### IEEE P802.11Wireless LANs

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| 11ax D4.0 MAC Comment Resolution for SM Power Save |
| Date: 2019-03-10 |
| Author(s): |
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Abstract

This submission proposes resolutions for comments of TGax Draft D4.0 with the following CIDs:

21210, 21211, 21448, 21449, 21540

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Revise based on the discussion during presentation. 21211 is deferred.

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGax D4.0 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGax D4.0 Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGax Editor: Editing instructions preceded by “TGax Editor” are instructions to the TGax editor to modify existing material in the TGax draft. As a result of adopting the changes, the TGax editor will execute the instructions rather than copy them to the TGax Draft.***

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| **CID** | **Commenter** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 21210 | Pooya Monajemi | 418.04 | 26.14.4 | The Trigger frame is an MPDU, while single spatial stream refers to an attribute of the PPDU, so saying frame X is frame Y is incorrect. The Client needs to be able to demodulate the Trigger, but not the full PPDU, and so it could be carried in a single spatial stream RU of a HE MU PPDU that had more than one spatial streams in other RU. | Replace text with "The starting Trigger frame is carried in either a single-spatial stream PPDU or a single-spatial stream RU of an HE MU PPDU" | Revised – Agree in principle with the commenter. We revise with “The starting Trigger frame is transmitted with single spatial stream.”TGax editor to make the changes shown in 11-19/0325r1 under all headings that include CID 21210 |
| 21211 | Pooya Monajemi | 418.11 | 26.14.4 | This does not cover the UORA use case, where a BSRP/BQRP is allocated for AID12 = 0, and the Client's OBO counts down to 0. | Update the text to support this use case | Rejected – Due to the potential high possibility of collision for UORA, always enabling multiple receiving chain under UORA may waste the power of the STA due to the collision of the transmission. |
| 21448 | Tomoko Adachi | 279.63 | 11.2.6 | "The basic rules for a non-HE STA are defined below." HE STAs also follow those rules. | Change it to "The basic rules are defined below." | Revised – Agree in principle with the commenter.TGax editor to make the changes shown in 11-19/0325r1 under all headings that include CID 21448 |
| 21449 | Tomoko Adachi | 417.00 | 26.14.4 | My understanding is that, the behaviour in 27.14.4 is applicable to a STA only when it meets the two conditions, the STA sets the HE Dynamic SM Power Save Support subfield to 1 and it also indicated that it is in the dynamic SM power save mode by either the HT Capabilities element during the Association process or by a SM Power Save frame. In other words, it cannot be judged only by the setting of the HE Dynamic SM Power Save Support subfield in the HE Capabilities element. | Clarify the point in 26.14.4. | Revised – TGax editor to make the changes shown in 11-19/0325r1 under all headings that include CID 21448 |
| 21540 | Yongho Seok | 417.62 | 26.14.4 | "In dynamic SM power save mode (see 11.2.6 (SM power save)), a STA that sets the HE Dynamic SM Power Save Support subfield to 1 in the HE MAC Capabilities Information field of the HE Capabilities element it transmits shall follow the dynamic SM power save procedures defined in 11.2.6 (SM power save) except that the STA may enable its multiple receive chains when it receives a Trigger frame as described below."Please define the MIB variable for this optional feature. | As in comment. | Revised – Agree in principle with the commenter. TGax editor to make the changes shown in 11-19/0325r1 under all headings that include CID 21540 |

**Discussion:** *None.*

**Propose:** Revised for CID 21210, 21448, 21540, per discussion and editing instructions in 11-19/0325r1.

**11.2.6 SM power save**

***Insert the following after the 2nd paragraph:***

The basic rules for a STA are defined below. Additional rule for an HE STA that sets the HE Dynamic SM Power Save subfield to 1 in the HE MAC Capabilities Information field of the HE Capabilities element it transmits is defined in 26.14.4 (SM power save).(#21448)

***TGax editor: Change 26.14.4 as follows: (Track change on)***

**26.14.4 HE Dynamic SM power save**

A STA that has dot11HEDynamicSMPowerSaveOptionImplemented equal to true shall set the HE Dynamic SM Power Save subfield in the HE MAC Capabilities Information field of the HE Capabilities element it transmits to 1. (#21540)

In dynamic SM power save mode (see 11.2.6 (SM power save)), a HE non-AP STA that sets the HE Dynamic SM Power Save subfield in the HE MAC Capabilities Information field of the HE Capabilities element it transmits to 1(#21540) shall follow the dynamic SM power save procedures defined in 11.2.6 (SM power save) except that the HE non-AP STA may enable its multiple receive chains when it receives a Trigger frame as described below.

The HE non-AP STA enables its multiple receive chains when it receives a Trigger frame that starts a frame exchange sequence. Such a frame exchange sequence shall satisfy the following conditions:

* The starting Trigger frame is transmitted with asingle-spatial stream.(#21210)
* The starting Trigger frame is from the associated AP or from the AP corresponding to the transmitted BSSID if HE non-AP STA is associated with a nontransmitted BSSID and has indicated support for receiving Control frames with TA set to the transmitted BSSID by setting the Rx Control Frame To MultiBSS subfield to 1 in the HE Capabilities element that the HE non-AP STA transmits.
* The starting Trigger frame is an MU-RTS Trigger frame, BSRP Trigger frame or BQRP Trigger frame that includes a User Info field with the AID12 subfield equal to the 12 LSBs of the AID of the HE non-AP STA (see 26.5.3.2.1 (General)) in dynamic SM power save mode.

The HE non-AP STA shall, subject to its spatial stream capabilities (see 9.4.2.55.4 (Supported MCS Set field), 9.4.2.157.3 (Supported VHT-MCS and NSS Set field) and 9.4.2.242 (HE Capabilities element)) and operat-ing mode (see 11.41 (Notification of operating mode changes) and 26.9 (Operating mode indication)), be capable of receiving a PPDU that is sent using more than one spatial stream a SIFS after the end of its response frame transmission. The STA switches to the multiple receive chain mode when it receives the Trigger frame addressed to it as defined above (#21210) and switches back immediately when the frame exchange sequence ends.

NOTE—A Trigger frame always solicits an immediate response.

NOTE—A HE non-AP STA that is in dynamic SM power save mode and sets the HE Dynamic SM Power Save subfield to 1 in the HE MAC Capabilities Information field of the HE Capabilities element it transmits cannot distinguish between a Trigger frames that precedes a MIMO transmission and any other Trigger frames that do not precede a MIMO transmis-sion and, therefore, always enables its multiple receive chains when it receives a Trigger frame, which is a MU-RTS Trigger frame, a BSRP Trigger frame, or a BQRP Trigger frame and has a User Info field with the AID12 subfield equal to the 12 LSBs of the AID of the HE non-AP STA.

***TGax editor: Change Annex C as follows: (Track change on)***

ASN.1 encoding of the MAC and PHY MIB

* MIB Detail

(..existing texts…)

Insert the following after the dot11S1GStationConfig TABLE:

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

-- \* dot11HEStationConfig TABLE

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

(..existing texts…)

Dot11HEStationConfigEntry ::=

 SEQUENCE {

 dot11HEULMUResponseSchedulingOptionImplemented TruthValue,

 dot11ULMUMIMOOptionImplemented TruthValue,

 dot11OFDMARandomAccessOptionImplemented TruthValue,

 dot11HEControlFieldOptionImplemented TruthValue,

 dot11OMIOptionImplemented TruthValue,

 dot11HEMCSFeedbackOptionImplemented INTEGER,

 dot11HEDynamicFragmentationLevel INTEGER,

 dot11AMPDUwithMultipleTIDOptionImplemented TruthValue,

 dot11MPDUAskedforAckInMultiTIDAMPDU TruthValue,

 dot11TXOPDurationRTSThreshold Unsigned32,

 dot11PPEThresholdsRequired TruthValue,

 dot11IntraPPDUPowerSaveOptionActivated TruthValue,

 dot11AMSDUFragmentationOptionImplemented TruthValue,

 dot11BSSColorCollisionAPPeriod Unsigned32,

 dot11BSSColorCollisionSTAPeriod Unsigned32,

 dot11AutonomousBSSColorCollisionReportingImplemented TruthValue,

 dot11HESRPOptionImplemented TruthValue,

 dot11HEBSRControlImplemented TruthValue,

 dot11HEUPHControlActivated TruthValue,

 dot11HEBQRControlImplemented TruthValue,

 dot11HECASControlImplemented TruthValue,

 dot11PartialBSSColorImplemented TruthValue,

 dot11ObssNbRuToleranceTime Unsigned32,

 dot11HESubchannelSelectiveTransmissionImplemented TruthValue,

 dot11SRResponderOptionImplemented TruthValue,

 dot11AutonomousBSSColorInUseReportingImplemented TruthValue,

 dot11ShortSSIDListImplemented TruthValue,

 dot11ColocatedRNRImplemented(#15651) TruthValue,

 dot11SRGAPOBSSPDMinOffset Integer,

 dot11SRGAPOBSSPDMaxOffset Integer,

 dot11HTVHTTriggerOptionImplemented TruthValue,

 dot11HEDynamicSMPowerSaveOptionImplemented TrueValue (#Ed)

 }

(.. existing texts…)

dot11HEDynamicSMPowerSaveOptionImplemented OBJECT-TYPE

 SYNTAX TruthValue

 MAX-ACCESS read-only

 STATUS current

 DESCRIPTION

 "This is a capability variable. Its value is determined by device

 capabilities.

 This attribute, when true, indicates that the STA implementation is

 capable of enabling its multiple receive chains when it receives a Trigger frame. The capability is disabled otherwise."

 DEFVAL { false }

::= { dot11HEStationConfigEntry ANA}(#21540)

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

-- \* End of dot11HEStationConfigTable TABLE

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(.. existing texts…)