IEEE P802.11
Wireless LANs

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| Diverse PHY Changes for 320 MHz Ranging |
| Date: 2023-09-12 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Christian Berger | NXP | 350 Holger Way, San Jose, CA |  | christian.berger@nxp.com |
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Abstract

This submission proposes amendment text to add portions to 11be PHY section that is needed for ToA estimation, changes are relative to Draft P802.11be\_D4.0 and partially based on IEEE802.11az-2022

Revisions:

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 Draft. This introduction is not part of the adopted material.

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

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

**The text preceded by “Discussion” is not part of the adopted changes.**

1. ***TGbk Editor: Insert new clause after 36.3.20.4.4:***

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* + - * 1. 36.3.20.5 Time of departure accuracy

The Time of Departure accuracy test evaluates TIME\_OF\_DEPARTURE against aTxPHYTxStartRMS and aTxPHYTxStartRMS against TIME\_OF\_DEPARTURE\_ACCURACY\_TEST\_THRESH as defined in Annex P with the following test parameters:

* MULTICHANNEL\_SAMPLING\_RATE is:

 sample/s, for a CH\_BANDWIDTH parameter equal to CBW20

 sample/s, for a CH\_BANDWIDTH parameter equal to CBW40

 sample/s, for a CH\_BANDWIDTH parameter equal to CBW80

 sample/s, for a CH\_BANDWIDTH parameter equal to CBW160

$320 × 10^{6}\left(1+\left⌈\frac{f\_{H}-f\_{HL}}{320 MHz}\right⌉\right)$ sample/s, for a CH\_BANDWIDTH parameter equal to CBW320

where

*fH* is the nominal center frequency in Hz of the highest channel in the channel set

*fL* is the nominal center frequency in Hz of the lowest channel in the channel set, the channel set is the set of channels upon which frames providing measurements are transmitted, the channel set comprises channels uniformly spaced across.

* FIRST\_TRANSITION\_FIELD is L-STF.
* SECOND\_TRANSITION\_FIELD is L-LTF.
* TRAINING\_FIELD is L-LTF windowed in a manner which should approximate the windowing described in 17.3.2.5 (Mathematical conventions in the signal descriptions) with TTR = 100 ns.
* TIME\_OF\_DEPARTURE\_ACCURACY\_TEST\_THRESH is 80 ns.

NOTE—The indicated windowing applies to the time of departure accuracy test equipment, and not the transmitter or receiver.

1. ***TGbk Editor: Change clause 36.3.22 as follows:***

36.3.22 EHT transmit procedure

The PHY indicates the state of the primary channel and other channels (if any) via the PHY-CCA.indication primitive (see 36.3.21.6 (CCA sensitivity) and 8.3.5.12 (PHY-CCA.indication)). Transmission of the PPDU shall be initiated by the PHY after receiving the PHY-TXSTART.request(TXVECTOR) primitive. The TXVECTOR elements for the PHY-TXSTART.request primitive are specified in Table 36-1 (TXVECTOR and RXVECTOR parameters).

Transmission of the PHY preamble may start if TIME\_OF\_DEPARTURE\_REQUESTED is false and shall start immediately if TIME\_OF\_DEPARTURE\_REQUESTED is true, based on the parameters passed in the PHY-TXSTART.request primitive.

If all of the following conditions are met:

* if dot11TODImplemented and dot11TODActivated are true or if dot11TimingMsmtActivated is true,
* the TXVECTOR parameter TIME\_OF\_DEPARTURE\_REQUESTED is true,

then the PHY shall issue a PHY-TXSTART.confirm(TXSTATUS) primitive to the MAC, forwarding the TIME\_OF\_DEPARTURE corresponding to the time when the first frame energy is sent by the transmitting port and TIME\_OF\_DEPARTURE\_ClockRate parameter within the TXSTATUS vector. If dot11TimingMsmtActivated is true, then the PHY shall forward the value of TX\_START\_OF\_FRAME\_OFFSET in TXSTATUS vector.

36.3.23 EHT receive procedure

***TGbk Editor: Change the second paragraph as follows.***

This receive procedure and state machine do not describe the operation of optional features, such as HE Ranging NDP and HE TB Ranging NDP. If the detected format indicates a non-HT PPDU, refer to the receive procedure and state machine in Clause 15 (DSSS PHY specification for the 2.4 GHz band designated for ISM applications), Clause 16 (High rate direct sequence spread spectrum (HR/DSSS) PHY specification), Clause 17 (Orthogonal frequency division multiplexing (OFDM) PHY specification), and Clause 18 (Extended Rate PHY (ERP) specification). If the detected format indicates an HT PPDU format, refer to the receive procedure and state machine in Clause 19 (High Throughput (HT) PHY specification). If the detected format indicates a VHT PPDU format, refer to the receive procedure and state machine in Clause 21 (Very High Throughput (VHT) PHY specification). If the detected format indicates an HE PPDU format, refer to the receive procedure and state machine in Clause 27 (High Efficiency (HE) PHY specification). Through station management (via the PLME), the PHY is set to the appropriate frequency as specified in 36.4 (EHT PLME). The PHY has also been configured with BSS identification information and STA identification information (i.e., BSS color value and STA-ID) so that it can receive data intended for the STA in the specific BSS. Other receive parameters, such as RSSI and indicated DATARATE, may be accessed via the PHY SAP.