IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Spec text for 20MHz-only devices in 11ax | | | | |
| Date: 2016-07-08 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Joonsuk Kim | Apple | 1 Infinite Loop, Cupertino, CA 95014 |  | joonsuk@apple.com |

Abstract

This submission proposes resolutions for 20MHz operating STAs related comment related to TGax D0.2 with the following CID:

* 1854

Revisions:

* Rev 0: Initial version of the document.

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 TGax Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 1854 | Sameer Vermani | 26.3.7.1 | Joint Motion 8 in March 2016 (motion related to RUs not allowed to be assigned to 20 MHz operating STAs) was approved but no corresponding spec text is present in the draft | as comment | 11-16-0907-00-00ax-20MHz-only-devices-in-11ax |

**Discussion:** Presented in 11-16-0907-00-00ax-20MHz-only-devices-in-11ax

**TGax Editor: *Add the following new sub-clause at the end of section 26.3.7 and change the current 26.3.8 Mathematical description of signals to 26.3.9 .***

**26.3.8. 20MHz-only HE STAs**

20MHz-only HE STAs are operating with 20MHz channel width only, in frequency bands between 1 GHz and 6 GHz. 20MHz-only HE STAs operate in primary 20MHz channel as a mandatory mode. It is indicated in the capability field, whether an HE STA is 20MHz-only or 80 MHz capable. Only a non-AP HE STA can be a 20MHz-only STA.

An HE AP in 5GHz shall be 80MHz capable and operate for both 80MHz capable non-AP HE STAs and 20MHz-only non-AP HE STAs.

20MHz-only non-AP HE STAs support tone mapping of 26-tone RU, 52-tone RU, 106-tone RU and 242-tone RU, for 20 and 40 MHz OFDMA in 2.4GHz and 5GHz frequency band, and for 80, 80+80 and 160 MHz OFDMA in 5 GHz frequency band, where some of RUs are restricted to operate (see 26.3.7.4 RU restriction rules when operating 20MHz).

**TGax Editor: *Add the following text modification in section 4.3.12a High efficiency (HE) STA.***

### 4.3.12a High efficiency (HE) STA

The IEEE Std 802.11 HE STA operates in frequency bands between 1 GHz and 6 GHz.

An HE STA is VHT STA or HT non-AP STA, that, in addition to the features supported as a VHT STA or HT non-AP STA respectively, supports the MAC features defined in Clause **25** and the PHY features defined in Clause **26**.

**TGax Editor: *Add the following text modification in section 26.1.1 Introduction to the HE PHY.***

### 26.1.1 Introduction to the HE PHY

Clause 26 specifies the PHY entity for a high efficiency (HE) orthogonal frequency division multiplexing (OFDM) system. In addition to the requirements in Clause 26, an HE STA shall be capable of transmitting and receiving PPDUs that are compliant with the mandatory requirements of the following PHY specifications:

* Clause 19 (High Throughput (HT) PHY specification) and Clause 21 (Very High Throughput (VHT) PHY specification) when the HE STA with 80MHz capability is operating in the 5 GHz band
* Clause 19 (High Throughput (HT) PHY specification) when the 20MHz-only Non-AP HE STA is operating in the 5 GHz band
* Clause 19 (High Throughput (HT) PHY specification) when the HE STA is operating in the 2.4 GHz band

The HE PHY with 80MHz capability is based on the VHT PHY defined in Clause 21 (Very High Throughput (VHT) PHY specification), which in turn is based on the HT PHY defined in Clause 19 (High Throughput (HT) PHY specification), which in turn is further based on the OFDM PHY defined in Clause 17 (Orthogonal frequency division multiplexing (OFDM) PHY specification). The HE PHY with 20MHz-only capability (see 26.3.8) is based on the HT PHY defined in Clause 19, which in turn is further based on the OFDM PHY defined in Clause 17. The HE PHY extends … <cut>

The HE PHY provides support for 20 MHz, 40 MHz, 80 MHz and 160 MHz contiguous channel widths and support for 80+80 MHz non-contiguous channel width, depending on the frequency band and capability. For channel width … <cut>

**TGax Editor: *Add the following text modification in section 26.1.2 Scope.***

### Scope

b) A function that defines the characteristics and method of transmitting and receiving data through a wireless medium between two or more STAs. Depending on the PPDU format, these STAs with 80MHz capability support a mixture of HE, Clause 21 (Very High Throughput (VHT) PHY specification), Clause 19 (High Throughput (HT) PHY specification) and Clause 17 (Orthogonal frequency division multiplexing (OFDM) PHY specification) PHYs. Those non-AP STAs with 20MHz-only capability support a mixture of HE, Clause 19 and Clause 17 PHYs.