IEEE P802.11  
Wireless LANs

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| --- | --- | --- | --- | --- |
| TGaz related CIDs resolution | | | | |
| Date: 2018-May-06 | | | | |
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Abstract

This submission proposes resolutions of comments received from TGay LB231.

(The proposed change is based on TGay Draft 1.1)

CID: 1874, 1880, 1981 and 1987

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1874 | 216.03 | 30 | Location features | TG11az is developing features for facilitating accurate location services based on FTM range measurement and AoA/AoD angular measurements. The EDMG spec shall include these PHY waveforms and frame formats. It should be noted that some 11az features change the Frame-Format and some flows are added.  Will provide a detailed submission about the solution. |
| 1981 | 216.03 | 30 | Location features | TG11az is developing features for facilitating accurate location services based on FTM range measurement and AoA/AoD angular measurements. The EDMG spec shall include these PHY waveforms and frame formats. It should be noted that some 11az features change the Frame-Format and some flows are added.  Will provide a detailed submission about the solution. |

**Discussion:**

TGaz are developing Next Generation Location wich includes variants for several PHY standards including EDMG.

After review of all the EDMG related TGaz development it was concluded that except what is included in CIDs 1880 and 1987 there is no additional provision to be done at this time in 11ay.

**Proposed resolution**: Reject:

No submission presented with details

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1880 | 210.02 | 12 | Secure FTM | The security chapter (#12) doesn't include the security part for Secure FTM.  Will provide a detailed submission about the solution. |
| 1987 | 210.02 | 12 | Secure FTM | The security chapter (#12) doesn't include the security part for Secure FTM.  Will provide a detailed submission about the solution. |

**Discussion:**

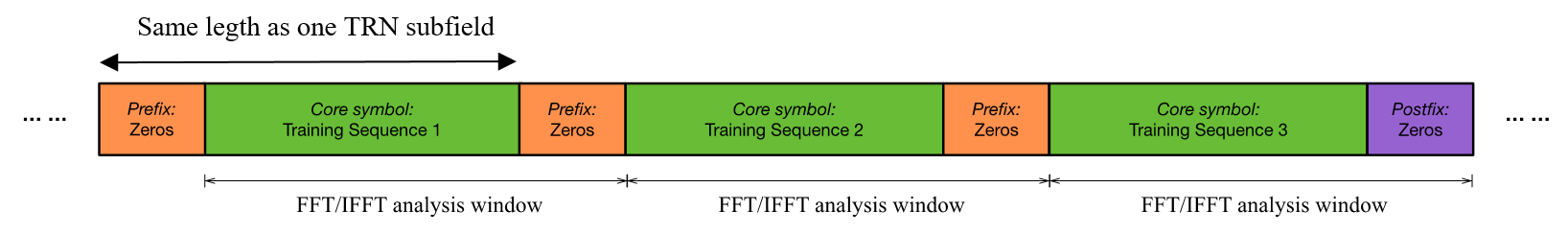
TGaz are developing Next Generation Location wich includes variants for several PHY standards including EDMG.

One of the developments include a zero-padded-waveform for facilitating secured FTM (Fine Time Measurement) and AoA & AoD. The new waveform is generated by a cryptographic algorithm and has no repetition, thus HW spoofing is made practically impossible.

The details are presented in document:

11-18-0223-00-00az-performance-evaluation-on-zero-padded-waveform.ppt

**The zero-padded-waveform:**



**EDMGz secure ranging:**





The use of zero-padded-waveform means that the TRN fields of such a PPDU are different, and therefore there is a need to signal this in the header.

It should be noted that:

* The secured ranging is used only in SC DPHY mode (non 0 MCS) and SISO mode only
* The use of zero-padded-waveform is applicable for secured ranging and secured AoA or AoD

The details of the zero-padded-waveform and all related protocol details will be part of 11az.

**Proposed resolution**: **Revised**:

Instruct the TGay editor to make the following changes:

***TGay Editor: Change Table 42 – EDMG MCS field definition***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Number of Spatial Stream based interpretation | Subfield | Number of bits | Start bit | Description |
| Number of SS > 0 | Base MCS | 5 | 0 | Indicates the lowest index of the modulation and coding scheme that is used to define the modulation and coding scheme of the spatial streams. |
| Differential EDMG-MCS1 | 2 | 5 | Generated from TXVECTOR parameter EDMG\_MCS.  Each Differential EDMG-MCSi subfield, 1 ≤ *i* ≤ 8, defines the modulation and coding scheme for spatial stream *i*, respectively. All spatial streams have the same code rate defined by the Base MCS subfield. A Differential EDMG-MCSi subfield is reserved if spatial stream *i* is not defined. CID2084  Each of these differential MCS subfields is set as follows:   * 0: indicates the same MCS as the Base MCS subfield * 1: indicates one level higher order modulation than the Base MCS subfield with the same code rate * 2: indicates two levels higher order modulation than the Base MCS subfield with the same code rate * 3: indicates three levels higher order modulation than the Base MCS subfield with the same code rate   If the MCS indicated by the value of the Base MCS subfield has a code rate of 1/2, then each of the differential MCS subfields shall not be set to the value that indicates π/2-64-QAM, π/2-64-NUC, or 64-QAM modulation.  For the EDMG SC mode, if the Base MCS subfield indicates MCS 12 or 13 and the π/2-8-PSK Applied field is 1, then all Differential EDMG-MCS subfields shall be set to 0.  The Differential EDMG-MCS index shall not indicate a modulation order exceeding π/2-64-QAM or π/2-64-NUC for the EDMG SC mode and 64-QAM for the EDMG OFDM mode. CID1454 |
| Differential EDMG-MCS2 | 2 | 7 |
| Differential EDMG-MCS3 | 2 | 9 |
| Differential EDMG-MCS4 | 2 | 11 |
| Differential EDMG-MCS5 | 2 | 13 |
| Differential EDMG-MCS6 | 2 | 15 |
| Differential EDMG-MCS7 | 2 | 17 |
| Differential EDMG-MCS8 | 2 | 19 |
| Number of SS=0 | MCS | 5 | 0 | Indicates the lowest index of the modulation and coding scheme that is used for the single stream |
| Secured TRN | 1 | 5 | When set to 1 indicates that the TRN field sequences appended to this packet have secure waveform described in 30.9.2.TBD.  When set to 0 indicates that TRN field sequences appended to this packet are as described in 30.9.2.2.5. |
| Reserved | 19 | 6 |  |

***TGay Editor: Add the following lines to*** —Table 32 TXVECTOR and RXVECTOR parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SECURED\_TRN | FORMAT is EDMG | Indicates whether TRNs appended to the PPDU are secured TRN  Enumerated type:  SECURED\_TRN  NON\_SECURED\_TRN | Y | Y |
| SECURED\_TRN\_WAVEFORM | FORMAT is EDMG and SECURED\_TRN set to SECURED\_TRN | Waveform for each of the TRN fields used in secured TRN. ZPWxTRN\_LEN Samples | Y | N |

***TGay Editor: Add the following text before 8.3.5:***

**8.3.4.4 Vector Descriptions**

***Editor: Add the following line to table 8.4 Vector-Description:***

|  |  |  |
| --- | --- | --- |
| SECURE\_TRN\_WAVEFORM | PHYCONFIG\_VECTOR | Waveform for each of the TRN fields used in receiving secured TRN. ZPWxTRN\_LEN Samples |