IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 802.11  [LB249 CR for Various Comments]  (relative to P802.11az/D2.2) | | | | |
| Date: 2020-08-11 | | | | |
| Author(s): | | | | |
| Name | Company | Address | Phone | Email |
| Jonathan Segev | Intel Corporation | 2200 Mission College Blvd |  | jonathan.segev@intel.com |
| Erik Lindskog | Samsung | 3655 N 1st street, San Jose |  | e.lindskog@samsung.com |
|  |  |  |  |  |
|  |  |  |  |  |

**Abstract**

This submission contains proposals to resolve LB#249 CIDs 3281 and 3387 (2 CIDs total).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 3281 | P.221  L.2 | B.4.4.1 | Entries for Passive Location Ranging is missing in the 'MAC frames' table. | Entries for Passive Location Ranging is missing in the 'MAC frames' table. | Resolution: Revise.  Agree in principle with the commenter.  TGaz editor please make the changes identified in 11-20-1196 shown below. |
| 3387 | P.220  L.2 | B.4 | The PICS section seems to be off, requiring all HE STAs to implement FTM. | Review section and adjust to reflect FTM as optional feature for WNM, HE STAs | Resolution: Revise.  Agree in principle with the commenter.  TGaz editor please make the changes identified in 11-20-1196 shown below. |

**Discussion:**

CID 3281 touches on Passive When the PICS was constructed the Passive Ranging support was slim and required alignment.

CID 3387 identifies some predicates in the TB and NTB operation was formulated such that FTM is required for all HE STA, clearly a miss-hap.

In addition some terminology required adjusting (NDP formal naming).

**Resolution:**

Revised.

***TGaz Editor make changes identified below to Annex B of P802.11az D2.2:***

Change B.4.3 as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IUT configuration | | | | |
| Item | IUT configuration | References | Status | Support |
|  | What is the configuration of the IUT? |  |  |  |
| CFRSTA | FTM RSTA operation | 11.22.6 (Fine timing measurement (FTM) procedure) | WNM23:O | Yes  No  |
| CFISTA | FTM ISTA operation | 11.22.6 (Fine timing measurement (FTM) procedure) | WNM23:O | Yes  No  |
| CFPLISTA | FTM Passive TB Ranging ISTA. | 11.22.6.4.8 (Measurement exchange in Passive TB Ranging mode) | WNM23:O | Yes  No  |
| CFPLRSTA | FTM Passive TB Ranging RSTA. | 11.22.6.4.8 (Measurement exchange in Passive TB Ranging mode) | WNM23:O | Yes  No  |
| CFPLPSTA | FTM Passive STA | 11.22.6.4.8 (Measurement exchange in Passive TB Ranging mode) | WNM23: O | Yes  No  |
| CFTB | support for FTM TB sounding | 11.22.6.4.3 (Fine timing measurement (FTM) procedure) | CFHE:O | Yes  No  |
| CFNTB | support for FTM Non TB sounding | 11.22.6.4.4 (Non-TB Ranging measurement exchange) | CFHE:O | Yes  No  |
| CFPTB | support for Passive TB sounding | 11.22.6.4.8 Measurement exchange in Passive TB Ranging mode | CFHE: O | Yes  No  |
| CFPASN | support for PASN | 12.13 (Pre-Association Security Negotioation) | PC34: O | Yes  No  |
| CFPSEC | Support for PHY security, ability to transmit and receive secure LTF waveforms for TB and Non-TB operation. | 11.2.6.4.6  (Secure Non-TB and TB Ranging Measurement Exchange Protocol) | PC34:O  CFHE:O | Yes  No  |

### B.4.4 MAC protocol

#### B.4.4.1 MAC protocol capabilities

***Insert the new rows at the end of the table:***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| PC<ANA> | Pre-Association Security Negotiation | 12.13 (Pre-Association Security Negotiation) | CFInfraSTA:O | Yes - No - N/A - |
| FSTB | Support for TB ranging sounding exchange sequence | 11.22.6.4.3 (Fine timing measurement (FTM) procedure) | CFTB:M | Yes  No  |
| FSNTB | Support for non TB ranging sounding exchange sequence. | 11.22.6.4.4 (Non-TB Ranging measurement exchange) | CFNTB:M | Yes  No  |
| FSPASN | Pre-association security negotiation | 12.13 (Pre-Association Security Negotiation) | CFPASN:M | Yes  No  |
| FSPTB | Support for Passive TB Ranging sounding exchange sequence | 11.22.6.4.8 (Measurement exchange in Passive TB Ranging mode) | CFPTB:M | Yes  No  |

Change B.4.4.2 as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| MAC frames | | | | |
| Item | MAC frame | References | Status | Support |
|  | Is transmission of the following MAC frames supported? | 9 (Frame formats) |  |  |
| FT ANA + 0 | Fine Timing Measurement Request | 11.22.6.3 (Fine Timing Measurement procedure negotiation) | CFISTA:M  (CFTB OR  CFNTB):M | Yes  No  N/A  |
| FT ANA + 1 | Fine Timing Measurement | 11.22.6.3 (Fine Timing Measurement procedure negotiation) | CFRSTA:M  (CFTB OR  CFNTB OR CF):M | Yes  No  N/A  |
| FT ANA + 2 | Location Measurement Report | 9.6.7.48 (Location Measurement Report frame format) 11.22.6.4.3 (TB Ranging measurement exchange)  11.22.6.4.4 (Non-TB Ranging Measurement Exchange) | (CFRSTA OR CFISTA):M  (CFTB OR  CFNTB):M | Yes  No  N/A  |
| FT ANA + 3 | Transmission of TF type Ranging using FTM TB ranging operation | 9.3.1.22.10 (Ranging Trigger variant)  11.22.6.4.3 (TB Ranging measurement exchange) | CFRSTA:M  CFTB:M | Yes  No  N/A  |
| FT ANA + 4 | Transmission of Ranging NDP Announcement frame using FTM TB ranging operation | 9.3.1.22.10 (Ranging Trigger variant)  11.22.6.4.3 (TB Ranging measurement exchange) | CFRSTA:M  CFTB:M | Yes  No  N/A  |
| FT ANA + 5 | Transmission of Ranging NDP Announcement frame using FTM NON-TB ranging operation. | 9.3.1.22.10 (Ranging Trigger variant)  [11.22.6.4.4 (Non-TB Ranging measurement exchange)](#H11o22o6o4o4) | CFISTA:M  CFNTB:M | Yes  No  N/A  |
| FT ANA + 6 | Transmission of TF subvariant Passive TB Sounding | 9.3.1.22.10.5 (Passive TB Sounding subvariant) | (CFRSTA AND  CFPTB): M | Yes  No  N/A  |
| FT ANA + 7 | Transmission of Ranging NDP Announcement frame | 9.3.1.19 (VHT/HE/Ranging NDP Announcement frame format) | (CFRSTA AND  CFPTB): M | Yes  No  N/A  |
|  | Is reception of the following MAC frames supported? |  |  |  |
| FR ANA + 0 | Fine Timing Measurement Request | 11.22.6.3 (Fine Timing Measurement procedure negotiation) | CFRSTA:M  (CFTB OR  CFNTB):M | Yes  No  N/A  |
| FR ANA + 1 | Fine Timing Measurement | 11.22.6.3 (Fine Timing Measurement procedure negotiation) | CFISTA:M  (CFTB OR  CFNTB):M | Yes  No  N/A  |
| FR ANA + 2 | Location Measurement Report | 9.3.1.22.10 (Ranging Trigger variant)  11.22.6.4.3 (TB Ranging measurement exchange) | (CFRSTA OR CFISTA):M  (CFTB OR  CFNTB ):M | Yes  No  N/A  |
| FR ANA + 3 | Receive of TF of type Ranging for TB ranging operation | 9.3.1.22.10 (Ranging Trigger variant)  11.22.6.4.3 (TB Ranging measurement exchange) | CFISTA:M  CFTB:M | Yes  No  N/A  |
| FR ANA + 4 | Receive of Ranging NDP Announcement frame for TB ranging operation | 9.3.1.22.10 (Ranging Trigger variant)  11.22.6.4.3 (TB Ranging measurement exchange) | CFISTA:M  CFTB:M | Yes  No  N/A  |
| FR ANA + 5 | Receive of Ranging NDP Announcement frame for NON-TB ranging operation | 9.3.1.22.10 (Ranging Trigger variant)  11.22.6.4.4 (Non-TB Ranging measurement exchange) | CFRSTA:M  CFNTB:M | Yes  No  N/A  |
| FR ANA + 6 | Reception of TF subvariant Passive TB Sounding | 9.3.1.22.10.5 (Passive TB Sounding subvariant) | (CFISTA AND  CFPTB):M  CFPSTA:M | Yes  No  N/A  |
| FR ANA + 7 | Reception of Ranging NDP Announcement frame | 9.3.1.19 (VHT/HE/Ranging NDP Announcement frame format) | (CFISTA AND  CFPTB):M  CFPSTA:M | Yes  No  N/A  |

***TGaz editor make changes to Subclause B.4.37 as follows:***B.4.37 Next Generation Positioning (Ranging) features

B.4.37.1 NGP MAC Features

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item** | **Protocol capability** | **References** | **Status** | **Support** |
|  | Are the following MAC protocol features supported? |  |  |  |
| NGP7 | Passive TB Ranging Operation |  |  |  |
| NGP7.1 | Passive TB Ranging sequence |  | CFPTB:M  CFHE:O | Yes  No  N/A  |

#### B.4.37.2 NGP PHY features

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Protocol capability | References | Status | Support |
|  | Are the following PHY protocol features supported? |  |  |  |
| NGPP1 | NGP TB and NON-TB Sounding waveforms | 27.3 (HE PHY) |  |  |
| NGPP1.1 | HE Ranging NDP | 27.3.18a (HE Ranging NDP) | (CFTB OR CFNTB OR CFPTB):M | Yes  No  N/A  |
| NGPP1.2 | HE Ranging NDP with Secure HE-LTFs | 27.3.18a (HE Ranging NDP) | (CFTB OR CFNTB):M  CFPASN:M  CFPSEC:M | Yes  No  N/A  |
| NGPP1.3 | HE TB Ranging NDP | 27.3.18b (HE TB Ranging NDP) | CFTB:M | Yes  No  N/A  |
| NGPP1.4 | HEz TB Ranging NDP with Secure HE-LTFs | 27.3.18b (HE TB Ranging NDP) | CFPASN:M  CFPSEC:M  CFTB:M | Yes  No  N/A  |