IEEE P802.11
Wireless LANs

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| EDCA-FTM Negotiations |
| Date: 2019-07-10 |
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Abstract

This document proposes resolutions to comments related to EDCA-FTM.

TGaz LB240 CIDs addressed: 1516.

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 1516 | 39.01 | 9.4.2.167 | The ACK to a Fine Timing Measurement frame should according to the current standard be sent in a non-HT duplicate PPDU, i.e. with the 20 MHzlegacy part of PPDU duplicated to the bandwidth of the ACK, e.g. 40 or 80 MHz. The phase relations between these 20 MHz segments arespecified in the standard but these specified phase relations may not be adhered to and there appear currently not to be any tests that ensurethat these phase relations are correct in released products. For regular communication these phase relations don't matter much but to for FTMTOA estimation on, say, the L-LTF part of the PPDU they are crucial. By adding a way for an ISTA and an RSTA to negotiate how the TOA should be measured, the problem with TOA measurements on the non-HT duplicate PPDU can be solved. | Make use of one of the reserved bits in the 'Fine Timing Measurement Parameters field' to be used by an FTM initiator to request that the responder computes a TOA estimate for the FTM ACK based on the assumption that the 20 MHz segments in the L-LTF part of the FTM ACK in non-HT PPDU format have standards compliant phase relations between its 20 MHz segments. If the responder can fulfill this requirement it replies with the same bit set in the 'Fine Timing Measurement Parameters field'. | Revised. See changes to amendment text in 11-19/1062r2. |

Proposed Resolution: **Revise**

**Discussion:**

It is already specified in [3]:

“The initiating STA shall indicate, in the Format and Bandwidth field, a format and bandwidth that it

supports(#1015).”

Thus an initiator shall not request FTM ranging with a bandwidth and format that it does not support.

This also means that the initiating STA shall not indicate No preference in the Format And Bandwidth field unless it supports FTM for all formats and bandwidths that the responding STA is allowed to select for the FTM session.

For example, if a non-DMG STA does not use the correct phase relations between the 20 MHz parts in an ‘FTM ACK’ (an Ack of an FTM frame) sent in a non-HT duplicate PPDU, and is not able to respond with ‘FTM ACKs’ in HT or VHT PPDUs, then it shall not request, or allow the responding STA to select, FTM ranging with a bandwidth of more than 20 MHz.

To clarify this the changes to the amendment text below is proposed.

***TGaz Editor: Change the text in Section 11.22.6.3 as follows:***

***Change the text in Section 11.22.6.3 as follows:***

* Fine timing measurement procedure negotiation

…

In the case of requests for 160 MHz bandwidth, the initiating STA shall indicate in the Format And Bandwidth field whether it uses a single or two separate RF LOs. In the cases when the responding STA indicates use of 160 MHz bandwidth, the responding STA shall indicate in the Format And Bandwidth field whether it uses a single or two separate RF LOs.

The initiating STA shall indicate, in the Format and Bandwidth field, a format and bandwidth that it supports(#1015).

The initiating STA shall not indicate No preference in the Format And Bandwidth field unless it supports all formats and bandwidths that the responding STA might use in the FTM session.

NOTE -- The use of phase relations, per Subclauses 19.3.11.11.4 (“Transmission in 40 MHz HT format”) and 21.3.7.5 (“Definition of tone rotation”), between the 20 MHz parts in non-HT duplicate PPDUs that contain Ack frames transmitted by the initiating STA is required to enable the responding STA to accurately determine the TOA of these frames, and is thus required for the initiating STA to support FTM using Ack frames transmitted in non-HT duplicate PPDUs.

If the request was successful

* (#1015)The responding STA shall indicate, in the Format and Bandwidth field, a format and bandwidth that it supports. The responding STA should indicate the same format and bandwidth in the Format and Bandwidth field as that requested by the initiating STA, if the responding STA supports this. The responding STA shall not indicate a bandwidth wider than requested. The responding STA shall not indicate a VHT format if DMG, HT-mixed or non-HT format was requested. (#1015)The responding STA shall not indicate an HT format if DMG or non-HT format was requested. The responding STA shall not indicate a DMG format if VHT, HT-mixed or non-HT format was requested.

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**References:**

**[1] Draft P802.11az\_D1.0**

**[2] Draft P802.11ay\_D3.0**

**[3] Draft P802.11REVmd\_D2.2**