IEEE P802.11  
Wireless LANs

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| D0.3 CR for Section 10.6 and 10.23 | | | | |
| Date: 2021-2-24 | | | | |
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Abstract

This submission proposes resolutions for the following comments on section 10.6 and 10.23 of TGbe D0.3:

Baseline documents: TGbe D0.3, TGax D8.0, and 11-21/0137r4.

Revisions:

* Rev 0: Initial version of the document. Use D0.3 as baseline spec text.
* Rev 1: Updated based on feedback during the call, i.e. removing DSSS, HR/DSSS, EHT beacon and group address based texts.

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. This introduction is 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).***

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

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| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause Number** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 1102 | 10.6.6.1 | 84 | These statements are getting long and currently incorrect. Need to add the EHT MCS, NSS tuple to the sentence. | As in comment. | **Revised.**  Added EHT STA sending trigger frame, multi-STA block ACK, NDP-A frame using HT/VHT/HE/EHT rate.  In addition, DSSS, HR/DSSS, ERP-OFDM and OFDM rate are added for HE and EHT STA.  *TGbe Editor: TGbe editor to make changes as shown in 11-21/0330r0 tagged as #1102, #1740, #1846, #1916, #2572, #3363.* |
| 1740 | 10.6.6.1 | 84 | Add <EHT-MCS, Nss> tuple | As in the comment | **Revised.**  Added EHT STA sending trigger frame, multi-STA block ACK, NDP-A frame using HT/VHT/HE/EHT rate.  In addition, DSSS, HR/DSSS, ERP-OFDM and OFDM rate are added for HE and EHT STA.  *TGbe Editor: TGbe editor to make changes as shown in 11-21/0330r0 tagged as #1102, #1740, #1846, #1916, #2572, #3363* |
| 1769 | 10.6.6.1 | 84 | "An HE STA that transmits a Trigger frame, Multi-STA BlockAck frame or VHT/HE/EHT NDP Announcement frame addressed to more than one STA shall use a rate, HT-MCS, <VHT-MCS, NSS> tuple or <HE-MCS, NSS> tuple that is supported by all recipient STAs." - can a HE STA transmit a EHT NDP Announcement frame? | Remove "/EHT" from the paragraph | **Accepted.** |
| 1846 | 10.6.6.1 | 84 | Why <EHT-MCS, NSS> tupple cannot be used for Control frame rate, if it is supported by all receivers. Such tuple may be needed for some BW/ puncturing configuration. | Please add <EHT-MCS, NSS> tupple as one alternative for control frame rate, if it is supported by all recievers. | **Revised.**  Added EHT STA sending trigger frame, multi-STA block ACK, NDP-A frame using HT/VHT/HE/EHT rate.  In addition, DSSS, HR/DSSS, ERP-OFDM and OFDM rate are added for HE and EHT STA.  *TGbe Editor: TGbe editor to make changes as shown in 11-21/0330r0 tagged as #1102, #1740, #1846, #1916, #2572, #3363* |
| 1916 | 10.6.6.1 | 84 | In D0.3, EHT MCS is defined. <EHT MCS, NSS> tuple can be add into the text. | Add the "<EHT-MCS, NSS> tuple" after "<HE-MCS,NSS> tuple". | **Revised.**  Added EHT STA sending trigger frame, multi-STA block ACK, NDP-A frame using HT/VHT/HE/EHT rate.  In addition, DSSS, HR/DSSS, ERP-OFDM and OFDM rate are added for HE and EHT STA.  *TGbe Editor: TGbe editor to make changes as shown in 11-21/0330r0 tagged as #1102, #1740, #1846, #1916, #2572, #3363* |
| 2572 | 10.6.6.1 | 84 | Can an HE STA transmit an EHT NDP Announcement frame? | Either change the HE STA to EHT STA or break this into two separate sentences: one for HE STA; one for EHT STA. | **Revised.**  Break the sentence into two seprate sentences is accepted. EHT STA sending trigger frame, multi-STA block ACK, NDP-A frame using HT/VHT/HE/EHT rate is added.  In addition, DSSS, HR/DSSS, ERP-OFDM and OFDM rate are added for HE and EHT STA.  *TGbe Editor: TGbe editor to make changes as shown in 11-21/0330r0 tagged as #1102, #1740, #1846, #1916, #2572, #3363* |
| 3363 | 10.6.6.1 | 84 | An HE STA can transmit an EHT NDP Announcement frame? Maybe we need a new paragraph to describe the EHT STA. | Add a new paragraph to desribe the EHT STA | **Revised.**  Added EHT STA sending trigger frame, multi-STA block ACK, NDP-A frame using HT/VHT/HE/EHT rate.  In addition, DSSS, HR/DSSS, ERP-OFDM and OFDM rate are added for HE and EHT STA.  *TGbe Editor: TGbe editor to make changes as shown in 11-21/0330r0 tagged as #1102, #1740, #1846, #1916, #2572, #3363* |
| 1141 | 10.6.6 | 84 (268?) | Add EHT related PHY and EHT PPDUs throughout (references relative to TGax 8.0). Including EHT MCS, NSS tuples and BW selections (320 MHz). | As in comment. | **Revised.**  Added EHT related PHY and EHT PPDUs throughout (references relative to TGax 8.0). Including EHT MCS, NSS tuples and BW selections. But couldn’t find any specific example to include 320 MHz.  *TGbe Editor: TGbe editor to make changes as shown in 11-21/0330r0 tagged as #1141* |

**Discussion:**

Proposed Changes:

## *Instruction to 11be Editor: Modify texts in the subclause 10.6 as follows.*

*Underline text is for addition, and strikeout text is for deletion.*

### 10.6 Multirate support

### 10.6.1 Overview

Change paragraphs 5-6 as follows:

For specific PHYs, the value of the Duration/ID field is determined using the PLME-TXTIME.request primitive and the PLME-TXTIME.confirm primitive. These specific PHYs are defined in:

* Clause 16 (High rate direct sequence spread spectrum (HR/DSSS) PHY specification) for HR/DSSS
* Clause 17 (Orthogonal frequency division multiplexing (OFDM) PHY specification) for OFDM
* Clause 18 (Extended Rate PHY (ERP) specification) for ERP
* Clause 19 (High Throughput (HT) PHY specification) for HT
* Clause 20 (Directional multi-gigabit (DMG) PHY specification) for DMG
* Clause 21 (Very High Throughput (VHT) PHY specification) for VHT
* Clause 22 (Television Very High Throughput (TVHT) PHY specification) for TVHT
* Clause 24 (China directional multi-gigabit (CDMG) PHY specification) for CDMG
* Clause 25 (China millimeter-wave multi-gigabit (CMMG) PHY specification) for CMMG
* Clause 27 (High Efficiency (HE) PHY specification) for HE
* Clause 36 (Extremely high throughput (EHT) PHY specification) for EHT *(#1141)*

The two PLME-TXTIME primitives are defined in the respective PHY specifications:

* 16.3.4 (HR/DSSS TXTIME calculation) for HR TXTIME calculation
* 17.4.3 (OFDM TXTIME calculation) for OFDM TXTIME calculation
* 18.5.3.2 (ERP-OFDM TXTIME calculations)
* 19.4.3 (TXTIME calculation) for HT TXTIME calculation
* 20.11.3 (TXTIME calculation) for DMG PLME TXTIME calculation
* 21.4.3 (TXTIME and PSDU\_LENGTH calculation) for VHT PLME TXTIME calculation
* 22.4.3 (TXTIME and PSDU\_LENGTH calculation) for TVHT PLME TXTIME calculation
* 25.14.3 (TXTIME calculation) for CMMG PLME TXTIME calculation
* 27.4.3 (TXTIME and PSDU\_LENGTH calculation) for HE PLME TXTIME calculation
* 36.4.3 (TXTIME and PSDU\_LENGTH calculaton) for EHT PLME TXTIME calculation *(#1141)*

### 10.6.5 Rate selection for Data and Management frames

### 10.6.5.1 Rate selection for non-STBC Beacon and non-STBC PSMP frames

Change the 2nd paragraph as follows:

If the BSSBasicRateSet parameter is not empty, a non-STBC PSMP frame or a non-STBC Beacon frame that is not an ER beacon or HE beacon shall be transmitted in a non-HT PPDU using one of the rates included in the BSSBasicRateSet parameter. An ER beacon is transmitted as defined in(#24331) 26.15.5 (Additional rules for ER beacons and group addressed frames) and an HE beacon is transmitted as defined in 26.15.6 (Additional rules for HE beacons and group addressed frames).

### 10.6.5.3 Rate selection for other group addressed Data and Management frames

Change the 1st paragraph as follows:

This subclause describes the rate selection rules for group addressed Data and Management frames, excluding the following:

* Non-STBC Beacon and non-STBC PSMP frames
* ER beacon and HE beacon
* STBC group addressed Data and Management frames
* Data frames located in an FMS stream (see 11.22.8 (FMS multicast rate processing))
* Group addressed frames transmitted to the GCR concealment address (see 11.22.16.3.5 (Concealment of GCR transmissions))
* Group addressed Data and Management frames transmitted in an HE ER SU PPDU (see 26.15.5 (Additional rules for ER beacons and group addressed frames))
* Group addressed Data and Management frames transmitted in an HE SU PPDU (see 26.15.6 (Additional rules for HE beacons and group addressed frames))
* Group addressed Data and Management frames transmitted in an HE MU PPDU (see 26.15.7 (Additional rules for group addressed frames in an HE MU PPDU))

### 10.6.6 Rate selection for Control frames

### 10.6.6.1 General rules for rate selection for Control frames

***Change the last paragraph as follows:***

An HE STA that transmits a Trigger frame, Multi-STA BlockAck frame or HE/VHT/HE *(#1769)* NDP Announcement frame addressed to more than one STA shall use an ERP-OFDM rate, OFDM *(#1102, #1740, #1846, #1916, #2572, #3363)* rate, HT-MCS, <VHT-MCS, NSS> tuple or <HE-MCS, NSS> tuple that is supported by all recipient STAs.

An EHT STA that transmits a Trigger frame, Multi-STA BlockAck frame or VHT/HE/EHT NDP Announcement frame addressed to more than one STA shall use an ERP-OFDM rate, OFDM rate, HT-MCS, <VHT-MCS, NSS>, <HE-MCS, NSS> tuple or <EHT-MCS, NSS> tuple that is supported by all recipient STAs. *(#1102, #1740, #1846, #1916, #2572, #3363)*

### 10.6.6.6 Channel Width selection for Control frames

Change the 2nd paragraph as follows:

If a VHT ~~or~~, HE or EHT STA transmits to another VHT ~~or~~, HE or EHT STA a Control frame that is not an RTS frame or a CF-End frame, if that Control frame is an HE/EHT NDP Announcement frame or elicits a control response frame, a VHT Compressed Beamforming frame, or an HE/EHT Compressed Beamforming/CQI frame, and

* If the Control frame is transmitted in a non-HT duplicate PPDU (channel width 40 MHz or wider), the transmitting VHT ~~or~~, HE or EHT STA shall set the TA field to a bandwidth signaling TA.
* If the Control frame is transmitted in a non-HT PPDU (channel width 20 MHz), the transmitting VHT ~~or~~, HE or EHT STA may set the TA field to a bandwidth signaling TA.

### 10.6.10 Modulation classes

Change Table 10-9 (Modulation classes) as follows:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Table 10-9−Modulation classes *(#1141)* | | | | | |
| **Description of modulation** | **Condition that selects this modulation class** | | | | |
| **Clause 15 (DSSS PHY specification for the 2.4 GHz band designated for ISM -applications) to Clause 18 (Extended Rate PHY (ERP) specification) PHYs or Clause 20 (Directional multi-gigabit (DMG) PHY specification) PHY or Clause 24 (China directional multi-gigabit (CDMG) PHY specification) PHY, or Clause 25 (China millimeter-wave multigigabit (CMMG) PHY specification) PHY** | **Clause 19 (High-throughput (HT) PHY specification) PHY** | **Clause 21 (Very High Throughput (VHT) PHY specification) PHY** | **Clause 27 (High Efficiency (HE) PHY specification)** | **Clause 36 (Extremely high throughput (EHT) PHY specification) PHY** |
| DSSS and HR/DSSS | Clause 15 (DSSS PHY specification for the 2.4 GHz band designated for ISM -applications) or Clause 16 (High rate direct sequence spread spectrum (HR/DSSS) PHY -specification) transmission | FORMAT is NON\_HT.  NON\_HT\_MODULATION is ERP-DSSS or ERP-CCK. | N/A | FORMAT is NON\_HT.  NON\_HT\_MODULATION is ERP-DSSS or ERP-CCK. | FORMAT is NON\_HT.  NON\_HT\_MODULATION is ERP-DSSS or ERP-CCK. |
| ERP-OFDM | 18.4 (ERP operating specifications (general)) transmission | FORMAT is NON\_HT.  NON\_HT\_MODULATION is ERP-OFDM. | N/A | FORMAT is NON\_HT.  NON\_HT\_MODULATION is ERP-OFDM. | FORMAT is NON\_HT.  NON\_HT\_MODULATION is ERP-OFDM. |
| OFDM | Clause 17 (Orthogonal frequency division multiplexing (OFDM) PHY specification) transmission | FORMAT is NON\_HT.  NON\_HT\_MODULATION is OFDM or NON\_HT\_DUP\_OFDM. | FORMAT is NON\_HT.  NON\_HT\_MODULATION is OFDM  or NON\_HT\_DUP\_OFDM. | FORMAT is NON\_HT.  NON\_HT\_MODULATION is OFDM  or NON\_HT\_DUP\_OFDM. | FORMAT is NON\_HT.  NON\_HT\_MODULATION is OFDM  or NON\_HT\_DUP\_OFDM. |
| HT | N/A | FORMAT is HT\_MF or HT\_GF. | FORMAT is HT\_MF or HT\_GF. | FORMAT is HT\_MF or HT\_GF. | FORMAT is HT\_MF or HT\_GF. |
| DMG Control | Clause 20 (Directional multi-gigabit (DMG) PHY specification) transmission and MCS is 0 | NA | NA | N/A | N/A |
| DMG SC | Clause 20 (Directional multi-gigabit (DMG) PHY specification) transmission and | NA | NA | N/A | N/A |
| DMG Low-power SC | Clause 20 (Directional multi-gigabit (DMG) PHY specification) transmission and | NA | NA | N/A | N/A |
| VHT | N/A | N/A | FORMAT is VHT. | FORMAT is VHT | FORMAT is VHT |
| CDMG Control | Clause 24 (China directional multi-gigabit (CDMG) PHY specification) transmission and MCS is 0 | N/A | N/A | N/A | N/A |
| CDMG SC | Clause 24 (China directional multi-gigabit (CDMG) PHY specification) transmission and | N/A | N/A | N/A | N/A |
| CDMG Low-power SC | Clause 24 (China directional multi-gigabit (CDMG) PHY specification) transmission and | N/A | N/A | N/A | N/A |
| CMMG Control | Clause 25 (China millimeter-wave multi-gigabit (CMMG) PHY specification) transmission and MCS is 0 | N/A | N/A | N/A | N/A |
| CMMG SC | Clause 25 (China millimeter-wave multi-gigabit (CMMG) PHY specification) transmission and | N/A | N/A | N/A | N/A |
| CMMG OFDM | Clause 25 (China millimeter-wave multi-gigabit (CMMG) PHY specification) transmission and | N/A | N/A | N/A | N/A |
| HE | N/A | N/A | N/A | FORMAT is HE\_SU, HE\_ER\_SU, HE\_MU or HE\_TB | FORMAT is HE\_SU, HE\_ER\_SU, HE\_MU or HE\_TB |
| EHT | N/A | N/A | N/A | N/A | FORMAT is EHT\_MU or EHT\_TB |

### 10.6.11 Non-HT basic rate calculation

Change as follows:

This subclause defines how to convert an HT‑MCS, a VHT-MCS ~~or~~, an HE-MCS or an EHT-MCS *(#1141)* to a non-HT basic rate for the purpose of determining the rate of the response frame. It consists of two steps as follows:

* Use the modulation and coding rate determined from the HT-MCS (defined in 19.5 (Parameters for HT-MCSs)) ~~or~~, VHT-MCS (defined in 21.5 (Parameters for VHT-MCSs)) ~~or~~, HE-MCS (defined in 27.5 (Parameters for HE-MCSs)) or EHT-MCS (defined in 36.5 (Parameters for EHT-MCSs)) *(#1141)* to locate a non-HT reference rate by lookup into Table 10-10 (Non-HT reference rate).[[1]](#footnote-1) In the case of an MCS with UEQM, the modulation of stream 1 is used.
* The non-HT basic rate is the highest rate in the BSSBasicRateSet that is less than or equal to this non-HT reference rate.

NOTE 1—The selection of a non-HT basic rate for the frame sent in response to an HE/EHT PPDU is not influenced by DCM encoding in the HE/EHT PPDU. *(#1141)*

NOTE 2—In a TVWS band, the non-HT reference rate is scaled as described in 22.2.4.

Change Table 10-10 (Non-HT reference rate) as follows:

|  |  |  |
| --- | --- | --- |
| * Non-HT reference rate *(#1141)* | | |
| Modulation | Coding rate  (R) | Non-HT reference rate  (Mb/s) |
| BPSK | 1/2 | 6 |
| BPSK | 3/4 | 9 |
| QPSK | 1/2 | 12 |
| QPSK | 3/4 | 18 |
| 16-QAM | 1/2 | 24 |
| 16-QAM | 3/4 | 36 |
| 64-QAM | 1/2 | 48 |
| 64-QAM | 2/3 | 48 |
| 64-QAM | 3/4 | 54 |
| 64-QAM | 5/6 | 54 |
| 256-QAM | 3/4 | 54 |
| 256-QAM | 5/6 | 54 |
| 1024-QAM | 3/4 | 54 |
| 1024-QAM | 5/6 | 54 |
| 4096-QAM | 3/4 | 54 |
| 4096-QAM | 5/6 | 54 |

NOTE—In a TVWS band, the non-HT reference rate is scaled as described in 22.2.4 (Support for NON\_HT and HT formats).

---- End of text proposal ----

1. For example, if an HT PPDU transmission uses 64-QAM and coding rate of 3/4, the related non-HT reference rate is 54 Mb/s. [↑](#footnote-ref-1)