IEEE P802.11
Wireless LANs

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| 802.11Resolutions to a few LB249 comments – Part 1(relative to IEEE 802.11 REVmd D3.0 and P802.11az D2.0) |
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**Abstract**

This submission proposes resolutions to the following LB249 CIDs: 3163, 3164, 3561, 3563, 3564, 3165, 3166, 3167, 3565, 3572, 3577, 3578, 3583, 3439 and 3579.

History:

R0: Initial Version

R1: with CIDs reviewed during the Tue PM2 meeting (and related offline work)

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| 3163 | 114.00 | 32 | 11.22.6.2 | "Capability Information field, Non-TB Ranging Responder, TB Ranging Responder, Passive TB" setence (paragraph) is broken an it is missing a part | replace with "Capability Information field, Shall set the Non-TB Ranging Responder, TB Ranging Responder, Passive TB" | Revise. Incorporate editor instructions in submission 11-20/0126 corresponding to CID 3163. |

Discussion:

1. Clause 11.22.6.2 in D2.0 starts with an editor instruction to “insert the following paragraphs” and has the first two paragraphs that are in the baseline but have been modified in PIEEE802.11az D2.0. These paragraphs should be shown as modified (and not as new “insertions” to the baseline).
2. Additionally, the author recalls submissions related to resolving comments from LB240 that included editor instructions to remove low level details (e.g., First Path Training Supported, LoS Assessment Tx, LoS Assessment Rx, Secure ToF Supported field/subfield settings) from 11.22.6.2 and move them to Cl. 11.22.6.3.2 or Cl. 11.22.6.3.5 as appropriate). It appears that the corresponding editor instructions were not implemented in D2.0.
3. Also, the setting of the referred fields namely non-TB Ranging Responder, TB Ranging Responder, Passive TB Ranging Responder Measurement Support and Passive TB Ranging Initiator Measurement Support fields, are not based on the STA’s DMG or EDMG capability and are set based on what the implementation supports while operating in the 2.4/5/6 GHz bands.
4. The text that referring to low level capabilities (First Path Beamforming, LoS Assessment Tx, LoS Assessment Rx and Secure ToF Support) and is proposed to be deleted below actually belongs in clauses 11.22.6.3.5, 11.22.6.3.6 and 11.22.6.3.4 respectively. So deleting from Cl. 11.22.6.2 does not cause any loss of requirements.

Resolution: REVISE.

***Editor: Replace the following paragraphs as shown below:***

A STA in which dot11FineTimingMsmtRespActivated is false shall set the Fine Timing Measurement Responder field of the Extended Capabilities element for non-DMG STA or the Fine Timing Measurement Responder subfield of the DMG Capabilities element for DMG STA (#3163) to 0.
A STA in which dot11FineTimingMsmtInitActivated is false shall set the Fine Timing Measurement Initiator field of the Extended Capabilities element for non-DMG STA or the Fine Timing Measurement Responder subfield of the DMG Capabilities element for DMG STA (#3163) to 0.

***TGaz Editor: Delete the following paragraphs in P114L30-48, P115L1-2, and insert new paragraphs as shown below:***

A STA in which dot11DMGOptionImplemented is true and dot11FineTimingMsmtRespActivated is true shall set the Fine Timing Measurement Responder subfield of the DMG Fine Timing and Range Measurement Capability Information field to 1.

A STA in which dot11DMGOptionImplemented is true and dot11FineTimingMsmtInitActivated is true shall set the Fine Timing Measurement Initiator subfield of the DMG Fine Timing and Range Measurement Capability Information field to 1.

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| 3164 | 114.00 | 47 | 11.22.6.2 | "An EDMG STA that additionally supports Direction Measurement" - this feature is also part of DMG, as DMG covers also EMDG, the text should refer to DMG | replace with "A DMG STA that additionally supports Direction Measurement" | REVISE. The referred text is deleted as a result of the resolution to CID 3163.The corresponding text in Cl. 11.22.6.3.6 covers both DMG and EDMG STAs.No specification changes required. |

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| 3561 | 114.00 | 30 | 11.22.6.2 | "A DMG STA, that have set to 1 either the Fine Timing Measurement Responder or the Fine 30Timing Measurement Initiator subfields of the DMG Fine Timing and Range Measurement 31Capability Information field, Non-TB Ranging Responder, TB Ranging Responder, Passive TB 32Ranging Responder Measurement Support and Passive TB Ranging Initiator Measurement 33Support fields of the Extended Capabilities element to 0. (#2126, #2127, #2129) " makes no sense (seems a verb is missing) and even if it did the "either" seems suspect (it suggests the condition does not hold if both sides are true) | Delete the cited text | Accept. The resolution CID #3163 includes deleting the cited text.No further changes needed to the specification. |
| 3563 | 114.00 | 35 | 11.22.6.2 | "An EDMG STA that have set to 1 either the Fine Timing Measurement Responder or the the Fine 35Timing Measurement Initiator subfields of the DMG Fine Timing and Range Measurement 36Capability Information may set one or more of the following fields to 1: " -- what's more important is what they must be set to in other circumstances. Also not clear about the "either" and bad grammar | Change to "An EDMG STA that has set to 0 the Fine Timing Measurement Responder and FineTiming Measurement Initiator subfields of the DMG Fine Timing And Range MeasurementCapability Information field shall set all of the following fields to 0: ". Delete "if itsupports ranging based on EDMG OFDM PPDUs" at line 44 | Revise.The referred text is deleted as a result of resolving CID #3163.No further changes needed to the specification. |
| 3564 | 114.00 | 44 | 11.22.6.2 | I'm guessing this was supposed to be part of the list | Prepend "- The" | REVISE. The referred text is deleted as part of resolving CID 3163.No further specification changes needed. |

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| 3165 | 115.00 | 4 | 11.22.6.2 | "If the STA in which dot11FineTimingMsmtRespActivated is true supports Passive TB Ranging." - the "then" part of the "if" is missing - probably the next sentece | Replace "." with "," at the end of the sentence, Repalce "It" with "it" at the beginning of the next sentence. | Revise.Incorporate instructions in 11-20/0126 corresponding to CID #3165. |
| 3166 | 115.00 | 9 | 11.22.6.2 | "If the STA in which dot11FineTimingMsmtInitActivated is true supports Passive TB Ranging. It" - the "then" part of the "if" is missing - probably the next sentece | Replace "If the STA in which dot11FineTimingMsmtInitActivated is true supports Passive TB Ranging. It" with "If the STA in which dot11FineTimingMsmtInitActivated is true supports Passive TB Ranging, it" | Revise.Incorporate instructions in 11-20/0126 corresponding to CID #3165. |

Discussion:

In addition to the edits proposed by the commenter this clause is expected to relate setting of MIB variables to the corresponding setting(s) of field(s) in the Extended Capabilities element. The use of “supports Passive TB Ranging” should therefore either be “dot11PassiveTBRangingInitiatorImplemented is true” or “dot11PassiveTBRangingResponderImplemented is true”.

Resolution: Revise

***TGaz Editor: Modify the following paragraphs in P115L4-15 as shown below:***

A STA in which both dot11FineTimingMsmtRespActivated and dot11PassiveTBRangingResponderImplemented (#3165) are true, shall set the Passive TB Ranging Responder Measurement Support field of the Extended Capabilities element to 1. Otherwise it shall set the Passive TB Ranging Responder Measurement Support field of the Extended Capabilities element to 0.

A STA in which dot11FineTimingMsmtInitActivated and dot11PassiveTBRangingInitiatorImplemented (#3166) are true, shall set the Passive TB Ranging Initiator Measurement Support field of the Extended Capabilities element to 1. Otherwise it shall set the Passive TB Ranging Initiator Measurement Support field of the Extended Capabilities element to 0.

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| 3167 | 115.00 | 16 | 11.22.6.2 | "is true supports. (#1515) (a) Phase Shift Feedback," - The "then" part of the sentece apears as a new pargraph - the sentence is broken | Replace "." at end of the sentence with ",", combine the next pargraph with this pargraph as a single paragraph | Revise.Editor to incorporate instructions in submission 11-20/0126 corresponding to CID 3167. |

Discussion:

In addition to the issues raised by the commentor need to address how the MIB variables are logically related and refer to the MIB variable dot11PhaseShiftFeedbackImplemented which indicates support (or otherwise) for Phase Shift Feedback.

Resolution: Revise.

***TGaz Editor: Change if paragraph in P115L14-19 as shown below:***

A STA in which either dot11TriggerBasedRangingRespImplemented and dot11NonTriggerBasedRangingRespImplemented are true, or dot11PassiveTBRangingInitiatorImplemented and dot11PassiveTBRangingResponderImplemented are true, and dot11PhaseShiftFeedbackImplemented is true (#3167) shall set the Phase Shift Feedback Support field in the Extended Capabilities element to 1. Otherwise it shall set the Phase Shift Feedback Support field in the Extended Capabilities element to 0.

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| 3565 | 115.00 | 4 | 11.22.6.2 | "If the STA in which dot11FineTimingMsmtRespActivated is true supports Passive TB Ranging. 4It shall set the Passive TB Ranging Responder Measurement Support field of the Extended 5Capabilities element to 1. Otherwise it shall set the Passive TB Ranging Responder Measurement 6Support field of the Extended Capabilities element to 0. " -- if support for RSTA implies support for PSTA (and lack of support for RSTA implies lack of support for PSTA), then there's no need to signal the latter | Get rid of the Passive TB Ranging Responder Measurement Support field and Passive TB Ranging Initiator Measurement Support field | Reject. The repetition of the field name for both cases (when it is set to 1 and when it is set to 0) may sound redundant. However, the usage “Otherwise it shall be set to 0” is ambiguous in the context since it is not clear what ‘it’ refers to. |
| 3572 | 116.00 | 7 | 11.22.6.3.1 | "using Format and Bandwidth 7in the range 31 through 41" -- magic numbers are a bad idea | "using a Format And Bandwidth field value that indicates DMG or EDMG format". Also in last para | Revise.Incorporate editor instructions in 11-20/0126 corresponding to CID 3572. |

Discussion: Agree that using magic numbers is a bad idea. But ‘indicates DMG or EDMG format” could be considered unclear and could trigger more comments. A better solution would be “using a Format And Bandwidth field value that indicates DMG or EDMG format (see Table 9-281 Format And Bandwidth field).”.

Resolution:Revise.

***TGaz Editor: Replace all occurrences of “using Format And Bandwidth in the range 31 through 41 (inclusive)” with “using a Format And Bandwidth field value that indicates DMG or EDMG format (see Table 9-281 Format And Bandwidth field).”***

***Note: In some instances, “(inclusive)” is not part of the text to be replaced.***

***P66L13-14***

***P66L23-24***

***P67L6-7***

***P116L7-8***

***P116L12-13***

***P116L26-27***

***P117L26-27***

***P117L32-33***

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| 3577 | 116.00 | 25 | 11.22.6.3.1 | "An ISTA shall not initiate a Fine Timing Measurement Negotiation for a session that is not a 25Trigger-Based, non-Trigger-Based or Fine Timing Measurement session with a Format and 26Bandwidth not in the range 31 through 41 with Protected Dual of Fine Timing Measurement 27Request frame. (#2523, #2524) " -- the triple negative with unclear precedence is impossible to decipher | As it says in the comment | Revise. Incorporate instructions in submission 11-20/0126 corresponding to CID #3577. |

Resolution: Revise

***TGaz Editor: Modify the two paragraphs in P116L20-28 as shown below:***

A Secure Fine Timing Measurement Session is established when an ISTA and a RSTA establish a security context and use it to exchange the initial Fine Timing Measurement Request frame and the corresponding initial Fine Timing Measurement frame in the Protected Dual of Public Action frame format (see Cl. 9.6.10 Protect Dual of Public Action frames), and the negotiation completes successfully.

An ISTA shall only initiate a Fine Timing Measurement Negotiation with a Protected Dual of Fine Timing Measurement Request frame for Trigger-Based, non-Trigger-Based or an EDCA based ranging measurement exchange with a Format And Bandwidth field indicating DMG or EDMG format (see Table 9-281 Format And Bandwidth field) (#3577). (#**2523**, #**2524**)

An ISTA shall only initiate a Fine Timing Measurement Negotiation with a Protected Dual of Fine Timing Measurement Request frame for a Trigger-Based, a non-Trigger-Based or an EDCA based ranging measurement exchange with a Format and Bandwidth field indicating DMG or EDMG format (see Table 9-281 Format And Bandwidth field). (#3577) (#**2523**, #**2524**)

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| 3578 | 116.00 |  | 11.22.6.3.1 | There are various references to types of session being "Trigger-Based, non-Trigger-Based or Fine Timing Measurement session", but these types of session are not defined anywhere. Also, surely a vanilla/legacy FTM session is a non-TB session? | As it says in the comment | Revise.Incorporate instructions in submission 11-20/0126 corresponding to CID #3578. |

Discussion: Agree with the commenter. There is no definition of the different types of ranging sessions. Propose to define the ranging session types in Cl. 11.22.6.3.1.

Resolution: Revise.

***TGaz Editor: Insert the following at P116L6 as shown below:***

A FTM session is characterized based on the measurement exchange that gets executed as part of the session. A FTM session can be one of the following types (#3578):

* EDCA based ranging session: The underlying measurement exchange procedure is as described in Cl. 11.22.6.4 (EDCA based ranging measurement exchange), If the corresponding Format And Bandwidth of the negotiated ranging session indicates a DMG or EDMG format (see. Table 9-281 Format And Bandwidth field), the ranging session is a DMG ranging or an EDMG ranging session respectively. When a security context is established prior to the establishment of a DMG or EDMG ranging session and is used to negotiate the ranging session
	+ in which the Secure ToF measurement is activated, the session is termed a secure DMG or a Secure EDMG ranging session,
	+ in which the Secure ToF measurement in not activated, the session is termed a Secure Fine Timing Measurement session.
* Trigger based (TB) ranging session: The underlying measurement exchange procedure is as described in Cl. 11.22.6.4.3 (TB ranging measurement exchange). If the underlying measurement exchange is as described in Cl. 11.22.6.4.8 (Measurement exchange in Passive TB ranging mode) the ranging session is termed Passive TB ranging session. When a security context is established prior to the establishment of TB ranging session and is used to negotiate the ranging session
	+ in which the Secure LTF measurement exchange is activated, the session is termed Secure TB ranging session,
	+ in which the Secure LTF measurement exchange in not activated, the session is termed a Secure Fine Timing Measurement session.
* Non-Trigger based (non-TB) ranging session: The underlying measurement exchange procedure is as described in Cl. 11.22.6.4.4 (non-Trigger based ranging measurement exchange). When a security context is established prior to the establishment of this type of ranging session and is used to negotiate the ranging session
	+ In which the Secure LTF measurement exchange is activated, the session is termed Secure non-TB ranging session,
	+ In which the Secure LTF measurement exchange is not activated, the session is termed a Secure Fine Timing Measurement session.

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| 3583 | 116.00 | 7 | 11.22.6.3.1 | "range 31 through 41" or "range 31 through 41 (inclusive)" -- magic numbers are a bad idea. Also "(inclusive)" is not necessary given 1.4 in the baseline | Say "using a Format And Bandwidth field value that indicates DMG or EDMG format" for all 8 instances | Revise. Duplicate of CID #3572.No further specification changes required. |
| 3439 | 117.00 | 6 | 11.22.6.3.2 | Clarify whether the BW can be more than the BSS operating BW for the associated STAs. If the answer is yes, other places need to be updated since the PPDU transmitted within the BSS is more than the BSS operating BW. This is disallowed by BSS operation. | change the text per the comment. | Revise.Incorporate instructions in submission 11-20/0126 corresponding to CID #3439 |

Discussion: Cl. 10.6.5.7 outlines constraints for transmissions of unicast frames within the BSS while associated (with the exception of off-channel TDLS transmissions) – where the CH\_BANDWIDTH in the most recently received HT Operation element limits the channel bandwidth used for the transmission. This constraint applies automatically and supercedes the negotiated Format And Bandwidth for the session. Additional constraint(s) need not be called out explicitly but adding a note describing this would be helpful.

Consider the scenario where the ISTA and RSTA establish a FTM session first where a the negotiated Format And Bandwidth is larger than the operating channel bandwidth used by the RSTA (in the BSS); and the ISTA gets associated with the RSTA later. This change in the relationship between the ISTA and RSTA should result in the channel bandwidth of FTM transmission(s) from the RSTA the ISTA (and the corresponding Acks from the ISTA to the RSTA) to be limited to that of the operating bandwidth of the BSS (even in the middle of a FTM burst). This constraint will be relaxed when the ISTA and the RSTA are no longer associated.

If the ISTA and RSTA are associated, and the ISTA initiates negotiation by sending an initial Fine Timing Measurement Request to the RSTA, it could specify any Format And Bandwidth value (including the No Preference value). If the negotiation is successful the RSTA constrains the Format And Bandwidth value in the initial Fine Timing Measurement frame to that of the operating channel bandwidth of the BSS (or lower).

Resolution: Revise.

***Editor: Insert a note as shown below in Cl. 11.22.6.3.1 before P115L6:***

NOTE—If the initiating STA and the responding STA are associated, the channel bandwidth used in the frame exchanges between the initiating STA and the responding STA during the ranging measurement exchange is constrained by the rules listed in Cl. 10.6.5.7 (Rate selection for other individually addressed management and data frames) and in Cl. 10.6.6.6 (Channel width selection for control frames). (#3439).

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| 3579 | 117.00 | 7 | 11.22.6.3.2 | "the BSS operation BW ." not defined (and spurious space) | Change to "the BSS bandwidth" | Revise.Incorporate instructions in submission 11-20/0126 corresponding to CID #3579. |

Resolution: Revise.

***TGaz Editor: modify the text in P117L6-7 as shown below:***

The initiating STA shall indicate, in the Format and Bandwidth field, a format and bandwidth that it supports, and this may be different from the CH\_BANDWIDTH in the TX\_VECTOR parameter at the RSTA (#3579) .(#**1015**, #**1516**).