IEEE P802.11  
Wireless LANs

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| 11bn PDT UHR PHY Capabilities Element | | | | |
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| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Eugene Baik | Qualcomm Technologies, Inc. |  |  | eugeneb@qti.qualcomm.com |
| Juan Fang | Intel |  |  |  |
| Brian Hart | Cisco |  |  |  |
| You-Wei Chen | Mediatek |  |  |  |
| Jianhan Liu | Mediatek |  |  |  |
| Bo Sun | Sanechips |  |  |  |
| Youhan Kim | Qualcomm Technologies, Inc. |  |  |  |
| Ross Yu | Huawei |  |  |  |
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Abstract

This document contains Proposed Draft Text (PDT) for the UHR PHY Capabilities Information field subclause (9.4.2.aab.1) 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 |
| 1 | Addressed comments regarding meaning of “UHR sounding” |
| 2 | Addressed comment to change “DL MU-MIMO PPDU” to “DL MU-MIMO transmission” |
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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 TGbn 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 TGbn 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:**

Related to defining separate capabilities for the maximum number of spatial streams supported for NDP sounding reception and maximum total number of spatial streams supported in for reception in an DL MU-MIMO or COBF PPDU.

* Motion #98 in [1]
  + Two separate capabilities shall be defined for the maximum number of spatial streams supported for reception of a sounding NDP in UHR and the maximum total number of streams (across all users) supported for reception in UHR DL MU-MIMO and CoBF PPDUs
    - The only possible values for each capability are 4 and 8.
* Motion #115 in [1]
  + For the maximum number of spatial streams supported for reception of sounding NDP in UHR and the maximum total number of streams (across all users) supported for reception in UHR DL MU-MIMO and COBF PPDUs:
    - 4 is mandatory except for a non-AP STA with 20 MHz-Only Limited Capabilities Support subfield equal to 1.
    - 8 is optional for DL MU-MIMO and sounding NDP (Note: More than 4 is not allowed for COBF PPDUs

**Text to be adopted begins here.**

***TGbn editor: Please add the following text for the subclause 38.1 Introduction to the 802.11bn draft version D0.1:***

***[Note: Placeholder text, TBDs, and comments from POC/TTT regarding text to fill in are set in bold/italics for now. Not meant to be permanent, and will be removed at appropriate time]***

# Frame Formats

## Management and Extension frame body components

### Elements

#### UHR Capabilities Element

##### UHR PHY Capabilities Information field

The format of the UHR PHY Capabilities Information field is defined in Figure 9‑1 (UHR PHY Capabilities Information field format).

***[Note from POC: Many more subfields will be inserted as their definitions are motioned in. Additionally, the ordering of the subfields included to date will likely change. As such, for this initial draft, the typical bit index labelling per subfield after B0 (i.e. B1, B2, etc.) will be denoted as “B\_”.***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | B0 | … | B\_ | B\_ | B\_ |
|  | Reserved | … | Max Nss Rx for NDP sounding (≤ 80 MHz) | Max Nss,total Rx for DL MU-MIMO (≤ 80 MHz) | Max Nss Rx for NDP sounding (= 160 MHz) |
| Bits: | 1 | … | 1 | 1 | 1 |
|  |  |  |  |  |  |
|  | B\_ | B\_ | B\_ | … | ***TBD*** |
|  | Max Nss,total Rx for DL MU-MIMO (= 160 MHz) | Max Nss Rx for NDP sounding (= 320 MHz) | Max Nss,total Rx for DL MU-MIMO (= 320 MHz) | … | ***TBD*** |
| Bits: | 1 | 1 | 1 | … | ***TBD*** |
|  |  |  |  |  |  |

**Figure 9‑1 - UHR PHY Capabilities Information field format**

The subfields of the UHR PHY Capabilities Information field are defined in Table 9‑1 (Subfields of the UHR PHY Capabilities Information field).

**Table 9‑1-Subfields of the UHR PHY Capabilities Information field**

|  |  |  |
| --- | --- | --- |
| **Subfield** | **Definition** | **Encoding** |
| Max Nss Rx for NDP sounding (≤ 80 MHz) | For a PPDU bandwidth less than or equal to 80 MHz, indicates:   * The maximum number of spatial streams supported by the STA for the reception of a sounding NDP. | Set to 0 if up to 4 spatial streams are supported.  Set to 1 if up to 8 spatial streams are supported |
| Max Nss,total Rx for DL MU-MIMO (≤ 80 MHz) | For a PPDU bandwidth less than or equal to 80 MHz, indicates:   * The maximum total number of spatial streams (summed over all users) on an RU or MRU, supported by the STA for the reception of that RU or MRU in a UHR DL MU-MIMO transmission. | For a non-AP STA:  Set to 0 if up to 4 total spatial streams are supported  Set to 1 if up to 8 total spatial streams are supported  Reserved for an AP |
| Max Nss Rx for NDP sounding (= 160 MHz) | For a PPDU bandwidth of 160 MHz, indicates:   * The maximum number of spatial streams supported by the STA for the reception of a sounding NDP. | Set to 0 if up to 4 spatial streams are supported.  Set to 1 if up to 8 spatial streams are supported |
| Max Nss,total Rx for DL MU-MIMO (= 160 MHz) | For a PPDU bandwidth of 160 MHz, indicates:   * The maximum total number of spatial streams (summed over all users) on an RU or MRU, supported by the STA for the reception of that RU or MRU in a UHR DL MU-MIMO transmission. | For a non-AP STA:  Set to 0 if up to 4 total spatial streams are supported  Set to 1 if up to 8 total spatial streams are supported  Reserved for an AP |
| Max Nss Rx for NDP sounding (= 320 MHz) | For a PPDU bandwidth of 320 MHz, indicates:   * The maximum number of spatial streams supported by the STA for the reception of a sounding NDP. | Set to 0 if up to 4 spatial streams are supported.  Set to 1 if up to 8 spatial streams are supported |
| Max Nss,total Rx for DL MU-MIMO (= 320 MHz) | For a PPDU bandwidth of 320 MHz, indicates:   * The maximum total number of spatial streams (summed over all users) on an RU or MRU, supported by the STA for the reception of that RU or MRU in a UHR DL MU-MIMO transmission. | For a non-AP STA:  Set to 0 if up to 4 total spatial streams are supported  Set to 1 if up to 8 total spatial streams are supported  Reserved for an AP |
| ***[TBD: more subfields to follow]*** |  |  |

**Text to be adopted ends here.**

**References:**

1. [11-24-0171r26](https://mentor.ieee.org/802.11/dcn/24/11-24-0171-26-00bn-tgbn-motions-list-part-1.pptx): 11-24-0171-26-00bn-tgbn-motions-list-part-1, Alfred Asterjadhi (Qualcomm Inc.)