |
| 1833 | B.4.3 | 232.35 | Within this table, the Status column is incorrect. These STAs should be defined to be optional entities. They are not an optional part of "Wireless Sensing (WS)", as that is a feature, not an entity. | Change "WS: O" to "O". Make the same change for the DMG Sensing STA and the DMS Passive Sensing STA in the same table. |   Revise: TGbf editor: make changes specified in <https://mentor.ieee.org/802.11/dcn/23/11-23-1003-00-00bf-lb272-misc-comments-set-2.docx> |
| 1661 | B.4.3 | 232.38 | "WS: O" uses an undefined pre-condition WS | Either define WS as an IUT configuration or an independent feature, else use another pre-condition, e.g., CFDMG: O |   Revise: TGbf editor: make changes specified in <https://mentor.ieee.org/802.11/dcn/23/11-23-1003-00-00bf-lb272-misc-comments-set-2.docx> |
| 1806 | B.4.3 | 232.38 | A DMG sensing STA and A DMG passive sensing STA are also DMG STAs. | Please change "WS: O" to "CFDMG: O" for Status of CFDSSTA and CFDSPASS. |   Revise: TGbf editor: make changes specified in <https://mentor.ieee.org/802.11/dcn/23/11-23-1003-00-00bf-lb272-misc-comments-set-2.docx> |
| 1662 | B.4.3 | 232.42 | "WS: O" uses an undefined pre-condition WS | Either define WS as an IUT configuration or an independent feature, else use another pre-condition, e.g., CFDMG: O |   Revise: TGbf editor: make changes specified in <https://mentor.ieee.org/802.11/dcn/23/11-23-1003-00-00bf-lb272-misc-comments-set-2.docx> |

***TGbf editor modify table B.4.3 (P295L33 at D1.1) as follows:***

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| B.4.3 IUT configuration  |
| Item | IUT configuration | References | Status | Support |
|  | What is the configuration of the IUT? |  |  |  |
| CFSSTA | WLAN Sensing STA | 11.55.1.2 Dependencies | CFHE:OCFEHT:O | Yes  No  |
| CFDSSTA | DMG Sensing STA | 11.55.3.2 Dependencies | CFDMG:O | Yes  No  |
| CFDSPASS | DMG Passive Sensing STA | 11.55.3.9 DMG passive sensing | CFDMG:O | Yes  No  |

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| 1808 | B.4.3 | 233.17 | About PC51, TB sensing is supposed to be supported by HE STA. Similar applies for TF sounding phase (PC52). | Please change "CFSSTA:M" to "CFSSTA and CFHE: M" for PC52, and "CFSSTA:O" to "CFSSTA and CFHE: O" for PC52 |  Revise Resolution to CID 1806 made sure that CFSSTA is CFHE or CFEHT |

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| 1779 | B.4.4.1 | 232.62 | Does it really make sense to have the PICS split out the support for sensing into all these pieces? Would an implementation ever implement one/some of these, and not many/most of the others? | Merge the WLAN sensing, and DMS sensing items into single "PC numbers" (with dot-separated sub-numbers where appropriate). Keep all the core, required elements for a given function together in one entry. Only break out the sub-components where there is value in tracking/listing separately (optional features, features with different status or conditions, etc.. |   Revise: TGbf editor: make changes specified in <https://mentor.ieee.org/802.11/dcn/23/11-23-1003-00-00bf-lb272-misc-comments-set-2.docx> |

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| 1351 | B4.4.1 | 232.62 | MAC Protocol Capabilities include the basic MAC functions that are applicable to most (or all amendments) like RTS/CTS, etc. Any sensing specific functions should move to a specific section. | As in comment |   Revise: TGbf editor: make changes specified in <https://mentor.ieee.org/802.11/dcn/23/11-23-1003-00-00bf-lb272-misc-comments-set-2.docx> |

***TGbf Editor: remove the lines of PC49 (Support for sensing capabilities***

***Exchange), PC50 (Support for sensing measurement session), PC51 (Support for TB sensing measurement Exchange), PC53 (Support for basic reporting phase), PC55 (Support for non-TB sensing measurement Exchange), PC61 (Support for DMG sensing session setup Exchange), PC62 (Support for DMG sensing measurement session) from table B.4.4.1***

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| 1675 | B.4.4.1 | 233.06 | Support of sensing transmitter role should be mandatory whilst support of sensing receiver role should be optional, since low-end device may be limited by cache. | Add two rows: one row for mandatory support of sensing transmitter, another for optional support of sensing receiver. And change related rows in B.4.4.1, B.4.4.2 and B.4.41.1. |  Reject: separating transmitter and receiver roles may cause market fragmentation |

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| 1407 | B.4.4.2 | 235.53 | For every FT we need a corresponding FR in the PICS table for frame reception | Add an FR line for ever FT line |   Revise: TGbf editor: make changes specified in <https://mentor.ieee.org/802.11/dcn/23/11-23-1003-00-00bf-lb272-misc-comments-set-2.docx> |

***TGbf Editor: Modify the text in Table B.4.4.2 MAC frames as follows:***

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| B.4.4.2 MAC frames ***Insert the following rows at the end of the table (maintaining item order):*** |
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| Item | MAC frame | References | Status | Support |
|  | Is transmission of the following MAC frames supported? | 9 (Frame formats) |  |  |
| … | … | … | … | … |
| FT77 | (Protected) Sensing MeasurementRequest frame | 9.6.7.49((Protected)SensingMeasurementRequestframe format | CFSSTA:M | Yes  No  N/A  |
| FT78 | (Protected) Sensing MeasurementResponse frame | 9.6.7.50((Protected)SensingMeasurementResponseframe format | CFSSTA:M | Yes  No  N/A  |
| FT79 | Sensing Measurement Report frame  | 9.6.7.51(SensingMeasurementReportframe format) | CFSSTA:M | Yes  No  N/A  |
| FT80 | (Protected) Sensing Measurement Termination frame | 9.6.7.52((Protected)SensingMeasurementTerminationframe format) | CFSSTA:M | Yes  No  N/A  |
| FT81 | (Protected) Sensing Measurement Query frame | 9.6.7.53((Protected)SensingMeasurementQueryframe format) | CFSSTA:M | Yes  No  N/A  |
| FT82 | (Protected) SBP Request frame | 9.6.7.54((Protected)SBPRequestframe format) | PC58:M | Yes  No  N/A  |
| FT83 | (Protected) SBP Response frame | 9.6.7.55((Protected)SBPResponseframe format | PC59:M | Yes  No  N/A  |
| FT84 | (Protected) SBP Termination frame | 9.6.7.56((Protected)SBPTerminationframeformat) | (PC58 OR PC59):M | Yes  No  N/A  |
| FT85 | SBP Report frame | 9.6.7.57(SBPReportframe format) | (PC58 OR PC59):M | Yes  No  N/A  |
| FT86 | DMG Sensing Measurement Setup Request | 9.6.21.8(DMGSensingMeasurementRequestframe format | CFDSSTA:M | Yes  No  N/A  |
| FT87 | DMG Sensing Measurement Setup Response | 9.6.21.9(DMGSensingMeasurementResponseframe format | CFDSSTA:M | Yes  No  N/A  |
| FT88 | DMG Sensing Measurement Report frame | 9.6.21.10(DMGSensingMeasurementReportframe format | CFDSSTA:M | Yes  No  N/A  |
| FT89 | DMG Sensing Measurement Setup Termination frame | 9.6.21.11(DMGSensingMeasurementTerminationframe format) | CFDSSTA:M | Yes  No  N/A  |
| FT90 | DMG SBP Request frame  | 9.6.21.12(DMG SBPRequestframe format) | PC60:M | Yes  No  N/A  |
| FT91 | DMG SBP Response frame  | 9.6.21.13(DMG SBPResponseframe format) | PC61: M | Yes  No  N/A  |
| FT92 | DMG SBP Report frame | 9.6.21.14(DMG SBPReportframe format) | (PC60 ORPC61): M | Yes  No  N/A  |
| FT93 | DMG SBP Termination frame | 9.6.21.15(DMG SBPTerminationframeformat) | (PC60 ORPC61): M | Yes  No  N/A  |
| FT94 | DMG Sensing Request frame | 9.3.1.25(TDDBeamformingframeformat) | CFDSSTA:M | Yes  No  N/A  |
| FT95 | DMG Sensing Response frame | 9.3.1.25(TDDBeamformingframeformat) | CFDSSTA:M | Yes  No  N/A  |
| FT96 | DMG Sensing Poll frame | 9.3.1.25(TDDBeamformingframeformat) | CFDSSTA:M | Yes  No  N/A  |
| … | … | … | … | … |
|  | Is reception of the following MACframes supported? | 9 (Frame formats) |  |  |
| … | … | … | … | … |
| FR77 | (Protected) Sensing MeasurementRequest frame | 9.6.7.49((Protected)SensingMeasurementRequestframe format | CFSSTA:M | Yes  No  N/A  |
| FR78 | (Protected) Sensing MeasurementResponse frame | 9.6.7.50((Protected)SensingMeasurementResponseframe format | CFSSTA:M | Yes  No  N/A  |
| FR79 | Sensing Measurement Report frame  | 9.6.7.51(SensingMeasurementReportframe format) | CFSSTA:M | Yes  No  N/A  |
| FR80 | (Protected) Sensing Measurement Termination frame | 9.6.7.52((Protected)SensingMeasurementTerminationframe format) | CFSSTA:M | Yes  No  N/A  |
| FR81 | (Protected) Sensing Measurement Query frame | 9.6.7.53((Protected)SensingMeasurementQueryframe format) | CFSSTA:M | Yes  No  N/A  |
| FR82 | (Protected) SBP Request frame | 9.6.7.54((Protected)SBPRequestframe format) | PC58:M | Yes  No  N/A  |
| FR83 | (Protected) SBP Response frame | 9.6.7.55((Protected)SBPResponseframe format | PC59:M | Yes  No  N/A  |
| FR84 | (Protected) SBP Termination frame | 9.6.7.56((Protected)SBPTerminationframeformat) | (PC58 OR PC59):M | Yes  No  N/A  |
| FR85 | SBP Report frame | 9.6.7.57(SBPReportframe format) | (PC58 OR PC59):M | Yes  No  N/A  |
| FR86 | DMG Sensing Measurement Setup Request | 9.6.21.8(DMGSensingMeasurementRequestframe format | CFDSSTA:M | Yes  No  N/A  |
| FR87 | DMG Sensing Measurement Setup Response | 9.6.21.9(DMGSensingMeasurementResponseframe format | CFDSSTA:M | Yes  No  N/A  |
| FR88 | DMG Sensing Measurement Report frame | 9.6.21.10(DMGSensingMeasurementReportframe format | CFDSSTA:M | Yes  No  N/A  |
| FR89 | DMG Sensing Measurement Setup Termination frame | 9.6.21.11(DMGSensingMeasurementTerminationframe format) | CFDSSTA:M | Yes  No  N/A  |
| FR90 | DMG SBP Request frame  | 9.6.21.12(DMG SBPRequestframe format) | PC60:M | Yes  No  N/A  |
| FR91 | DMG SBP Response frame  | 9.6.21.13(DMG SBPResponseframe format) | PC61: M | Yes  No  N/A  |
| FR92 | DMG SBP Report frame | 9.6.21.14(DMG SBPReportframe format) | (PC60 ORPC61): M | Yes  No  N/A  |
| FR93 | DMG SBP Termination frame | 9.6.21.15(DMG SBPTerminationframeformat) | (PC60 ORPC61): M | Yes  No  N/A  |
| FR94 | DMG Sensing Request frame | 9.3.1.25(TDDBeamformingframeformat) | CFDSSTA:M | Yes  No  N/A  |
| FR95 | DMG Sensing Response frame | 9.3.1.25(TDDBeamformingframeformat) | CFDSSTA:M | Yes  No  N/A  |
| FR96 | DMG Sensing Poll frame | 9.3.1.25(TDDBeamformingframeformat) | CFDSSTA:M | Yes  No  N/A  |

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| 1815 | B.4.41.1 | 238.24 | The definitions of sensing initiator and sensing responder behavior differ significantly. However, the PICS does not reflect it. | I suggest separating the cases and using the identification of the AP and non-AP configuration to distinguish those cases in the PICS | Reject:There is no separate capability for responder and initiator defined in the draft. The PICS just reflects this.  |

**SP:** do you agree to the resolution of CIDs: The list of CIDs is: 1928, 2120, 1227, 1814, 1885, 2258, 1224, 1314, 1376, 2245, 2246, 2247, 2248, 1350, 1807, 1833, 1661, 1806, 1662, 1808, 1779, 1351, 1675, 1407, 1815 as specified in 11-23-1003r0.

**references: Draft P802.11bf\_D1.1**