### IEEE P802.11Wireless LANs

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| Comment resolution on WUR receive procedure (32.2.14) |
| Date: 2019-01-07 |
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Abstract

This submission proposes resolutions for comments of TGba Draft D1.0 with the following CIDs:

22, 25, 40, 41, 42, 43, 208, 231, 502, 1221, 1253, 207, 209, 824, 23, 823

**NOTE**: Document 1965r4 covered CIDs 22, 25, 40, 41, 42, 43, 208, 231, 502, 1221, 1253 and it has been motioned in November IEEE meeting. However, the document was not on the IEEE Mentor at the time of motion. In this document, we added comment resolution for CIDs 207, 209, 824, 23, 823. The other CIDs and the corresponding CR text remains same as document 1965r4.

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 22 | 91.14 | 32.2.14 | the term "final" in the sentence "Any final bits that cannot be assembled...." is ambiguous. |  | Revised. TGba Editor makes changes as shown in 802.11-18/1965r6 |
| 25 | 90.00 | 32.2.14 | Missing arrow head for "End of PPDU Rx" in Figure 32-15 |  | Revised. TGba Editor makes changes as shown in 802.11-18/1965r6 |
| 40 | 91.06 | 32.2.14 | The text reads - RSSI measurement is done on the WUR Sync. Needs more clarification |  | Revised. TGba Editor makes changes as shown in 802.11-18/1965r6 |
| 41 | 91.05 | 32.2.14 | Missing term |  | Reject. The comment is not clear. It does not specify what term is missing. |
| 42 | 91.02 | 32.2.14 | Missing term |  | Reject. The comment is not clear. It does not specify what term is missing. |
| 43 | 91.08 | 32.2.14 | RCPI (Receive Channel Power Indicator) measurement is reference in Figure 32-14 as measured during the reception of the WUR data portion On/Off symbols. However there is no supporting text referenced to clause 19 in 802.11-2016. |  | Revised.TGba Editor makes changes as shown in 802.11-18/1965r6 |
| 208 | 91.05 | 32.2.14 | "If the Sync sequence detection fails, a PHY-RXSTART.indication primitive is not issued, and instead the PHY shall issue the error condition PHY-RXEND.indication primitive." If Sync sequence is not detected, PHY shouldn't issue the error condition, in fact, it shouldn't issue any signal to MAC at all. | as in the comment | Revised.TGba Editor makes changes as shown in 802.11-18/1965r6 |
| 231 | 90.22 | 32.2.14 | BPSK Mark is constructed with MCS0 ( BPSK and Rate 1/2). Specify the applied modulation and rate for BPSK-Mark on figure 32-14. | see the comment. | Revised. TGba Editor makes changes as shown in 802.11-18/1965r6 |
| 502 | 91.12 | 32.2.14 | "PHYRXEND.indication" must be "PHY-RXEND.indication". | Please correct as commented. | Accept.  |
| 1221 | 90.23 | 32.2.14 | In Fig 32-14, Coded OFDM -> Coded OFDM, BPSK, Rate 1/2 | as in comment | Accept.  |
| 1253 | 90.10 | 32.2.14 | In Figure 32-14, the legacy preamble should not be visible to the WURx. So, maybe there is no need to show the legacy preamble + BPSK Mark portion. Or, at least they can be shown as shaded blocks to distinguish with the WUR portion. | In Figure 32-14, change the legacy preamble and BPSK Mark portion to shaded blocks. | Accept.  |
| 207 | 90.51 | 32.2.14 | Does the end of PPDU Rx is determined by the receiver signal strength fail? Should be based on the PSDU length indicated in MAC header | as in the comment | Revised.While WUR PHY is not aware of the PSDU length in the MAC header, the WUR MAC may indicate the end of WUR PPDU to PHY by means of PHY-CCARESET.request primitive. TGba Editor makes changes as shown in 802.11-18/1965r6 |
| 209 | 91.16 | 32.2.14 | "Any final bits that cannot be assembled into a complete octet are discarded. The WUR PHY shall maintain decoding the data as long as the receive signal strength is maintained the same.". How is the signal level measured? Power of the On symbol. This is not reliable. Should based on the PSDU length indicate in the MAC header to termine the end of receiption | as in the comment | Revised.While WUR PHY is not aware of the PSDU length in the MAC header, the WUR MAC may indicate the end of WUR PPDU to PHY by means of PHY-CCARESET.request primitive. TGba Editor makes changes as shown in 802.11-18/1965r6 |
| 824 | 91.18 | 32.2.14 | During the reception of a WUR PPDU, the receive signal strength may fluctuate. So using just a reduction of the signal strength to detect the end of the packet does not work. | Change line 19 to "If it terminates due to a significant reduction of the receive signal strength, a PHY-RXEND.indication (NoError) primitive shall be issued. If it terminates due to PHY-CCARESET.request, a PHY-RXEND.indication (MAC Reset) primitive shall be issued" | Revised.The related text has been updated as below:“Since the WUR PHY is not aware of the end of the WUR PPDU, the PHY shall keep decoding, until receive signal strength drops significantly. Alternatively, the WUR MAC may also indicate the end of WUR PPDU to PHY by means of PHY-CCARESET.request primitive.”TGba Editor makes changes as shown in 802.11-18/1965r6 |
| 23 | 91.17 | 32.3.14 | Receive signal strength is call out to fall, and should fall to given threshold. Threshold could be a value equal to 0. |  | Revised.The related text has been updated as below:“Since the WUR PHY is not aware of the end of the WUR PPDU, the PHY shall keep decoding, until receive signal strength drops significantly. Alternatively, the WUR MAC may also indicate the end of WUR PPDU to PHY by means of PHY-CCARESET.request primitive.”TGba Editor makes changes as shown in 802.11-18/1965r6 |
| 823 | 90.19 | 32.2.14 | During the reception of a WUR PPDU, RSSI is calculated during the SYNC Sequence and hence the RSSI indication should be a measured value. | Change "MEASURE RSSI" to "MEASURED RSSI" | Revised.The text in Figure 32-14 has been updated to “Measured RSSI”.TGba Editor makes changes as shown in 802.11-18/1965r6 |

***TGba editor: Change the 32.2.14 WUR receive procedure as follows: (Track change on)***

**32.2.14 WUR receive procedure**

A typical PHY receive procedure is shown for WUR format in Figure 32-14 (PHY receiver procedure for WUR PPDU). A typical state machine implementation of the receive PHY is given in Figure 32-15 (PHY receive state machine). The PHY is set to operate at the appropriate frequency through station management via the PLME, as specified in 32.3 (WUR PLME). The receive parameters, such as RSSI, may be accessed via the PHY-SAP.

The PHY measures a receive signal strength and searches for a valid WUR Sync sequence, in order to acquire WUR PPDU, to determine the WUR data rate and the start of the WUR Data field. If a valid Sync sequence is detected, WUR PHY issues PHY-RXSTART.indication primitive along with the WUR\_DATARATE.indication. If the Sync sequence detection fails, a PHY- RXSTART.indication primitive is not issued, and WUR PHY goes back to RX IDLE state. (#208) RSSI measurement is made during the reception of the WUR Sync. (#40) Based on the WUR data rate, the PHY sets the *NSPDB* parameter as given in Table 32-4 (Frequently used parameters).

The PHY entity shall begin receiving the WUR Data symbols. If signal loss occurs during reception, prior to completion of the PPDU reception, the error condition PHY-RXEND.indication (CarrierLost) shall be reported to the MAC.(#502) The received PPDU bits are decoded, assembled into octets and presented to the MAC using a series of PHY-DATA.indication (DATA) primitive exchanges. Any remaining bits, which could not be assembled into a complete octet are discarded.(#22) RCPI measurement is made during the reception of the data field as described in 19.3.19.6. (#43) Since the WUR PHY is not aware of the end of the WUR PPDU, the PHY shall keep decoding, until receive signal strength drops significantly. Alternatively, the WUR MAC may also indicate the end of WUR PPDU to PHY by means of PHY-CCARESET.request primitive. On termination, the WUR PHY enters the RX IDLE state. If the WUR PHY terminates due to reduction of the receive signal strength, a PHY-RXEND.indication (NoError) primitive shall be issued. If it terminates due to PHY-CCARESET.request, a PHY-RXEND.indication (MAC Reset) primitive shall be issued. (#207, #209, #824, #23)

***TGba editor: Replace the Figure 32-14 PHY receiver procedure for WUR PPDU with the figure below (#231, #1221, #1253, #823)***



**Figure 32-14—PHY receiver procedure for WUR PPDU**

***TGba editor: Replace the Figure 32-15 PHY receive state machine with the figure below***(#25,#208)



**Figure 32-15—PHY receive state machine**