IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Proposed resolution to 11ad related CIDs | | | | |
| Date: 2014-02-10 | | | | |
| Author(s): | | | | |
| Name | Company | Address | Phone | email |
| Carlos Cordeiro | Intel |  |  | [Carlos.Cordeiro@intel.com](mailto:Carlos.Cordeiro@intel.com) |

Abstract

This submission proposes a resolution to several CIDs submitted on 11ad text.

The discussion is in reference to Draft P802.11REVmc\_D2.0.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2084 | 1321.48 | 9.36.6.2 | (From Editor Panel Review of D1.1) "The RSS is a TXSS" - might be misread to indicate equivalence between these terms. | Reword: "The RSS comprises a responder TXSS" |

**Proposed resolution**: Accepted

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2097 | 1301.23 | 9.36.1 | (From Editor Panel Review of D1.1) Neither SSW not DMG Beacon frames are labelled in figure 9-52. | Label the frames corresponding to SSW and DMG Beacon in figure 9-52. |

**Proposed resolution**: Revised

*Replace Figure 9-52 with the following figure*



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2077 | 1303.34 | 9.36.2.1 | (From Editor Panel Review of D1.1) "During the SLS phase the only BF frames an initiator may transmit are the DMG Beacon frame, the SSWframe, and the SSW-Feedbackframe. During the SLS phase the onlyBF frames a responder may transmitare the SSW frame and the SSW-Ack frame. " -- this does not agree with the terminology defined in 9.36.1 | In 9.36.1, change the definition of "BF training frame" to that of "BF frame" and include additional frames: SSW-Feedback, SSW-ACK |

**Proposed resolution**: Revised

*Change the first paragraph of 9.36.1 as follows:*

Beamforming (BF) is a mechanism that is used by a pair of STAs to achieve the necessary DMG link budget for subsequent communication. BF training is a bidirectional sequence of BF frame transmissions that uses sector sweep and provides the necessary signaling to allow each STA to determine appropriate antenna system settings for both transmission and reception. After the successful completion of BF training, BF is said to be established. A BF frame is an SSW frame, a DMG Beacon frame, an SSW-Feedback frame, an SSW-ACK frame or a BRP frame. Figure 9-52 (An example of beamforming training) gives an example of the beamforming training procedure.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2103 | 1313.25 | 9.36.3.2 | (From Editor Panel Review of D1.1) "A DMG STA (either initiator or responder) requests a MID subphase with MID and BC subphases" - recursive! | Replace with "... requests a MIDC subphase with MID and BC subphases" |

**Discussion:** to follow the same write up as in the next paragraph and next-to-next paragraph, propose to simplify the text and only refer to MID and BC subphases.

**Proposed resolution**: Revised

*Change the noted paragraph as follows*

A DMG STA (either initiator or responder) requests both MID and BC subphases (see 9.36.6.3.2 (MIDC subphase with MID and BC subphases)) by setting both the MID-REQ and BC-REQ subfields to 1 in the BRP Request field of an SSW-Feedback, SSW-Ack or BRP frame. It shall also set the L-RX subfield in the BRP Request field to the number of RX AWV settings it needs in each BRP-RX packet during the MID subphase. The peer DMG STA grants the request by setting the MID-Grant and BC-Grant subfields to 1 in the BRP Request field within the next SSW-Ack or BRP frame transmitted to the requesting DMG STA. If either the MID or BC were not granted by the peer STA, the MID and BC subphases shall not occur.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2082 | 1314.61 | 9.36.3.2 | (From Editor Panel Review of D1.1) Figure 9-60 is labeled as "Example of BRP setup subphase procedure", but it shows a case where the BRP setup subphase is explicitly skipped. | Change title to: "Example of skipping the BRP setup subphase." |

**Discussion:** The figure number should be 9-59 at P1314L61. Also, for some reason Figure 9-59 is shown before Figure 9-58.

**Proposed resolution**: Revised

*Change the title of Figure 9-59 to* “Example of skipping the BRP setup subphase (SLS in DTI)”

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2104 | 1315.27 | 9.36.3.2 | (From Editor Panel Review of D1.1) Figure 9-58 contains some errors, typos and the terms I-TXSS and R-TXSS. | Replace "= SIFS & = BRPIFS" by ">= SIFS & =< BRPIFS" and either replacing I-TXSS by "Initiator TXSS" and R-TXSS by "Responder TXSS" throughout or define the acronym properly elsewhere. |

**Discussion:**

1. Could not find “= SIFS & = BRPIFS” in this or similar figures.
2. Since the terms “I-TXSS” and “R-TXSS” are used elsewhere in the draft, propose to define such acronyms. Note that the acronym TXSS is already defined in section 3.3.

**Proposed resolution**: Revised

*Insert the following two acronyms in section 3.3:*

I-TXSS: Initiator TXSS

R-TXSS: Responder TXSS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2180 | 2194.62 | 21.5.3.2.4 | (From Editor Panel Review of D1.1) " the indices P(k), in the range of NCBPS/2 to NCBPS-1,are as defined in 21.5.3.2.6 (OFDM modulation)" - wrong reference | Change reference to 21.5.3.2.4.6 |

**Proposed resolution**: Accepted

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2181 | 2195.25 | 21.5.3.2.4 | (From Editor Panel Review of D1.1) "where the matrix Q and the indices P(k), in the rangeof NSD/2 to NSD -1, are as defined in 21.5.3.2.5 (Pilot sequence)." - wrong reference | Change reference to 21.5.3.2.4.6 |

**Proposed resolution**: Accepted

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2133 | 1368.64 | 10.1.4.5 | "A DMG STA shall adopt the operational parameters transmitted by its PCP/AP within the DMG Operation Information field of the DMG ..." - but which are the operational parameters? | Indicate which of the fields of the DMG Operation Information field are operational parameters. |

**Discussion:**

1. The use of “shall adopt” in this case is incorrect. The STA does not “adopt” as such, but instead obtains those parameters as transmitted by the PCP/AP and uses that information to determine its behavior.
2. Hence, there is no need for the noted sentence to be normative.
3. Also, need to correct reference in the same paragraph

**Proposed resolution**: Revised

*Change the noted paragraph as follows*

A DMG STA shall be capable of transmitting DMG Beacon frames. A DMG STA obtains the operational parameters in use by its PCP/AP through the DMG Operation Information field of the DMG Operation element. A DMG STA shall update the value of its local MIB variables with the corresponding field value transmitted by its PCP/AP within the DMG BSS Parameter Configuration field of the DMG Operation element (8.4.2.128 (DMG Operation element)). Except for the prefix “dot11” used in the MIB variable naming convention, the name of the field is the same as the name of the corresponding MIB variable.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2144 | 1423.13 | 10.3.7 | "the PCP shall send the PBSS information" -- not specific enough. | Delete "the PBSS information using" orcite the required information / elements / structures. |

**Discussion:** The first occurrence of “PBSS information” is premature, since it will be defined later in the same paragraph. So, propose to remove the first reference to “PBSS information” and defined it later. By doing so, the second paragraph can also be simplified.

**Proposed resolution**: Revised

*Change the first and second paragraphs of 10.3.7 as follows*

Following the association or security association of a STA with a PCP, the PCP shall send an unsolicited Information Response frame (8.6.20.5 (Information Response frame format)) to all the STAs associated with the PBSS. The PCP shall set the Subject Address field of the Information Response frame to the broadcast address and shall include in the Information Response frame the DMG Capabilities element for each STA associated with the PBSS including the PCP. This process is referred to as PBSS information distribution.

The PCP shall perform a PBSS information distribution at least once every dot11BroadcastSTAInfoDuration beacon intervals.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2149 | 1424.25 | 10.4.1 | "DMG TSPEC is transported over the air within the DMG ADDTS and across" -- which DMG ADDTS frames? It's also missing an article. | Cite specific frame names and correct grammar. |

**Proposed resolution**: Revised

*Change the indicated paragraph as follows*

The DMG TSPEC element is transported over the air within DMG ADDTS Request and DMG ADDTS Response frames and across the MLME SAP by the MLME-ADDTS primitives.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2113 | 1350.06 | 9.40.3.2.3 | "The Ack policy used during an SP where link cooperation is in use is the same as defined in Clause 9 (MAC sublayer functional description)."This reference is about as useful as a chocolate teapot. | Replace reference with one is an eensy-weensy bit more specific, and not self-referential. |

**Discussion:** This sentence is meaningless. What other ACK policy would be used if not the ones already defined in clause 9? Propose to delete this paragraph.

**Proposed resolution**: Revised

*Remove the indicated paragraph*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2159 | 1300.37 | 9.36.1 | What 9.36 needs is some introductory material that describes the characteristics of the DMG antenna system and introduces the terminology of antennas and sectors. | Please describe the characteristics and parameters controlling the system that this subclause is managing. |

**Discussion:** There is already quite some introductory material in clause 9.36.1. In fact, many of the paragraphs in this subclause are very explanatory. Adding more explanatory text will do little to help. Perhaps, one of the areas that might somewhat lacking is the relation between DMG antenna and sector. Since P1301L44 already has some text to this point, propose to change that paragraph to highlight this fact.

**Proposed resolution**: Revised

*Change the paragraph in P1301L44 as follows*

A STA can have one or more DMG antennas. A DMG antenna can be used to create sectors through which a STA can transmit or receive frames. The number of sectors per DMG antenna shall not be greater than 64. The total number of sectors across all DMG antennas in a STA shall not be greater than 128.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2053 | 1149.44 | 9.8 | Classification of Clause 21 modulation classes according to subclause make no sense. It should be based on something the MAC observes, such as a txvector parameter. | Reword Clause 21 conditions based on TXVECTOR/RXVECTOR parameters. |

**Discussion:** the parameter is named MCS.

**Proposed resolution**: Revised

*Change the last 4 rows of the indicated table as follows*

|  |  |  |
| --- | --- | --- |
| DMG Control | 21.4 (DMG control PHY) transmission | MCS parameter of TXVECTOR/RXVECTOR is 0 |
| DMG SC | 21.6 (DMG SC PHY) transmission | MCS parameter of TXVECTOR/RXVECTOR is ≥ 1 and ≤ 12 |
| DMG OFDM | 21.5 (DMG OFDM PHY) transmission | MCS parameter of TXVECTOR/RXVECTOR is ≥ 13 and ≤ 24 |
| DMG low-power SC | 21.7 (DMG low-power SC PHY) transmission | MCS parameter of TXVECTOR/RXVECTOR is ≥ 25 and ≤ 31 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2110 | 1341.40 | 9.38.3 | "5.27 ++s" - magic numbers considered harmful. Where does this come from? | Either add a note so that future generations know how to maintain this when DMG++ arrives, or relate it to PHY attributes. |

**Discussion:** this duration reflects the minimum amount of time necessary to perform the measurements. There are other 3 places in the same subclause that require the same change below.

**Proposed resolution**: Revised

*Insert the following new parameter in Table 10-24 in subclause 10.39*

aMinPPDUDurationForDMGMeasurement; 5.27 µs

*Replace all instances of “*5.27 µs*” in section 9.38.3 by “*aMinPPDUDurationForDMGMeasurement*”*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2055 | 1154.40 | 9.14 | " The value of fields within the PHY header of a PPDU belonging to an A-PPDU might differ from other PPDUs in the same A-PPDU, including the MCS field. "True - but it is not something the MAC is capable of observing. | Reword to relate to \*VECTOR parameters. |

**Proposed resolution**: Revised

*Change the indicated paragraph as follows*

An A-PPDU is a sequence of two or more PPDUs transmitted without IFS, preamble, and separation between PPDU transmissions. All PPDUs within an A-PPDU shall have the ADD-PPDU parameter of the TXVECTOR set to ADD-PPDU, except for the last PPDU in the A-PPDU that shall have this parameter set to NO-ADD-PPDU. The value of a TXVECTOR parameter of a PPDU belonging to an A-PPDU might differ from the value of the same TXVECTOR parameter of another PPDU in the same A-PPDU, including the MCS parameter.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2184 |  |  | (From Editor Panel Review of D1.1) .11ad has created a number of new concepts such as "Listening Mode" and "Protected Period" that are capitalized.  This goes against the REVmb/REVmc direction which is that concepts, modes, procedures are generally not capitalized, but proper names of frames, elements, subelements, fields, subfields, enumeration values are. | Discuss whether to grandfather the .11ad terms, or whether to lower-case such uses.  The following terms should be examined: (and there are probably many more). Link Change Interval, First Period, Decentralized PCP/AP, Guard Interval, Listening Mode |

**Proposed resolution**: Revised

*Change:*

1. “Listening Mode” by “listening mode” *throughout the draft*
2. “Protected Period” by “protected period” *throughout the draft*
3. “Guard Interval” by “guard interval” *throughout the draft*
4. “Guard Intervals” by “guard intervals” *throughout the draft*
5. “doze state” by “Doze state” *throughout the draft*
6. “Dynamic Allocation of Service Period” by “dynamic allocation of service period” *throughout the draft*
7. “Cluster Monitoring Period” by “cluster monitoring period” *throughout the draft*
8. “Link Change Interval” by “link change interval” *throughout the draft*
9. “Data Sensing Time” by “data sensing time” *throughout the draft*
10. “First Period” by “first period” *throughout the draft*
11. “Second Period” by “second period” *throughout the draft*
12. “Transmit Buffer Control” by “transmit buffer control” *throughout the draft* *except in Figures 9-31 and 9-78*
13. “Scoreboard Context Control” by “scoreboard context control” *throughout the draft* *except in Figures 9-31 and 9-78*
14. “Increase or Decrease Transmit” by “increase or decrease transmit” *throughout the draft*
15. “Explicit PCP Handover” by “explicit PCP handover” *throughout the draft*
16. “Implicit PCP Handover” by “implicit PCP handover” *throughout the draft*
17. “Next PCPs” by “next PCPs” *throughout the draft*
18. “NextPCP” by “Next PCP” *throughout the draft*
19. “PCP Factor” by “PCP factor” *throughout the draft*
20. “Implicit candidate” by “implicit candidate” *throughout the draft*
21. “Time-Overlapped” by “time-overlapped” *throughout the draft*
22. “Transparent” by “transparent” in P1619L39
23. “Nontransparent” by “nontransparent” in P1619L42
24. “BPSK Mapping” by “BPSK mapping”
25. “QPSK Mapping” by “QPSK mapping”
26. “16QAM Mapping” by “16QAM mapping”

**Note**: Beware that some of these occurrences could be in the beginning of a sentence.

*In Figure X-1, delete “*DBand*”*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2183 | 2383.00 | B.4.24.1 | Invalid or bogus references at: 2386.10 (8.4.2.111.2), 2386.11 (11.3), 2386.15 (8.4.2.145), 2386.23 (9.13a9.14), 2387.31 (9.4.2.138), 2387.35 (8.4.2.140), 2387.44 & 2387.57 (8.4.2.138), 2392.55 (8.4.2.138), 2392.59 (8.4.2.140), 2393.07 (8.4.2.138), 2393.11 (8.4.2.140) |  |

**Proposed resolution**: Revised

In 2385.54, delete “8.4.2.145”

In 2386.10, replace “8.4.2.111.2” by “8.4.2.127.2”

In 2386.11, delete “11.3”

In 2386.15, delete “8.4.2.145”

In 2386.23, replace “9.13a9.14” by “9.14”

In 2387.31, replace “8.4.2.138” by “8.4.2.131”

In 2387.35, replace “8.4.2.140” by “8.4.2.133”  
In 2387.44 & 2387.57, replace “8.4.2.138” by “8.4.2.131”

In 2392.55, replace “8.4.2.138” by “8.4.2.131”

In 2392.59, replace “8.4.2.140” by “8.4.2.133”  
In 2393.07, replace “8.4.2.138” by “8.4.2.131”

In 2393.11, replace “8.4.2.140” by “8.4.2.133”

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2108 | 1323.11 | 9.36.6.3.1 | Figure 9-62 claims to show the MIDC subphase, but fails to identify it. | Label the extent of the MIDC subphase. Ditto in Figure 9-63, Figure 9-64, Figure 9-65. |

**Proposed resolution**: The MID and BC subphases are already shown in Figures 9-64 and 9-65. And since MIDC is a combination of both MID and BC (P1311L19), these figures already capture MIDC.

**Proposed resolution**: Revised

*Replace Figure 9-62 with the following*



*Replace Figure 9-63 with the following*

