IEEE P802.11
Wireless LANs

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| WUR Short Wakeup Frame |
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Abstract

This document contains normative text for a WUR short wakeup frame, addressing CIDs 2416, 2462, 2367.

The baseline for this document is Draft P802.11ba D2.0.

**Related CIDs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 2416 | 9.10.3.2 | 58 | 24 | The current WUR wake-up frame can have a significant duration, in particular at the low data rate. | Add a short wakeup frame that can be used in addition to the current WUR wake-up frame. |
| 2462 | 9.10.3.2 | 58 | 24 | For the individually addressed Wake-up frame, when the Protected subfield in the Frame Control field is set to 0, the Type Dependent Control field (12 bits) is reserved and not being used but adding a huge overhead due to the LDR = 62.5kbps. By removing the Type Dependent Control field for this case, the airtime (including WUR preamble) shrinks from 920 usec to 728 usec, which is 20% overhead reduction. | Define a shorter individually addressed WUR Wake-up frame by removing the Type Dependent Control field when the frame is not protected. Also remove the Length Present field and the Length/Misc field from the Frame Control field. Also remove the Protected field. This shortens the individually addressed WUR Wake-up frame to 24usec+128usec+31bitsx16usec = 648 usec. |
| 2367 |  |  |  | The size of the WUR wakeup frame can be significantly reduced by using a paging identifier, because Address, MIC, and FCS are not needed in this case. | Picking up on comments made in the previous letter ballot on D1.0, the TG did not properbly address the issue raised in the comment, nor does the TG provide an indication that the text commented on has been deleted and hence the comment does not apply. (Note, page and line and sublause number refer to D1.0). In fact, as stated in the TGba minutes (11-19/226r0), the intend of the task group was to "Move to resolve CIDs that have no approved resolution as rejected with a reason read "TGba is unable to reach consensus on a resolution" in the interest of releasing draft 2.0". Also, the statement ""TGba is unable to reach consensus on a resolution" was added to the motion text there was one person speaking against the motion." was only added to the motion after objection to the original motion trying to reject comments in bulk with the reason of releasing a new LB.The TG is asked to give the original comment due consideration and debade the proposed comment resolution as included in 11-18/1794r10. The referenced document includes an actionable comment resolution. |

**Proposed Resolution**

Revised - implement changes described in 11-19-0482-00-00ba-wur-short-wakeup-frame.docx.

**Proposed Changes**

**9.4.2.290 WUR Capabilities element**

***In Figure 9-772c (WUR Capabilities Information field format) add a "WUR Short Wakeup Frame Support" subfield at B14, and update the reserved values accordingly.***

***In Table 9-321a (Subfields of the WUR Capabilities Information field) add a subfield "WUR Short Wakeup Frame Support" with definition "Indicates support for the WUR Short Wakeup Frame" and description "For a WUR non-AP STA: —Set to 1 to indicate support for the reception of WUR Short Wakeup frames. Set to 0 otherwise. Reserved for a WUR AP."***

**9.10.1 Basic components**

***Modify as shown:***

Each Wake-up Radio (WUR) frame except the WUR Short Wakeup frame consists of the following basic components:

**9.10.2.1.1 Frame Control field**

***Add the following sentence:***

The WUR Short Wakeup frame contains only the Type subfield and the Protected subfield of the Frame Control field.

***In Table 9-540a (WUR frame types) add a WUR Short Wakeup frame as Type 4 and update the reserved values accordingly.***

***Insert a new subclause:***

**9.10.3.5 WUR Short Wakeup frame format**

The frame format of the WUR Short Wakeup frame is defined in Figure 9-xxx (WUR Short Wakeup frame format).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | B0 B2 | B3 | B4 B16 | B17 B32 |
|  | Type | Protected | WUR ID | FCS |
| Bits: | 3 | 1 | 12 | 16 |

**Figure 9-xxx—WUR Short Wakeup frame format**

The Type subfield is defined in Table 9-540a (WUR frame types).

The Protected subfield is 0.

The WUR ID subfield is defined in 30.4 (Setting the identifiers of WUR frames).

The FCS subfield is defined in 9.10.2.5 (Frame Check Sequence (FCS) field).

***Add a new subclause as follows:***

**30.12 WUR Short Wakeup Frame Operation**

When a WUR non-AP STA indicates support for WUR Short Wakeup frames, a WUR AP may transmit WUR Short Wakeup frames in place of WUR Wake-up frames to the WUR non-AP STA. WUR Wake-up frames and WUR Short Wakeup frames may be used interchangeably in this case.

When a WUR AP transmits WUR Short Wakeup frames to a WUR non-AP STA and the WUR AP has a secure association with the non-AP STA, the following rules apply:

* The WUR AP shall randomly select the WUR non-AP STAs WUR ID (see 30.4.4 (WUR ID)).
* The WUR AP shall configure a new WUR ID at the WUR non-AP STA when the WUR AP receives frames from the WUR non-AP STA after the WUR AP transmitted a WUR Short Wakeup frame to the WUR non-AP STA.
* The WUR AP should not retransmit a WUR Short Wakeup frame. The WUR AP may retransmit using a WUR Wake-up frame (see 30.8.2 (WUR AP Operation)).
* The WUR non-AP STA shall ignore received WUR Short Wakeup frames after the WUR non-AP STA received a WUR Short Wakeup frame with a matching WUR ID, until a new WUR ID has been configured at the WUR non-AP STA by the WUR AP.

**B.4.4.2 MAC frames**

***Add the following PICS entries:***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| FR<Last\_as- signed+7> |  WUR Short Wakeup frame | 9.10.3.5 (WUR Short Wakeup frame format) | CFWUR:O |  Yes  No  N/A   |

**B.4.36.1 WUR MAC features**

***Add the following PICS entry:***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| WURM 13 |  WUR Short Wakeup frame operation | 30.8.1 (General) | CFWUR:O |  Yes  No  N/A  |