IEEE P802.11
Wireless LANs

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| EHT TB Ranging NDP Amendment Text |
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| 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 for the EHT TB Ranging NDP, changes are relative to IEEE802.11az-2022 and Draft P802.11be\_D3.0

Revisions:

1. Edits to incorporate feedback discussion during presentation

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.**

**Discussion:**

The spec text is directly copied from subclause 27.3.18a.2 HE TB Ranging NDP, showing edits to convert to EHT PHY.

***TGbk Editor: Insert the new subclause 36.3.XX at TBD as follows***

* + - * 1. **36.3.XX** EHT TB Ranging NDP

The format of an EHT TB Ranging NDP is shown in Figure 36-E (EHT TB Ranging NDP format).



1. Figure 36-E—EHT TB Ranging NDP format

The EHT TB Ranging NDP has the following properties:

* Uses the EHT TB PPDU format but without the Data field.
* The U-SIG field is encoded in the same way as in the EHT TB PPDU, i.e, the UL/DL subfield is set to 1 and the PPDU Type and Compression Mode subfield is set to 0.
* The EHT-STF field in EHT TB Ranging NDP is the same as the EHT-STF field in an EHT TB PPDU
* Uses EHT-LTFs or secure EHT-LTFs when the TXVECTOR parameter SECURE\_LTF\_FLAG is set to 0 or 1 respectively.
* Secure EHT-LTFs use randomized EHT-LTF sequences, pseudorandom and deterministic per stream phase rotation and when the TXVECTOR parameter TX\_WINDOW\_FLAG is set to 1, a frequency domain flat top window is used instead of the frequency domain rectangular window; see 36.3.TBD (Construction of secure EHT-LTF symbols).
* Uses EHT-LTF repetitions, if indicated in the TXVECTOR parameter LTF\_REP by values larger than one.
* The EHT-LTF field of an EHT TB Ranging NDP consists of a single EHT-LTF User Block. The EHT-LTF User Block contains one or more EHT-LTF Repetition Blocks, and the number of EHT-LTF Repetition Blocks is equal to LTF\_REP. Each EHT-LTF Repetition Block in the EHT-LTF User Block comprises of one or more EHT-LTF symbols, NEHT-LTF specified in the Common Info field within the Sounding Ranging Trigger frame.
* Has a Packet Extension (PE) field that is 8 µs in duration. No energy is transmitted during the first 1.6 µs of the PE field if the EHT-LTF field is using the secure EHT-LTF, similar to no energy being transmitted during the GI of EHT-LTF symbols.
* No beamforming steering matrix is applied to the waveform.
* For transmission of EHT-LTFs, if NSTS = NTx, the Q matrix shall be an Identity matrix, and if NSTS < NTx, the Q matrix shall be an antenna selection matrix with no antenna swapping. The Q matrix becomes an Identity matrix when all 0 rows are removed.
* The only supported mode is the 2x EHT-LTF with 1.6 µs GI. The other combinations of EHT-LTF modes and GI duration are disallowed.

The number of EHT-LTF symbols in an EHT TB Ranging NDP is the product of the number of EHT-LTF symbols in an EHT-LTF Repetition Block, NEHT-LTF and the number of EHT-LTF repetitions, given in LTF\_REP. A value of LTF\_REP equal to 1 indicates no repetition, i.e., a single EHT-LTF Repetition Block is included in the EHT-LTF User Block, and a value of LTF\_REP greater than 1 indicates the use of repetitions, i.e., multiple ETH-LTF Repetition Blocks are included in the EHT-LTF User Block. The sum of Tx power shall remain constant throughout the entire EHT TB Ranging NDP PPDU.

When the TXVECTOR parameter SECURE\_LTF\_FLAG is set to 0, EHT-LTFs as defined in Subclause 36.3.12.10 (EHT-LTF) are used in each EHT-LTF Repetition Block.

When the TXVECTOR parameter SECURE\_LTF\_FLAG is set to 1, secure EHT-LTFs as defined in 36.3.TBD (EHT-LTF field using secure EHT-LTF) are used in the EHT-LTF Repetition Blocks, and the Packet Extension field will be partially replaced by a zero power GI in its first 1.6 µs; see Figure 36-F (EHT TB Ranging NDP format with Secure EHT LTFs). The repetitions of the EHT-LTF symbols form the EHT-LTF Repetition Blocks. The randomized EHT-LTF sequences are different in each EHT-LTF Repetition Block.



1. Figure 36-F—EHT TB Ranging NDP with secure EHT-LTFs