IEEE P802.11
Wireless LANs

|  |
| --- |
| 11bp PDT Time Related Parameters |
| Date: Sep 15, 2025 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Manideep Dunna | Qualcomm Technologies, Inc |  |  | mdunna@qti.qualcomm.com |
| Amichai Sanderovich | Wiliot |  |  | amichai.sanderovich@wiliot.com |
| Bin Qian | Huawei |  |  | qianbin14@huawei.com |
| Juan Fang | Intel |  |  | juan.fang@intel.com |
| Lei Zhou | H3C |  |  | zhou.leiH@h3c.com |
| Leif Wilhelmsson | Ericsson |  |  | leif.r.wilhelmsson@ericsson.com |
| Nelson Costa | Haila |  |  | nelson@haila.io |
| Panpan Li | Huawei |  |  | lipanpan25@huawei.com |
| Rui Cao | NXP |  |  | rui.cao\_2@nxp.com |
| Shengquan Hu | MediaTek |  |  | shengquan.hu@mediatek.com |
| Weijie Xu | OPPO |  |  | xuweijie@oppo.com |
| You-Wei Chen | MediaTek |  |  | you-wei.chen@mediatek.com |
| Yuxiao Hou | TP-Link |  |  | houyuxiao@tp-link.com.hk |
| Ian Bajaj | Huawei |  |  | ian.bajaj@huawei.com |
| Yaron Ben-Arie | Huawei |  |  | yaron.benarie@huawei.com |
| Dror Regev | Huawei |  |  | dror.regev@huawei.com |
| Ke Wang | OPPO |  |  | wangke6@oppo.com |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Abstract

This document contains Proposed Draft Text (PDT) for UL modulation and coding of the proposed TGbp (AMP, Ambient Power) 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 including motions up to 8/19/2025 |
| 1 | Including comments about using AMP non-AP STA accuracy and not AMP-AP, constants instead of parameters |
|  |  |
|  |  |
|  |  |

**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 TGbp 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 TGbp 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 TGbp draft within this document are based on the following motions adopted by the TGbp task group:

# Relevant passing motions:

All the passing motions up to Sep 1, 2025 (see [1]) are as follows.

* When performing transmission, the maximum clock offset is ± 103 ppm for AMP Non-AP STA supporting active transmission.

[Motion #20, [1], [12] and [13]]

* The maximum allowed clock inaccuracy for the backscattering tag using OOK modulation is 100,000 ppm for both receive mode and backscattering transmit mode.

[Motion #72, [1], [15] and [71]]

* The maximum clock offset for a non-backscatter STA is ±10,000 PPM when receiving.

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

* For mono-static backscattering communication in sub-1 GHz, the maximum allowed clock inaccuracy for the backscattering tag is 100,000 ppm for both receive mode and backscattering transmit mode.
	+ 11bp shall specify an AMP-S1G Downlink PPDU supporting downlink transmission for backscattering AMP STA in sub-1 GHz. AMP-S1G Downlink PPDU contains at least an Excitation field, an AMP-Sync field and an AMP-Data field.
		- Inclusion of an AMP-SIG field is TBD.
		- Inclusion of an 802.11 preamble is TBD.
		- Additionally, there will be one or more Excitation fields
		- Additionally, there may be more than one AMP-Data field
		- Additionally, AMP-Sync and AMP-SIG field may precede each AMP-Data field
	+ 11bp shall specify an AMP-S1G Uplink PPDU supporting uplink transmission for backscattering AMP STA in sub-1 GHz. AMP-S1G Uplink PPDU contains an AMP-Sync field and AMP-Data field.
	+ The AMP-S1G Downlink PPDU and AMP-S1G Uplink PPDU AMP-Data field will use Manchester encoding for backscattering operation.
	+ The AMP-Sync field and the AMP-Data field of AMP-S1G Downlink PPDU and AMP-S1G Uplink PPDU for backscatter communication use OOK modulation

[Motion #96, [1] and [97]]

**Text to be adopted begins here.**

***TGbp editor: Please add the following text to the respective subclauses in 802.11bp draft D0.1:***

**40.3.6 Timing related parameters**

For all the MCSs that are defined for the backscatter tag in 2.4GHz, the frequency tolerance shall be ± 105 ppm for both the receiver and the backscatter transmitter of the AMP non-AP STA.

For all the MCSs that are defined for the tag with active transmissions in 2.4GHz, the transmitted center frequency tolerance of the AMP non-AP STA shall be ± 103 ppm.

For all the MCSs that are defined for the tag with active transmissions in 2.4GHz, the transmitter chip clock frequency tolerance of the AMP non-AP STA shall be ± TBD ppm.

For all the MCSs that are defined for the tag with active transmissions in 2.4GHz, the receiver chip clock frequency tolerance of the AMP non-AP STA shall be ± 104 ppm.

###### Table 40-xx Timing Related Constants for AMP PHY at 2.4GHz

|  |  |
| --- | --- |
| **Parameter** | **Value** |
|  |  |
|
|  |  |

**40.4.6 Timing related parameters**

For all the MCSs that are defined for the backscatter tag in sub-1GHz, the frequency tolerance of the AMP non-AP STA shall be ± 105 ppm for both the receiver and the backscatter transmitter.

###### Table 40-xx Timing Related Constants for AMP PHY (Sub-1 GHz)

|  |  |
| --- | --- |
| **Parameter** | **Value** |
|  |  |
|
|  |  |

**Text to be adopted ends here.**

**References:**

1. [11-24-1613r12](https://mentor.ieee.org/802.11/dcn/24/11-24-1613-11-00bp-specification-framework-for-tgbp.docx): Specification Framework for TGbp, Yinan Qi (OPPO)