IEEE P802.11
Wireless LANs

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| 11bn PDT PHY U-SIG |
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Abstract

This document contains Proposed Draft Text (PDT) for the U-SIG subclause of the proposed TGbn (UHR, Ultra High Reliability) amendment to the 802.11 standard.

**Revision information**

The following is a summary of the important changes that occurred within each revision of this document:

|  |  |
| --- | --- |
| **Revision** | **Major changes** |
| 0 | Initial revision |
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**Introduction**

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 TGbe Draft. The abstract, revision information, introduction, explanation of the proposed changes and references sections are not part of the adopted material.

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

**Explanation of the proposed changes:**

The proposed changes to the 802.11 TGbn draft within this document are based on the following motions adopted by the TGbn task group:

**Relevant passing motions:**

All the passing motions up to and including those in the 2024 November IEEE 802 Plenary Session (see [1]).

[Motion #22, [1] and [38]]

* “PHY version identifier” is set to 1 in U-SIG field for UHR PPDUs.

[Motion #92, [1] and [175]]

* The BW of ELR PPDU is 20MHz and one Spatial stream is used for ELR transmission.

[Motion #32, [1] and [84]]

* ELR PPDU starts with L-STF, L-LTF, L-SIG, RL-SIG, and U-SIG in the PPDU for the ELR transmission.

[Motion #75, [1] and [168]]

* In ELR PPDU, STA boosts L-STF and L-LTF by 3 dB
	+ For UL, non-AP STA corrects CFO before transmission
	+ NOTE: Non-AP STA pre-correction CFO requirement for residual CFO is TBD

[Motion #78, [1] and [170]]

* ELR packet detection is done at L-STF, which has same length as legacy with 3dB power boosting
	+ L-LTF also has same length as legacy with same power boosting as L-STF

[Motion #33, [1] and [85]]

* In the U-SIG field of a UHR ELR PPDU, the PHY Version Identifier is set to 1. And the PPDU Type And Compression Mode is used to indicate ELR PPDU.

[Motion #79, [1] and [170]]

* U-SIG carries STA-ID in ELR PPDU.

[Motion #91, [1] and [174]]

* The U-SIG field in ELR PPDU consists of 2 OFDM symbols and includes the same version independent fields defined in the U-SIG field of EHT PPDU
* The details for the version dependent fields are TBD.

[Motion #96, [1] and [177]]

* The contents of the U-SIG field in ELR PPDU is defined as follows.

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| --- | --- | --- | --- |
| **Two parts of U-SIG** | **Field** | **Bit Pos** | **Bits** |
| **U-SIG-1** | PHY Version Identifier | B0-B2 | 3 |
| Bandwidth | B3-B5 | 3 |
| UL/DL | B6 | 1 |
| BSS Color | B7-B12 | 6 |
| TXOP | B13-B19 | 7 |
| Disregard | B20-B24 | 5 |
| Validate | B25 | 1 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Two parts of U-SIG** | **Field** | **Bit Pos** | **Bits** |
| **U-SIG-2** | PPDU Type And Compression Mode | B0-B1 | 2 |
| STA-ID | B2-B12 | 11 |
| ELR Validate bits  | B13-B15 | 3 |
| CRC | B16-B19 | 4 |
| Tail | B20-B25 | 6 |

* ELR PPDU indication: PPDU Type And Compression Mode set to ‘11’.
* STA-ID (11 bit): B2-B12 bit in U-SIG-2.
* ELR Validate bits (B13-B15 of USIG-2): Set to all ‘1’ for ELR PPDU.
* Note: B11-B15 – in EHT MU PPDU indicates “Number of EHT-SIG symbols”, and in UHR MU PPDU indicates “Number of UHR-SIG symbols”

[Motion #112, [1] and 184]

* The pre-UHR portion of a Co-BF PPDU shall have identical content across two APs.

[Motion #113, [1] and 184]

* Co-BF data transmission shall be indicated in the U-SIG field for IEEE802.11bn

[Motion #103, [1] and 179]

* In the UHR sounding process for Co-BF, for the joint sounding case as well as for the sequential sounding case, the NDP shall always carry the BSS color of the AP which transmitted the NDPA.

**Text to be adopted begins here.**

***TGbn editor: Please add the following new subclause 38.x.y.7 U-SIG to the 802.11bn draft D0.1:***

**38.x UHR PHY**

**38.x.y UHR Preamble**

**38.x.y.7 U-SIG**

**38.x.y.7.1 General**

[Content TBD: a place holder for details of Contexts]

**38.x.y.7.2 Content**

[Content TBD: a place holder for details of Contexts]

**38.x.y.7.3 Encoding and modulation**

[Content TBD: a place holder for details of Contexts]

**Text to be adopted ends here.**

**References:**

1. [11-24-0171r21](https://mentor.ieee.org/802.11/dcn/24/11-24-0171-21-00bn-tgbn-motions-list-part-1.pptx): 11-24-0171-21-00bn-tgbn-motions-list-part-1, Alfred Asterjadhi (Qualcomm Inc.)