IEEE P802.11
Wireless LANs

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| Comment resolutions for 4.9 GHz related comments  |
| Date: 2019-4-21 |
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Abstract

This submission proposes resolutions for multiple comments related to TGba D2.0 with the following CIDs (14 CIDs):

* 2006, 2007, 2009, 2012, 2013
* 2015, 2023, 2024, 2025, 2026
* 2027, 2114, 2717, 2767

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: made changes based on the discussion in TGba ad-hoc meeting in April.
* Rev 2: the resolutions for CID 2009, 2012, 2013 modified to be consistent with CID 2023

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 TGba Draft. This introduction is not part of the adopted material.

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

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

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| **CID** | **Commenter** | **Clause Number** | **Page** | **Line** | **Comment** | **Proposed Change** | **Resolution** |
| 2006 | Albert Petrick | 9.4.2.290 | 41 | 46 | 4.9 GHz and 5 GHz in Figure 9-772b and the text references both bands with a signal bit (B1) in the Supported Bands Field format. If 4.9 GHz is a licensed band, Each band should have its own selected bit. The same holds true if 6 GHz becomes another optional band in the future - via PAR change. | Separate 4.9GHz and 5GHz with their own selectable bits. | Revised.Based on the TGba functional requirement document (11-17/39r2), TGba R5 reads “TGba R5 The 802.11ba amendment shall define operations for 2.4 GHz and 5 GHz bands.” To avoid the confusion, the name of the field is now changed to “5 GHz”. The actual operating class and the operating channel are defined in the WUR Operating Class and WUR Channel fields in the WUR Operation Parameters based on Annex E.TGba editor to make the changes shown in doc.: IEEE doc.: IEEE 802.11-19/0642r2 under all headings that include CID 2006. |
| 2007 | Albert Petrick | 9.4.2.290 | 41 | 47 | 4.9 GHz band is an option for WUR using 20 MHz channel. In Annex E Table E1 of IEEE 802.11REVmd-2.0 Channel 103 (4.9375 GHz) is on 5 MHz channels, the WUR 20MHz channels may not work based on what's listed ANNEX E. If there are other channels planned for 4.9 GHz for public safety for the US. If 4.9 GHz is for Japan (\* 20MHz channels centered at 4.920, 4.940, 4.960 and 4.980 GHz) This should be updated and create an ANNEX E entry for WUR and list the applicable channels. | Add Annex E for 4.9 GHz and create channel list for Japan. | Revised.Based on the TGba functional requirement document (11-17/39r2), TGba R5 reads “TGba R5 The 802.11ba amendment shall define operations for 2.4 GHz and 5 GHz bands.” To avoid the confusion, the name of the 4.9 and 5 GHz field is now changed to “5 GHz”. The actual operating class and the operating channel are defined in the WUR Operating Class and WUR Channel fields in the WUR Operation Parameters based on Annex E.TGba editor to make the changes shown in doc.: IEEE doc.: IEEE 802.11-19/0642r2 under all headings that include CID 2007. |
| 2009 | Albert Petrick | 30.11 | 81 | 56 | 4.9 GHz operation channels missing for WUR Discovery frames. | Add WUR discover channel for 4.9GHz if available | Revised.Based on the TGba functional requirement document (11-17/39r2), TGba R5 reads “TGba R5 The 802.11ba amendment shall define operations for 2.4 GHz and 5 GHz bands.” To be consistent with other 802.11 amendmends, the following sentence “The transmission and reception of WUR PPDUs is defined in the 2.4 GHz and 5 GHz bands. The transmission of 40 MHz WUR FDMA PPDUs is defined in the 2.4 GHz and 5 GHz bands and the transmission of 80 MHz WUR FDMA PPDUs is defined in the 5 GHz band.” is now added in 31.1. Also to be consistent, use the same sentence to replace the sentence in P21L45 in 4.3.15a in D2.1.TGba editor to make the changes shown in doc.: IEEE doc.: IEEE 802.11-19/0642r2 under all headings that include CID 2009 |
| 2012 | Albert Petrick | 4.3.15a | 21 | 15 | Clause 4 is general description and should include the frequency bands of operation 2.4 GHz, 4.9 GHz and 5 GHz to be consistent with other .11 amendments. | Change text to read: transmitting a WUR PPDU "operating in the 2.4, 4.9 and 5 GHz bands. | Revised.Based on the TGba functional requirement document (11-17/39r2), TGba R5 reads “TGba R5 The 802.11ba amendment shall define operations for 2.4 GHz and 5 GHz bands.” To be consistent with other 802.11 amendmends, the following sentence “The transmission and reception of WUR PPDUs is defined in the 2.4 GHz and 5 GHz bands. The transmission of 40 MHz WUR FDMA PPDUs is defined in the 2.4 GHz and 5 GHz bands and the transmission of 80 MHz WUR FDMA PPDUs is defined in the 5 GHz band.” is now added in 31.1. Also to be consistent, use the same sentence to replace the sentence in P21L45 in 4.3.15a in D2.1.TGba editor to make the changes shown in doc.: IEEE doc.: IEEE 802.11-19/0642r2 under all headings that include CID 2012. |
| 2013 | Albert Petrick | 4.3.15a | 21 | 34 | Clause 4 describes features for WUR AP, based on the 20 MHz channels. this should be highlighted as applied to the 2.4, 4.9 and 5 GHz bands. | Add sentence that reads: "In the 2.4, 4.9 and 5 GHz bands the following applies:" | Revised.Based on the TGba functional requirement document (11-17/39r2), TGba R5 reads “TGba R5 The 802.11ba amendment shall define operations for 2.4 GHz and 5 GHz bands.” To be consistent with other 802.11 amendmends, the following sentence “The transmission and reception of WUR PPDUs is defined in the 2.4 GHz and 5 GHz bands. The transmission of 40 MHz WUR FDMA PPDUs is defined in the 2.4 GHz and 5 GHz bands and the transmission of 80 MHz WUR FDMA PPDUs is defined in the 5 GHz band.” is now added in 31.1. Also to be consistent, use the same sentence to replace the sentence in P21L45 in 4.3.15a in D2.1.TGba editor to make the changes shown in doc.: IEEE doc.: IEEE 802.11-19/0642r2 under all headings that include CID 2013. |
| 2015 | Albert Petrick | 4.3.15a | 21 | 63 | Clause 4 describes features for WUR non-AP STA, based on the 40 and 80 MHz channel BW. This should be highlighted as applied to the 2.4, 4.9 and 5 GHz bands. | Add sentence that reads: "In the 2.4, 4.9 and 5 GHz bands the following applies:" | Rejected.In P21L63 of D2.0, there is no description of the 40 and 80 MHz channel BW. The 40 and 80 MHz WUR FDMA PPDU is only for the WUR AP side. |
| 2023 | Albert Petrick | 31.1 | 83 | 17 | Clause 31.1 should include the frequency bands of operation 2.4 GHz, 4.9 GHz and 5 GHz to be consistent with other .11 amendments. | Change text to read: transmitting a WUR PPDU "operating in the 2.4, 4.9 and 5 GHz bands." | Revised.Based on the TGba functional requirement document (11-17/39r2), TGba R5 reads “TGba R5 The 802.11ba amendment shall define operations for 2.4 GHz and 5 GHz bands.” To be consistent with other 802.11 amendmends, the following sentence “The transmission and reception of WUR PPDUs is defined in the 2.4 GHz and 5 GHz bands. The transmission of 40 MHz WUR FDMA PPDUs is defined in the 2.4 GHz and 5 GHz bands and the transmission of 80 MHz WUR FDMA PPDUs is defined in the 5 GHz band.” is now added in 31.1. Also to be consistent, use the same sentence to replace the sentence in P21L45 in 4.3.15a in D2.1.TGba editor to make the changes shown in doc.: IEEE doc.: IEEE 802.11-19/0642r2 under all headings that include CID 2023. |
| 2024 | Albert Petrick | 31.1 | 83 | 19 | Clause 31.1 should include the frequency bands of operation 2.4 GHz, 4.9 GHz and 5 GHz to be consistent with other .11 amendments. | Change text to read: receiving a WUR PPDU "operating in the 2.4, 4.9 and 5 GHz bands." | Revised.Based on the TGba functional requirement document (11-17/39r2), TGba R5 reads “TGba R5 The 802.11ba amendment shall define operations for 2.4 GHz and 5 GHz bands.” To be consistent with other 802.11 amendmends, the following sentence “The transmission and reception of WUR PPDUs is defined in the 2.4 GHz and 5 GHz bands. The transmission of 40 MHz WUR FDMA PPDUs is defined in the 2.4 GHz and 5 GHz bands and the transmission of 80 MHz WUR FDMA PPDUs is defined in the 5 GHz band.” is now added in 31.1. TGba editor to make the changes shown in doc.: IEEE doc.: IEEE 802.11-19/0642r2 under all headings that include CID 2024. |
| 2025 | Albert Petrick | 31.1 | 83 | 44 | Clause 31.1 describes features for WUR AP and WUR non-AP based on the 20 MHz channels. this should be highlighted as applied to the 2.4, 4.9 and 5 GHz bands. | Add sentence that reads: "In the 2.4, 4.9 and 5 GHz bands the following applies:" | Revised.Based on the TGba functional requirement document (11-17/39r2), TGba R5 reads “TGba R5 The 802.11ba amendment shall define operations for 2.4 GHz and 5 GHz bands.” To be consistent with other 802.11 amendmends, the following sentence “The transmission and reception of WUR PPDUs is defined in the 2.4 GHz and 5 GHz bands. The transmission of 40 MHz WUR FDMA PPDUs is defined in the 2.4 GHz and 5 GHz bands and the transmission of 80 MHz WUR FDMA PPDUs is defined in the 5 GHz band.” is now added in 31.1. TGba editor to make the changes shown in doc.: IEEE doc.: IEEE 802.11-19/0642r2 under all headings that include CID 2025. |
| 2026 | Albert Petrick | 31.1 | 83 | 54 | Clause 31.1 describes features for WUR AP FDMA transmissions based on the 40 MHz and 80Mhz channels. this should be highlighted as applied to the 4.9 and 5 GHz bands. | Add sentence that reads: "In the 4.9 and 5 GHz bands the following applies:" | Revised.Based on the TGba functional requirement document (11-17/39r2), TGba R5 reads “TGba R5 The 802.11ba amendment shall define operations for 2.4 GHz and 5 GHz bands.” To be consistent with other 802.11 amendmends, the following sentence “The transmission and reception of WUR PPDUs is defined in the 2.4 GHz and 5 GHz bands. The transmission of 40 MHz WUR FDMA PPDUs is defined in the 2.4 GHz and 5 GHz bands and the transmission of 80 MHz WUR FDMA PPDUs is defined in the 5 GHz band.” is now added in 31.1.TGba editor to make the changes shown in doc.: IEEE doc.: IEEE 802.11-19/0642r2 under all headings that include CID 2026. |
| 2027 | Albert Petrick | 31.1 | 83 | 59 | Clause 31.1 describes features for WUR non-AP based on the 20 MHz channels. this should be highlighted as applied to the 2.4, 4.9 and 5 GHz bands. | Add sentence that reads: "In the 2.4, 4.9 and 5 GHz bands the following applies:" | Revised.Based on the TGba functional requirement document (11-17/39r2), TGba R5 reads “TGba R5 The 802.11ba amendment shall define operations for 2.4 GHz and 5 GHz bands.” To be consistent with other 802.11 amendmends, the following sentence “The transmission and reception of WUR PPDUs is defined in the 2.4 GHz and 5 GHz bands. The transmission of 40 MHz WUR FDMA PPDUs is defined in the 2.4 GHz and 5 GHz bands and the transmission of 80 MHz WUR FDMA PPDUs is defined in the 5 GHz band.” is now added in 31.1.TGba editor to make the changes shown in doc.: IEEE doc.: IEEE 802.11-19/0642r2 under all headings that include CID 2027. |
| 2114 | Guido Hiertz | 9.4.2.290 | 41 | 47 | All values must carry consist of a number and a unit. | Replace "[...] 4.9 and 5 GHz [...]" with "[...] 4.9 GHz and 5 GHz [...]". | Revised.Based on the TGba functional requirement document (11-17/39r2), TGba R5 reads “TGba R5 The 802.11ba amendment shall define operations for 2.4 GHz and 5 GHz bands.” To avoid the confusion, the name of the 4.9 and 5 GHz field is now changed to “5 GHz”. The actual operating class and the operating channel are defined in the WUR Operating Class and WUR Channel fields in the WUR Operation Parameters based on Annex E.TGba editor to make the changes shown in doc.: IEEE doc.: IEEE 802.11-19/0642r2 under all headings that include CID 2114. |
| 2717 | Xiaofei Wang | 9.4.2.290 | 41 | 45 | Since B0 and B1 are fields with defined names such as "2.4GHz" and "4.9 and 5GHz", the field names should be used instead of B0 or B1. | use field names "2.4 GHz" and "4.9 and 5 GHz" instead of B0 and B1. | Revised.Agree with the commenter. The sentence is now changed to “The 2.4 GHz subfield of the Supported Bands field is set to 1 to indicate the support of the 2.4 GHz band. Otherwise, the 2.4 GHz subfield of the Supported Bands field is set to 0. The 5 GHz subfieldof the Supported Bands field is set to 1 to indicate the support of the 5 GHz band. Otherwise, the 5 GHz subfieldof the Supported Bands field is set to 0.”TGba editor to make the changes shown in doc.: IEEE doc.: IEEE 802.11-19/0642r2 under all headings that include CID 2117. |
| 2767 | Yonggang Fang | 9.4.2.290 | 41 | 45 | The following sentence "B0 of the Supported Bands field is set to 1 to indicate the support of 2.4 GHz band. Otherwise, B0 of the Supported Bands field is set to 0. B1 of the Supported Bands field is set to 1 to indicate the support of 4.9 and 5 GHz band. Otherwise, B1 of the Supported Bands field is set to 0 " is duplicated with the previous one. Please remove it. | As in the comment. | Rejected.The 2.4GHz bit (i.e. B0) of the Supported Bands field is to indicate whether the STA supports the 2.4 GHz band and the 5 GHz bit (i.e. B1) of the field is to indicate whether the STA supports the 5 GHz band. Therefore, there is no duplicate sentences. |

**TGba Editor: *Change the subclauses below in TGba Draft 2.1 as follows: (CID #2023, 2009, 2012, 2013)***

**4.3.15a Wake-up radio (WUR) AP and WUR non-AP STA**

(#2023, #2009)The transmission and reception of WUR PPDUs is defined in the 2.4 GHz and 5 GHz bands. The transmission of 40 MHz WUR FDMA PPDUs is defined in the 2.4 GHz and 5 GHz bands and the transmission of 80 MHz WUR FDMA PPDUs is defined in the 5 GHz band.(#2023, 2009, 2012, 2013)

**TGba Editor: *Change the subclauses below in TGba Draft 2.1 as follows: (CID# 2006,2007,2717)***

* WUR Capabilities element

|  |  |  |  |
| --- | --- | --- | --- |
|  | B0 | B1 | B2                   B7 |
|  | 2.4 GHz | 5 GHz (#2006, 2007) | Reserved |
| BBits:  | 1 | 1 | 6 |
| * Supported Bands field format
 |

The 2.4 GHz subfield of the Supported Bands field is set to 1 to indicate the support of the 2.4 GHz band. Otherwise, the 2.4 GHz subfield of the Supported Bands field is set to 0. The 5 GHz subfieldof the Supported Bands field is set to 1 to indicate the support of the 5 GHz band. Otherwise, the 5 GHz subfieldof the Supported Bands field is set to 0.(#2717)

**TGba Editor: *Change the subclauses below in TGba Draft 2.1 as follows: (CID# 2023, 2024, 2025, 2026, 2027, 2009, 2012, 2013)***

**31. Wake-Up Radio (WUR) PHY specification
31.1 Introduction**

Clause 31 (Wake-Up Radio (WUR) PHY specification) specifies the PHY entity for orthogonal frequency
division multiplexing (OFDM) and Multicarrier On-Off Keying (MC-OOK) systems. In addition to the
requirements in Clause 31 (Wake-Up Radio (WUR) PHY specification), a WUR STA that supports WUR
PHY specification shall be capable of transmitting and receiving PPDUs that are compliant with the
mandatory requirements of the following PHY specifications:
— Clause 17 (Orthogonal frequency division multiplexing (OFDM) PHY specification)

The transmission and reception of WUR PPDUs is defined in the 2.4 GHz and 5 GHz bands. The transmission of 40 MHz WUR FDMA PPDUs is defined in the 2.4 GHz and 5 GHz bands and the transmission of 80 MHz WUR FDMA PPDUs is defined in the 5 GHz band.(#2023, 2024, 2025, 2026, 2027, 2009, 2012, 2013)

A WUR AP shall be capable of transmitting the WUR PPDU