IEEE P802.11  
Wireless LANs

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| Assorted Comment Resolutions D3.0 | | | | |
| Date: June 25, 2019 | | | | |
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Abstract

This document contains comment resolutions for CIDs

1. 3045 3063 3104 3168 3170 3273 3286 3287 3288 3390
2. 3009 3075 3096 3097 3098 3114 3116 3177 3208 3375
3. 3396

The baseline for this document is Draft P802.11ba D3.0.

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| **Identifiers** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| 3045 9.6.34.4 73.64 | Wake-up Indication frame format diagram missing | As in comment | Revised - agree with the comment. Make changes as follows (same as for CID 3390):  At 73.64 replace  "Value 0 indicates unsolicited\_wakeup. Values 1-255 are reserved."  with  "The values for the WUR Wake-up Indication field are defined in Table 9-xxx.".  Add a new Table 9-xxx below the replaced sentence, with a table title of  "Table 9-xxx—WUR Wake-up Indication field values"  with two columns named "Value" and "Description", respectively, and with two entries:  0 unsolicited\_wakeup  1-255 Reserved |
| 3390 9.6.34.4 73.64 | Description of WUR Wake-up Indication field value should be using a table, even though only one value is used. See Table 9-491--FILS Action frame values or Table 9-523--GLK Action field values in REVmd D2.2, for examples. | Replace  "Value 0 indicates unsolicited\_wakeup. Values 1-255 are reserved."  with  "The values for the WUR Wake-up Indication field are defined in Table 9-xxx.".  Add Table 9-xxx below the replaced sentence, with a table title of  "WUR Wake-up Indication field values",  with two columns named Value and Description, respectively, and with two entries:  0 unsolicited\_wakeup;  1-255 Reserved. | Accepted.  (Same as for CID 3045.) |
| 3273 9.6.34.4 73.65 | Does "unsolicited\_wakeup" refer to any specific STA behavior? If so it should be defined somewhere (perhaps in section 3). If not this should not be written as a single word. | Defined unsolicited\_wakeup somewhere (perhaps in section 3). Else remove the underscore. | Rejected - the use of the unsollicited\_wakeup code is defined in 29.13 (WUR Short Wake-up frame operation):  "The WUR non-AP STA may transmit a WUR Wake-up Indication frame with a WUR Wake-up Indication field indicating unsolicited\_wakeup as the first frame when it wakes up without receiving a prior WUR Short Wake-up frame or WUR Wake-up frame. This avoids that the WUR AP config- ures a new WUR ID at the WUR non-AP STA." |
| 3170 9.10.2.5.2 77.33 | "The CRC is calculated over the calculation fields, which include all the fields of the Frame Control, ID, Type Dependent Control, Frame Body field (if present in the WUR frame), and Embedded BSSID field (if present in the calculation fields).". The sentence needs to be revised for WUR short wake-up frame | as in comment | Revised - agree with the comment. Make changes as shown under CID 3170 in 11-19-1135-02-00ba-assorted-comment-resolutions-d3-0.docx.  Same resolution for CID 3396. |
| 3396 9.10.2.5.2 77.34 | How is this applicable to the WUR Short Wake-up frame, which doesn't contain a TD Control field? Is the TD Control field excluded from the CRC calculation for the WUR Short Wake-up frame or are 12 dummy bits being used? Same question for the 4 MSBs of the FC field that is not present in the WUR Short Wake-up frame. Are they excludes from the CRC calculation or merely filled with dummy bits? | Describe clearly how CRC is calculated for the WUR Short Wake-up frame. And update Figure 9-993d if necessary. | Revised - agree with the comment. Make changes as shown under CID 3170 in 11-19-1135-02-00ba-assorted-comment-resolutions-d3-0.docx.  Same resolution for CID 3170.  [added from Woojin] |
| 3168 29.13 129.6 | Because WUR short wake-up frame has no MIC (Protected field=0), after an attacker overhears WUR ID assignment, it may later send a spoofing WUR short wake-up frame.  "WUR non-AP STA and the WUR AP has a secure association with the non-AP STA". It is not clear whether protected management frame is mandatory for a secure association.  Even with a secure association, WUR ID may have already been assigned in an Association Response frame before 4-way handshake | change "the WUR AP has a secure association with the non-AP STA" to "the WUR AP and non-AP STA both have advertised MFPC=1"  Add a bullet to indicate that WUR Wake-up frames should be used if the WUR ID is assigned by an Association Response frame | Revised - a secure association includes dot11RSNAProtectedManagementFrames Activated to true, so this case is covered by the current text. However, a note may be added as follows:  At 129.38, add:  "NOTE—On a secure link with dot11RSNA ProtectedManagementFramesActivated equal to false, the new WUR ID may still be overheard, therefore for full protection it needs to be true." |
| 3286 29.13 129.6 | Secure Association may not be sufficient. Since the WUR Action frames that carry the random WUR ID need to be protected, protected robust management frame needs to be enabled at both AP and non-AP STA. | Add as the first bullet:  Both the WUR AP and the WUR non-AP STA shall set dot11RSNAProtectedManagementFrames Activated to true. | Revised - a secure association includes dot11RSNAProtectedManagementFrames Activated to true, so this case is covered by the current text. However, a note may be added as follows:  At 129.38, add:  "NOTE—On a secure link with dot11RSNA ProtectedManagementFramesActivated equal to false, the new WUR ID may still be overheard, therefore for full protection it needs to be true." |
| 3287 29.13 129.9 | The WUR Action frames that are used to configure the random WUR ID need to be protected, else the random ID is no longer a secret. | Change to:  The WUR AP shall configure a new random WUR ID at the WUR non-AP STA using protected WUR Mode Setup frame ... | Revised - a secure association includes dot11RSNAProtectedManagementFrames Activated to true, so this case is covered by the current text. However, a note may be added as follows:  At 129.38, add:  "NOTE—On a secure link with dot11RSNA ProtectedManagementFramesActivated equal to false, the new WUR ID may still be overheard, therefore for full protection it needs to be true." |
| 3063 29.13 129.17 | Why does the WUR AP need to wait for "at least 1 minute" before configuring a new WUR ID in WUR Short Wake-up frame operation? | Please mention the technical reason or make the value generic and not implementation specific | Revised - agree with the comment.  At 129.17 replace  "the WUR AP should wait at least 1 minute before configuring a new WUR ID at the WUR non-AP STA"  with  "the WUR AP should invoke a timeout before configuring a new WUR ID at the WUR non-AP STA" |
| 3288 29.13 129.24 | "The WUR AP may retransmit using a WUR Wake-up frame." The use of the word retransmit here is not correct since a new frame is being transmitted. | Change to:  The WUR AP may transmit a WUR Wake-up frame instead. | Accepted. |
| **Identifiers** | **Comment** | **Proposed Change** | **Resolution** |
| 3009 29.3 106.13 | Resolution for CID 2040 indicates rejected, which seems not correct. The text was amended to say that the AP should initiate the TXOP with a NAV-setting frame, which addresses the comment. | Please set the record straight. | Rejected - the comment does not identify a technical issue. |
| 3075 29.3 106.28 | "NOTE 1--WUR primary channel can be different from the primary channel of the BSS" This is a repeat of the NOTE on the previous page. I don't think you need it twice. Make a decision and delete either thte NOTE from the previous ot this one. | Delete NOTE on page P105L62, or cited NOTE.  If deleting NOTE on P105L62 then add "The" in front of "WUR" in NOTE 1. | Revised - agree with the comment.  At 105.62, delete NOTE 1.  For the second part of the proposed resolution, make changes as specified in 11-19-1135-02-00ba-assorted-comment-resolutions-d3-0.docx under CID 3097. |
| 3104 29.13 128.63 | Unlike some of the other WUR frame types, the WUR Short Wake-up frame is sent to wake up a single STA. As such it is appropriate to provide rules for EDCAF. | Add the sentence to 29.13. "The WUR AP should transmit WUR Short Wake-up frames with the EDCAF AC corresponding to the buffered data units it has for the non-AP STA." | Rejected - the use of any AC is deemed adequate for the purpose of transmitting WUR frames, as opposed to the associated data transmissions, which are still bound to their associated AC. Networks can still apply policies on the AC selection for WUR frames if deemed appropriate. |
| 3096 29.3 106.8 | I don't disagree that "The WUR AP may use any AC for sending a WUR frame." but further guidance should be added about what AC might be appropriate to use. | Add a sub-bullet indicating a recommended AC for WUR Wake-up frames is the AC of the frames for which the AP is waking the STA up to deliver. | Rejected - the use of any AC is deemed adequate for the purpose of transmitting WUR frames, as opposed to the associated data transmissions, which are still bound to their associated AC. Networks can still apply policies on the AC selection for WUR frames if deemed appropriate. |
| 3097 29.3 106.13 | "The WUR AP that sent a WUR frame using the EDCAF of a particular AC shall not update the CW and the retry counters for that AC as a result of the WUR frame transmission."  Does this make sense for the case where the WUR Primary channel is not the same channel as the primary channel of the BSS? | Is it assumed that the EDCAF is common across WUR primary channel and BSS primary channel, or two separate EDCAF are maintained in the AP? | Revised - the (not) updating of the retry counters and CW is already specified in 10.24.2.2 (EDCA backoff procedure), so this statement can be removed from WUR.  However, the case in which the WUR channel is not the BSS primary channel, it can be made more clear that the WUR channel uses a separate EDCAF.  Make changes specified in 11-19-1135-02-00ba-assorted-comment-resolutions-d3-0.docx under CID 3097.    [deferred] |
| 3098 29.3 106.20 | "The WUR AP may transmit a WUR frame on the WUR primary channel. The WUR AP shall use the same EDCAF for transmitting a WUR frame and a frame that is not a WUR frame." Does this only apply for sending the non-WUR frame and WUR frame in the same channel? You also state the WUR primary channel may not be the BSS operating channel | Add a qualifier "if the BSS primary channel equals the WUR primary channel then..." Sort out if this EDCAF rule even applies across two different channels. | Revised - agree with the comment. Make changes as specified in 11-19-1135-02-00ba-assorted-comment-resolutions-d3-0.docx under CID 3097. |
| 3114 29.3 106.3 | "with a frame that sets NAV for the duration of the TXOP" what does it mean? It's too general and ambiguous. RTS can be the frame. Clarify it. | As in comment | Revised - agree with the comment. Make changes as specified in 11-19-1135-02-00ba-assorted-comment-resolutions-d3-0.docx under CID 3097. |
| 3116 29.3 106.33 | "Otherwise, the WUR Channel may be different from the WUR primary channel" When is the WUR Channel same as the WUR primary channel in case that the WUR Channel Offset subfield is set to 0? If no case, remove "may". | Remove "may" in the indicated sentence | Revised - agree with the comment. Make changes as specified in 11-19-1135-02-00ba-assorted-comment-resolutions-d3-0.docx under CID 3097. |
| 3177 29.3 106.8 | Make it clear that in the TXOP to transmit WUR frame, other 802.11 normal frames can't be transmitted. Otherwise, the multiple frame exchange ruels should be changed accordingly, e.g. adding WUR frame transmission to frame exchange list etc. | As in comment. | Revised - a TXOP can contain a mix of WUR frames and non-WUR frames, but this is indeed not very clear. Make changes as specified in 11-19-1135-02-00ba-assorted-comment-resolutions-d3-0.docx under CID 3097. |
| 3208 29.3 106.8 | "The WUR AP may use any AC for sending a WUR frame." meaning implementations will most likely use voice. Don't be shy and state it clearly ... More seriously, in case of indivually adressed Wake-up frame, the AC used should match the one of the buffered data, to make it more fair to others | as in comment | Rejected - the use of any AC is deemed adequate for the purpose of transmitting WUR frames, as opposed to the associated data transmissions, which are still bound to their associated AC. Networks can still apply policies on the AC selection for WUR frames if deemed appropriate. |
| 3375 29.3 106.28 | Note 1 is the same as the note on the previous page; should consider to remvoe one to avoid repetition over two consecutive pages | remove one of the notes | Revised - agree with the comment.  At 105.62, delete NOTE 1. |

**CID 3170**

At 77.33, modify as shown:

"The CRC is calculated over the *calculation fields*, which include all the fields present in the WUR frame except the CRC field, and the Embedded BSSID field (if present in the *calculation fields*)."

**CID 3097**

**29.3 Channel access**

Before transmitting a WUR frame, a WUR AP shall contend for the medium as defined in 10.24.2 (HCF contention based channel access (EDCA)) and 10.3.2 (Procedures common to the DCF and EDCAF).

The WUR AP may use any AC for sending a WUR frame.

The WUR AP should initiate a TXOP that contains a WUR frame with a frame that sets NAV for the duration of the TXOP (see 10.3.2.15 (NAV distribution)). For the purpose of determining the duration of the frames, a WUR frame shall be considered to be a QoS Data frame with No Ack ack policy (see Annex G (Frame exchange sequences)).

WUR FDMA operation is defined in 29.11.1 (WUR FDMA channel access).

If the WUR primary channel is the same as the primary channel of the BSS, the WUR AP shall use the EDCAF that is also used for transmitting non-WUR frames on the primary channel of the BSS (e.g. using the CCA on the primary channel of the BSS).

If the WUR primary channel is different from the BSS primary channel, the WUR AP shall use a separate EDCAF that uses the CCA on the WUR primary channel.

After moving to a new WUR channel, the WUR AP shall perform CCA until a frame is detected by which it can set its NAV, or until a period of time indicated by the NAVSyncDelay parameter in the most recent MLME-START.request primitive has transpired.

NOTE 1—The WUR primary channel can be different from the primary channel of the BSS.

NOTE 2—When the WUR Channel Offset subfield is set to 0, the WUR Channel is the same as the WUR primary channel, i.e., the WUR Wake-up frame and the WUR Beacon frame are transmitted on the same channel. Otherwise, the WUR Channel can be different from the WUR primary channel (see 29.11 (WUR FDMA operation)).

**10. MAC sublayer functional description**

***In 802.11ba draft 3.0 at 83.47, add***

**10.24.2.2 EDCA backoff procedure**

***In 802.11REVmd draft 2.0 at 1797.47, add***

a1) The transmission of the MPDU in the final PPDU transmitted by the TXOP holder during the TXOP for that AC has completed and the TXNAV timer has expired, the AC was a primary AC (see 10.24.2.7 (Sharing an EDCA TXOP)) and the initial PPDU of the TXOP was a WUR PPDU.

***In 802.11REVmd draft 2.0 at 1798.6, modify as shown***

If the backoff procedure is invoked for reason a) or a1) above, the value of CW[AC] shall be left unchanged.