IEEE P802.11
Wireless LANs

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| EDCA-FTM Negotiations |
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Abstract

This document proposes resolutions to comments related to EDCA-FTM. The changes described here are in relation to [1].

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 11-19/1062r7. |

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.

Also, the bandwidth that the initiator requests and the responder selects may be different from the BW of the BSS operation BW.

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 D1.2 in Subclause 11.22.6.3.2 as (EDCA-based FTM ranging session negotiation):***

***Change the text in Subclause 11.22.6.3.2 as (EDCA-based FTM ranging session negotiation) as follows:***

**11.22.6.3.2 EDCA-based ranging session 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, and this may be different from the BSS operation BW. **(#1015)** **(#1516).**

The initiating STA shall not indicate No preference in the Format And Bandwidth field unless it supports all formats and bandwidths that are applicable to the FTM session being negotiated. **(#1516)**

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. Alternatively, an ISTA that supports transmission of VHT or HT Ack frame as a control response frame to the FTM transmissions sent by RSTA in VHT or HT format respectively, is not required to support the non-HT duplicate PPDU Ack frame for FTM transmissions. **(#1516)**

The initiating STA shall indicate an EDCA-based HE format in the Format And Bandwidth field sent to a responding STA if and only if the STAs are operating in the 6 GHz band, at least one of the STAs does not support TB or non-TB ranging, and the responding STA has sent an Extended Capabilities element with the Fine Timing Measurement Responder subfield set to 1; otherwise the STA shall not indicate an EDCA-based HE format in the Format 24 And Bandwidth field.

A STA that supports TB or non-TB ranging is not required to support EDCA-based HE.

**…**

**References:**

**[1] Draft P802.11az\_D1.4**

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

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