IEEE P802.11  
Wireless LANs

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| 802.11  [LB249 CR for Various Comments]  (relative to P802.11az/D2.0) | | | | |
| Date: 2020-08-05 | | | | |
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**Abstract**

This submission contains proposals to resolve LB#249 CIDs 3094, 3095, 3212, 3618, 3630, 3708, 3709, 3716, 3758, 3762, 3764, 3825, 3829, 3844, 3854, 3855, 3860, 3862, 3863, 3867, 3878, 3941 (22 CIDs total).

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| 3094 | P.225 | B.4.37.1 | The use of "DMG/EDMG" is incorrect. Any EDMG device is also a DMG device since DMG includes EDMG. Meaning that if it should apply to both DMG and EDMG it is enough to specify DMG! (Note that a DMG which is not supporting EDMG is named non-EDMG). Section: B.4.37.1 | Replace DMG/EDMG with DMG. 3 times | Reject.  EDMG operation is defined under PICS section of 802.11ay, DMG operation is defined under REVmd. In the context of 11az the two operation modes are not the same as some functionality is only available for EDMG and not for DMG.  There are 41 occurrences of EDMG operation under 11ay. |
| 3095 | P.225 | B.4.37.1 | Reference to non existing PICS EDMG-M17.7 (Maybe it should be 16.7 ?) Section: B.4.37.1 | Fix 4 times | Resolution: Revised  Agree in principle with commenter.  TGaz editor make changes depicted by document 11-20-1189 as shown below. |
| 3212 | P.225 | B.4.37.1 | Fix the reference (paragraph number) of rows NGPM5, NGPM5.1, NGPM5.2, NGPM5.3, NGPM5.4, NGPM5.5, NGPM5.6, NGPM5.7, NGPM5.8, NGPM6 as the text has been move to a new location | replace sublcause number with the correct ones | Resolution: Revised  Agree in principle with commenter, some of the refrences already fixed as part of D2.2  TGaz editor make changes depicted by document 11-20-1189 as shown below. |
| 3941 | P.225 | Annex B | All references to the items related to NGPM5 and NGPM6 are wrong | Provide accurate references | Resolution: Revised  Agree in principle with commenter, some of the refrences already fixed as part of D2.2  TGaz editor make changes depicted by document 11-20-1189 as shown below. |

**Discussion:**

CID 3095: The functionality referred to is the first path beamforming which is EDMG-M16.7 and not EDMG-M17.7. Corrections made to section ***NGPM5 EDMG/DMG operation accordingly.***

CID 3212: section 11.22.6.4.7 PEDMG/PEDMG measurement exchange of D1.0 was incorporated into section ***11.22.6.4.2.1 DMG measurement exchange***,changes below reflect this.

**Resolution:**

**Revised.**

**TGaz Editor make changes identified below to P802.11az D2.2 P225:**

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| NGPM5 | EDMG/DMG operation | 11.22.6.4.2.1 (DMG measurement exchange)(# 3095, 3212, 3941) | O | Yes  No  N/A  |
| NGPM5.1 | EDMG/DMG Direction Measurement as ISTA | [11.22.6.4.2.1.2](#H11o22o6o4o2o1o2) (DMG/PEDGM AOA/AOD measurement exchange) )(# 3095, 3212, 3941) | CFISTA: O | Yes  No  N/A  |
| NGPM5.2 | EDMG/DMG Direction Measurement as RSTA | [11.22.6.4.2.1.2](#H11o22o6o4o2o1o2) (DMG/PEDGM AOA/AOD measurement exchange) )(# 3095, 3212, 3941) | CFRSTA: O | Yes  No  N/A  |
| NGPM5.3 | EDMG FTM measurement with First Arrival Path as ISTA | [11.22.6.4.2.1.5](#H11o22o6o4o2o1o5) (First Path AWV for EDCA based ranging measurement exchange) )(# 3095, 3212, 3941) | (CFISTA and EMDG-M16.7): M | Yes  No  N/A  |
| NGPM5.4 | EDMG FTM measurement with First Arrival Path as RSTA | [11.22.6.4.2.1.5](#H11o22o6o4o2o1o5) (First Path AWV for EDCA based ranging measurement exchange) | (CFRSTA and EMDG-M16.7): M | Yes  No  N/A  |
| NGPM5.5 | EDMG Direction measurement with First Arrival Path as ISTA | [11.22.6.4.2.1.2](#H11o22o6o4o2o1o2) (DMG/PEDGM AOA/AOD measurement exchange) | (CFISTA and EMDG-M16.7): O | Yes  No  N/A  |
| NGPM5.6 | EDMG Direction Measurement with First Arrival Path as RSTA | [11.22.6.4.2.1.2](#H11o22o6o4o2o1o2) (DMG/PEDGM AOA/AOD measurement exchange) )(# 3095, 3212, 3941) | (CFRSTA and EMDG-M16.7): O | Yes  No  N/A  |
| NGPM5.7 | EDMG LOS Assessment as ISTA | [11.22.6.4.2.1.4](#H11o22o6o4o2o1o4) (DMG LOS assessment for EDCA based ranging measurement exchange) )(# 3095, 3212, 3941) | (CFISTA and EMDG-M16.7 and EDMG-M16.10):O (#**1085**, #**1098**) | Yes  No  N/A  |
| NGPM5.8 | EDMG LOS Assessment as RSTA | [11.22.6.4.2.1.4](#H11o22o6o4o2o1o4) (DMG LOS assessment for EDCA based ranging measurement exchange) )(# 3095, 3212, 3941) | (CFISTA and EMDG-M16.7 and EDMG-M16.10):O (#**1085**, #**1098**) | Yes  No  N/A  |

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| 3618 | P.123  L.21 |  | "An ISTA and an RSTA may activate a secure LTF measurement exchange of the Non-TB 21 ranging and TB Ranging measurement exchange for using randomized LTF sequences in an I2R 22 NDP and a R2I NDP in which case, the ISTA and the RSTA follow the rules described in the 23 subclause 11.22.6.4.6 (Non-TB and TB ranging measurement exchange for secure LTF). " is a bit confusing | Change to "An ISTA and an RSTA may activate a secure LTF measurement exchange for non-TB ranging and TB ranging that uses randomized LTF sequences in the I2R NDP and R2I NDP (see 11.22.6.4.6 (Non-TB and TB ranging measurement exchange for secure LTF))." | **Resolution**:  Revised  Agree in principal with commenter, minor fixes to stale references of the proposed resolution were required.  TGaz Editor please make the changes depicted in submission 11-20-1189 below. |

**Discussion:**

The 802.11 style guide calls for the use of active rather than passive voice.

**Resolution:**

**TGaz Editor: Modify the subclause 11.22.6.3.4 Negotiation for Secure LTF in the TB and Non-TB Ranging measurement exchange P.123 L.10 D2.2 as follows:**

An ISTA and an RSTA may activate a secure LTF measurement exchange for non-TB ranging and TB ranging that uses randomized LTF sequences in the I2R NDP and R2I NDP 11.22.6.4.6 (Secure Non-TB and TB Ranging Measurement Exchange Protocol). (#3618)

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| 3758 |  |  | You don't need to say which sublayer issues the primitive since it's known from the primitive (e.g. PHY-blah.request is always from the MAC) | Just say the STA issues the primitive in 11.22.6.4.2.1.6 Secure measurement exchange for EDMG STAs, 11.22.6.4.6.1 Secure Non-TB ranging mode, 11.22.6.4.6.2 TB Ranging measurement exchange for Secure LTF | Rejected.  REVmd as well as the 802.11 style guide does not make this requirement.  As a result this is a preferance choice.  There are many examples of the opposite to the proposal existing in REVmd.  In addition since this is an internal operation simply saying the STA generates it is incorrect because its non-observable at the STA level. |
| 3762 | P.46  L.2 |  | ", and the size of this field is one octet" is duplication, as is ", and the size of this field is two octets" at line 10. Also "The CFO parameter field is a signed value of length 2 octets." at 97.4 | Delete the cited text | Revised.  Agree in principle with commenter.  D2.2 section 9.3.1.22.10 Ranging Trigger variant was revised, and the duplication was removed. |
| 3829 | P.46  L.2 |  | ", and the size of this field is one octet" is duplication, as is ", and the size of this field is two octets" at line 10. Also "The CFO parameter field is a signed value of length 2 octets." at 97.4 | Delete the cited text | Revised.  This is partial duplication of 3762 touching on P.97 L.10 in addition to the ranging Trigger variant of 3762. 3762 adopts the proposal by the commenter, however P.97 L.10 refers to the CFO parameter appearing a page or so away, and specifying the field size prevents the reader from scrolling up and down needlessly.  TGaz editor: no further changes required beyond those already implemented over D2.2 (from D2.0). |
| 3764 |  |  | It is confusing for LTF\_REP and LTF\_OFFSET to be both TXVECTOR and LTFVECTOR parameters | Call them different things in the LTFVECTOR | Resolution: Revised.  TGaz editor make changes described in 11-20-1189 below. |

**Discussion:**

The LTF Vector is said to be carried in the PHY-RXLTFSEQUENCE.Request, which is the counterpart of the TXVECTOR for the receive operation. As a result the parameter serve same purpose from two different direction, Tx and Rx referring to the same property of the Ranging PPDU. Changing the name to be a different in receive and transmit will just create more confusion for no observed value.



Further discussion with the commenter revealed the error strives from possibly a leftover of the parameter LTF\_REP in the RxVector:

*“DL\_N’REP is the assigned number of R2I repetitions equal to the value set in LTF\_REP 34 within the TXVECTOR and the RXVECTOR for the downlink.”*

**Resolution:**

***TGaz Editor, make the following changes to PD2.2. P.163 L.24***

* DL\_NʹREP is the assigned number of R2I repetitions equal to the value set in LTF\_REP within the TXVECTOR and the XVECTOR for the downlink.

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| 3825 |  |  | It is not clear whether the things after "Note that" are normative or not | If they are informative (i.e. do not express normative behaviour that is not normatively stated elsewhere) change them to start "NOTE---". If they are in fact normative delete the "Note that " | Revised.  See discussion in 11-20-1189.  TGaz Editor, make the changes depicted by document 11-20-1189 identified below. |

**Discussion:**

There are 4 occurrences of “note that” in D2.2 of P802.11az, this language does not have similar occurrences in REVmd. The commenter is correct in describing the 802.11 style requirements for notes.

**Resolution:**

**TGaz Editor modify the subclauses in P.32 L.4 D2.2as follows:**

6.3.56.2.3 When Generated

**Change the following paragraph as follows:**

This primitive is generated by the SME in the context of an active FTM Session to initiate a measurement exchange(#1766). If the FTM session is

— (#1238, #1241) EDCA based ranging measurement exchange (11.22.6.4.2): the SME generates this primitive to request that a Fine Timing Measurement frame be sent to a peer entity

— Non-TB Ranging measurement exchange (11.22.6.4.4): the SME generates this primitive to request that a Non-TB Ranging measurement exchange be initiated with the specified peer entity.

NOTE—

The sounding exchange initiation is constrained to the Min Time Between Measurements and Max Time Between Measurements thresholds that are defined when the corresponding FTM session was established. (#3825)

— TB Sounding Exchange (11.22.6.4.3): the SME generates this primitive to request that a TB Sounding Exchange be initiated with the specified peer entity.

NOTE—

This causes the MLME to respond to the Trigger frame with type set to Location and subtype set to Polling to the specified peer entity. (#1766)(#3825)

**TGaz Editor modify the subclauses in P.120 L.11 D2.2as follows:**

An RSTA shall reject a request, unless the request is for Passive TB Ranging, if it has set the Protection of Range Negotiation and Measurement Management Frames Required field of the Extended Capabilities element to 1, and the ISTA has not successfully set up a security context to protect IFTMR, IFTM and LMR frames exchanged between the RSTA and the ISTA.

NOTE—

The security context can either be established as a result of a successful association between the RSTA and ISTA; or as a result of the ISTA successfully completing PASN as described in 12.13 Pre-Association Security Negotiation.(#3591)(#3825)

**TGaz Editor modify the subclauses in P.192 L.1 D2.2as follows:**

PMK is the pairwise master key for the base AKM if the AKM is other than PASN AKM; see 9.4.2.24.3 (AKM Suites). Otherwise, if the base AKM is PASN AKM i.e. the PASN PTKSA is being setup without mutual authentication in a non-RSN, the PMK shall be set to the string “PMKz” padded with 28 0s.

NOTE—

The PMK for the derivation can come from a cached PMKSA for the AKM or from the PMKSA established with PASN by tunneling Wrapped Data or Authentication frames(#3825)

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| 3844 |  |  | IntegrityCheckError needs to be added to the Value cell for RXERROR in Table 8-3--PHY SAP service primitive parameters | As it says in the comment | Resolution: Revised.  Agree in principle with the commenter.  TGaz editor, please make the changes identified submission 11-20-1189 below. |

**Discussion:**

Agree to the point the commenter is making.

Baseline spec has to sub-sections under section 8. PHY service specification that deals with the PHY interface:

* 8.3.4 Basic Service and Options
* 8.3.5 PHY SAP Detailed service specification

P802.11az D2.0 made changes to the section 8.3.5 (see below) detailed to reflect under RXEND.indication the value IntegrityCheckError but did not populate it to table 8-3 where all possible values are specified.

P802.11az D2.0:

*“8.3.5 PHY SAP detailed service specification*

*8.3.5.14 PHY-RXEND.indication*

*8.3.5.14.2 Semantics of the service primitive*

***Insert the following paragraph after “Filtered. This value is used to indicate that during the reception of ...“***

*— IntegrityCheckError. This value is used to indicate that the integrity check performed during the reception of the HE Ranging NDP or HE TB Ranging NDP, an integrity check was performed and failed.”*

**Resolution:**

**TGaz Editor modify the subclauses** **8.3.4.3 table 8-3 P.37 D2.2 as shown below:**

1. Table 8-3—PHY SAP service primitive parameters

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| **Parameter** | **Associated primitive** | **Value** |
| RXERROR | PHY-RXEND.indication | NoError, FormatViolation,  CarrierLost, UnsupportedRate,  Filtered, IntegrityCheckError (#3844) |
| IPI-STATE | PHY-CCARESET.request  PHY-CCARESET.confirm | IPI-ON, IPI-OFF |
| IPI-REPORT | PHY-CCA.indication  PHY-CCARESET.confirm | A set of IPI values for the preceding  time interval |
| PHYCONFIG\_VECTOR | PHY-CONFIG | A set of parameters |
| TXSTATUS | PHY-TXSTART.confirm | A set of parameters |
| USER\_INDEX | PHY-DATA.request | 0 to TXVECTOR parameter  NUM\_USERS - 1 |
| LTFVECTOR | PHY-RXLTFSEQUENCE.request | Indicate the Secure LTF Counter (#**2289**) to make the randomized LTF sequence used in the Non-TB sounding NDP and TB sounding NDP.  The Secure LTF Counter (#**2289**) is defined in 9.4.2.297 (Secure LTF Parameters). |

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| 3854 | P.76  L.25 |  | "The Element ID and Length fields are defined in 9.4.3 (Subelements). " -- no Element ID field in a subelement | Change to "The Subelement ID and Length fields are defined in 9.4.3 (Subelements). " | Resolution: Accept. |
| 3855 | P.79  L.11 |  | "The Secure LTF Counter (#2289) field (#1129) is present in the RSTA2ISTA (#1664) Location 11 Measurement Report frame and is reserved otherwise. " -- the field is always present, the only question is when it is reserved | Change to "The Secure LTF Counter (#2289) field (#1129) is reserved in frames other than the RSTA2ISTA (#1664) Location Measurement Report frame. ". At 79.17 change "This field is used in the Location Measurement Report frame transmitted from an RSTA and is reserved otherwise. " to "This field is reserved in frames other than a Location Measurement Report frame transmitted by an RSTA. " | Resolution: Reject.  It is common practice in baseline spec to have a field present or alternatively not present in which case the bits are reserved.  Example:  Indication Multicast Address field in the Location Indication Parameters subelementm, refer to REVmd D3.0 P.1221 L.20.  FMSID field in the FMS subelement, WNM sleep interval…  Total of 160 occurrences of the quote “field is reserved” in REVmd. |
| 3860 | None provided |  | There are 7 references to a "measurement instance". This term is not used in the baseline, and is not defined here | Define the term as being a point in time where a ToA and ToD were measured | Resolution: Reject.  See discussion in 11-20-1189 below. |
| 3862 | P.111  L.4 | None provided | "availability window instance " is not defined | Change to "availability window" | Resolution: Reject.  See discussion in 11-20-1189 below. |

**Discussion**:

*Instance – noun, an example or single occurrence of something. (Google dictionary)*

“Measurement instance” and “availability window instance” appear several times in the spec, referring to a singular measurement or availability time window,

There is also an accompanying figure which reference from one measurement instance to the previous is shown.

This is basic English language, there is no value in redefining the English language as part of the spec.

As an example defining a measurement instance to be a point in time where a ToA and ToD were measured will yield the question “what is a point in time” “what is time” , “what is a point” (is it interval or instantaneous zero time?) “what is availability”? and so on.

This will only create a cumbersome spec language and will not serve any purpose.

The commenter himself was wise enough to understand what measurement and availability window instance are.

**Resolution:**

Rejected.

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| 3863 | None provided | None provided | "in the Ranging Parameters field" -- but there might not be such a field. Ditto "the Ranging Parameters field" below | Maybe change "the" to "a", or say "if present". This was rejected in CID 2137 because "The comment is asking a question." but there was no question | Resolution: Reject.  See discussion in 11-20-1189 below. |

**Discussion**:

The commenter provided no line # section # to refer to.

There are 22 occurrences of “in the ranging parameter field” in the D2.2 spec, all of which are in sections related to TB, Non-TB or Passive Ranging and thus the Ranging Parameter field is mandatory (i.e. always) present in the IFTMR.

**Resolution:**

Rejected.

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| 3863 | None provided | None provided | Follow-up to CID 2176: there should be something stating that "if it is delayed feedback, you'll never get the last measurement" | As it says in the comment | Resolution: Reject.  See discussion in 11-20-1189 below. |

**Discussion**:

It is true that in delayed reporting the last measurement is not reported, however there is no action (observable Shall or May statement) on ISTA or RSTA that needs to happen as a result.

It is simply a property of the message exchange flow.

There are many other properties the spec doesn’t specify which individuals may care for, specifying some will yield the question on why not others and will result in no better observable part.

**Resolution:**

Rejected.

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| 3878 | P.120  L.21 | None provided | RSID and AID space shall be non-conflicting instead of 'The RSID 21 and the AID are derived the same ID number space and are non-conflicting' | Suggest to mandate | Resolution: Revised.  Agree with the commenter.  See discussion in 11-20-1189 below.  TGaz Editor, please make changes |

**Discussion**:

*D2.2 P.120 L.17: “If the RSTA includes a TB-specific subelement in an IFTM and the Status Indication field in the 15 IFTM is set to 1, the subelement contains an AID/RSID field assignment to the ISTA. The RSID 16 and the AID are derived from the same ID number space and are non-conflicting (#****2078****).”*

If the RSID and the AID are conflicting (i.e. identical for two different ISTAs) the consequences will be a improper operation.

For example in NTB the RSTA will be unable to distinct between the two ISTAs using the same AID/RSID with an FTM session. As a result in the meas. sequence RSTA will respond with the wrong LMR encryption frame or the wrong NDP (i.e. wrong secured sequence, wrong # of antennas, wrong repetition etc.).

**Resolution:**

**TGaz Editor modify subclause 11.22.6.3.3 P.120 L.17 D2.2 as shown below:**

(#3951)If the RSTA includes a TB-specific subelement in an IFTM frame and the Status Indication field in the IFTM frame is set to 1, the subelement contains an AID/RSID field assignment to the ISTA. The RSID and the AID are derived from the same ID number space and shall be non-conflicting (#2078).