IEEE P802.11
Wireless LANs

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| Resolution to some DMG related CIDs |
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| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Carlos Cordeiro | Intel |  |  | carlos.cordeiro@intel.com |

Abstract

This document proposes resolution to some DMG related CIDs submitted against 11md D1.0.

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| 1021 | 10.37.6.2 | 1806 | 50 | T | "At the beginning of an SP, a destination DMG STA shall transmit ...". The source STA is the one that always initiates transmission at the beginning of an SP. The destination STA only transmits in response to a frame received from the source STA. | 1) Delete "At the beginning of an SP,"2) This paragraph is very difficult to parse given no punctuation. Need to improve its readability. |

**Proposed resolution**: REVISED

**Discussion**: Agree with the comment. Moreover, there is no “unsolicited DMG DTS” defined, so this should be removed.

**Proposed changes**:

*Change the indicated paragraph as follows*

The first frame transmitted by a destination DMG STA to the source DMG STA in an SP shall use the DMG Control modulation class if the Heartbeat field in the source DMG STA’s DMG Capabilities element is 1. Subject to the rules specified in 10.6 (Multirate support), subsequent frames transmitted by the destination DMG STA within the SP may use a different modulation class.

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| 1030 | 9.4.2.137 | 1226 | 46 | T | "... transmitting STA is able to accomplish a session transfer from the current channel to a channel using another STA in the same device ..."The use of the Multi-band element should not be restricted/tied to FST. In other words, this element has useful information that can be used by devices regardless if FST is employed or not. | Generalize the use of the Multi-band element so that it can be employed for non-FST usages as well. |

**Proposed resolution**: REVISED

**Discussion**: agree with the comment. The set of required changes are:

1. Amend the element definition to remove any hard dependency to FST.
2. For consistency, replace all occurrences of “session transfer” by “fast session transfer”. Note that the term “fast session transfer” is defined, whereas “session transfer” is not
3. The normative behavior specified in 11.31.1 already cover the use of the Multi-band element outside the context of FST. However, to make it more explicit that the element use does not depend on FST, propose to restructure this subclause.

**Proposed changes**:

**4.9.4 Reference model for multi-band operation**

*Change the indicated paragraph as follows*

When used in the context of FST, the term “session” refers to non-PHY state information that is kept in a pair of STAs that communicate directly (i.e., excludes forwarding) and that is available prior to and following a fast session transfer. This state information is different depending if transparent or nontransparent is used. For transparent FST, a shared multi-band management entity has access to the local information within each SME; and in this case the state information includes block ack agreements, TSs, association state, RSNA, security keys, sequence counter, and PN counter. For nontransparent FST, the function of the multiband management entity is restricted to coordinating the setup and teardown of a fast session transfer with no access to other local information within each SME. Therefore, with nontransparent FST, any information local to an SME needs to be reestablished for the new band/channel, and this can be done either prior to or following the fast session transfer (see 11.31 (Multi-band operation)).

**9.4.2.137 Multi-band element**

*Change the indicated paragraph as follows*

The Multi-band element indicates that the STA transmitting this element (the transmitting STA) is within a multi-band device capable of operating in a frequency band or operating class or channel other than the one in which this element is transmitted. In addition, if used as part of a fast session transfer, this element indicates that the transmitting STA is able to accomplish a fast session transfer from the current channel to a channel using another STA in the same device, in the other or same band. The format of the Multi-band element is shown in Figure 9-557 (Multi-band element format).

*Change the indicated paragraph as follows*

The FSTSessionTimeout field is used in the FST Setup Request frame to indicate the timeout value for FST session setup protocol as defined in 11.31.1 (General). The FSTSessionTimeout field contains the duration, in TUs, after which the FST setup is terminated. The FSTSessionTimeout field is reserved if the Multi-band element is used outside the context of a fast session transfer.

**11.31.1 General**

*Before the paragraph that starts with* “The FST session ((#301) see 4.9.4 (Reference model for multi-band operation)) transition is managed by the FST session setup protocol….” *Insert the following caption*

**11.31.2 General FST rules**

*Move the paragraph that starts with* “In each band/channel, a multi-band capable device may use the same or different MAC addresses …” *to the end of section 11.31.1*

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| 1268 | 9.4.2.126 | 1205 | 10 | G | BI is used for beacon interval though out the specification but its is not defined or listed as an acronym. Only the first use of BI, outside the table of context is referenced. Also the label used for the variable in the Query Response info field format PAME-BI is confusing due to the use of -BI. This field name should probably be changed. | Provide a definition of beacon interval and list BI as an acronym. Also rename or change the field name PAME-BI to be different e.g. PAME-bi or some other name to avoid confusion. PAME-BI is used on Page 1169, 9.4.2.92, line 38 and in the figure 9-473 line 20; and on page 2204, 11.23.3.2.5, line 22. Lastly it may be beneficial to use BI consistently though out the specification and replace the ~347 uses of "beacon interval" with BI. |

**Proposed resolution**: REJECT

**Discussion**:

1. The topic of whether define “BI” as a term/acronym in the 802.11 spec was extensively discussed during the development of the 11ad amendment and also in 11mc. It was observed that beacon interval is simply an interval of time (and not a channel access structure), and hence would not be proper to abbreviate it. Hence the reason the term “BI” does not exist.
2. In the case of this particular comment, the subclause number, page and line numbers refer to a field named “BI Duration”. Since this is a field name, it does not infringe the intent in (1)
3. The commenter also refers to another field PAME-BI defined in (**9.4.2.92 Advertisement Protocol element**). Similar to (2), this is also a field name and does not infringe the intent of (1). Finally, please note that, in this case, “BI” in the field name stands for “BSSID Independent”

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| 1395 | 9.5.1 | 1369 | 9 | T | A DMG antenna ID does not differ in any substantial form from a common or garden antenna ID | Delete "DMG" in all instances of "DMG Antenna ID" throughout the document |

**Proposed resolution**: REJECT

**Discussion**: DMG antenna is defined as follows in the standard:

**directional multi-gigabit (DMG) antenna**: A DMG antenna is a phased array, a single element antenna, or a set of switched beam antennas covered by a quasi-omni antenna pattern.

Then, in 20.9.1, the following is stated about quasi-omni: “DMG STAs use a quasi-omni antenna pattern. The antenna gain of the main beam of a quasi-omni antenna pattern shall be at most 15 dB lower than the antenna gain in the main beam for a directional pattern.”

As can be seen above, this is very different than the assumptions of an antenna for lower bands.

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| 1276 | 9.3.4.2 | 827 | 6 | T | DMG Beacon frame is claimed to include SSID List element. This looks like a copy-paste error since the SSID List element is defined only to be used in Probe Request frames (see 9.4.2.72) to indicate which SSIDs are scanned for. Furthermore, the standard does not define what an SSID List element in the DMG Beacon frame would be used for. | Delete the SSID List row from Table 9-45 (DMG Beacon frame body) and renumber the Order column values for the following entries. |

**Proposed resolution**: ACCEPT

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| 1319 | 10.39.2.1 | 1836 | 44 | T | "A STA shall set the TRN-LEN parameter of the TXVECTOR to 0 for a frame transmitted as part of a sector sweep."An 11ad non-AP STA should not discard a DMG PPDU with TRN-LEN >0 when it is trying to look for a DMG beacon, because an EDMG AP may send beacon with TRN-LEN >0 | add an exception for DMG beacon. This should be corrected in rev.MD instead of in 11ay |

**Proposed resolution**: REJECT

**Discussion**: this is a receiver behavior. There is nothing in the spec that requires a DMG STA to discard (or not) any frame that has TRN appended to it.

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| 1318 | 10.39.4 | 1848 | 63 | T | With fragmented TXSS in BTI, how a non-AP STA find the TBTT of the first DMG beacon frame of the next BI, in order to be awake in advance? | add in a DMG beacon frame a field indicating the start time of the current BTI, ordescribing the STA wishing to receive a complete TXSS needs to be continuously awake for TXSS Span\*BI after receiving the first DMG beacon |

**Proposed resolution**: REJECT

**Discussion**:

1. Every DMG Beacon frame contains a Timestamp and a Beacon Interval fields (see 9.3.4.2). So, once a STA receives at least one beacon, it can determine the TBTT of the following beacon interval.
2. For the fragmented TXSS, two fields are key as described in the second paragraph of 10.39.4: CDOWN and TXSS Span.
3. The beacon interval, CDOWN and TXSS Snap are all the STA needs to know to determine when the fragmented TXSS ends (TXSS Span \* beacon interval).

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| 1320 | 10.3.2.1 | 1575 | 7 | T | "when at least one of the counters is nonzero, the indication is busy"The requirement may be too restrictive for a DMG STA maintaining multiple NAVsIf NAV setting frame is appended with TRN-R units, a 3rd party STA receiving with quiasi-omni pattern in a CBAP can use the TRN-R to test the direction associated with the NAV. If such STA has attenna pattern reciprocity, it may transmit/receive in directions not corresponding to NAVs with busy directions | add "If a NAV setting frame was appended with TRN-R units, a STA with Antenna Pattern Reciprocity set to 1 in the DMG Capabilities element, may consider the couter associated with the NAV setting frame as zero when the STA initiates or responds to a TXOP using an awv which was tested via TRN-R with detected energy below receive sensitivity of MCS0" |

**Proposed resolution**: REJECT

**Discussion**:

1. The commenter is proposing a new spatial reuse feature be added. This is being done without providing analysis or simulations of the implications of this proposal such as how it impacts legacy devices, for how long the new transmission can last, what if multiple STAs perform the same behavior, to name a few.
2. The commenter may want to take this subject to 11ay.

**Discussion**:

1. There is a typo in Table 20-15

**Proposed changes**:

*In Table 20-15, change the indicated entry as follows*

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| 12.4 | 10 | 1 | π/2-64-QAM | 6 | 1 | 3/4 | 6930 |