IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Spec Text for CR for CID 915, 1100, 1132, 1099 and 1141 | | | | |
| Date: 2019-01-11 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Xiaofei Wang | InterDigital Inc. | 2 Hungting Quad,  Melville, NY 11747  USA | +1-607-592-2727 | Xiaofei.wang@interdigital.com |
| Hanqing Lou |  |  |
| Rui Yang |  |  |
| Rojan Chitrakar | Panasonic |  |  |  |
| Alfred Asterjadhi | Qualcomm |  |  |  |
| Jeongki Kim | LGE |  |  |  |
| Yunsong Yang | Huawei |  |  |  |
| Ming Gan | Huawei |  |  |  |
| Yongho Seok | Mediatek |  |  |  |

Abstract

This submission proposes resolutions for the following CIDs: 915, 1100, 1132, 1099 and 1141.The baseline for this comment resolution document is 802.11ba Draft 1.0 with one figure from 802.11ba Draft 1.1.

Rev 0: initial draft

Rev 1: updates highlighted in green

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Clause** | **Page** | **Line** | **Comment** | **Proposed Change** | **Resolution** |
| 915 | Rojan Chitrakar | 4.3.15a | 22 | 2 | A WUR non-AP STA that supports reception of WUR PPDU with High Data Rate may fail to receive the WUR frame in bad channel conditions. In such situations, it would be better for the WUR AP to switch to Low Data Rate; however currently there is no mechanism for WUR STAs to provide feedback to the WUR AP. | In the event of CRC or MIC errors during reception of WUR PPDUs carrying WUR frames with High Data Rate addressed to a WUR non-AP STA, add options for the STA to provide feedback to the AP in one of the following two ways: 1) As an Event Report e.g. "FCS Error Event" 2) As a request to switch to Low Data Rate Based on the feedback from the STA, AP can decide to use the more robust LDR for subsequent WUR frames addressed to the STA. | Revised—  Agree in principle with the comment. Added an optional Recommended WUR Parameter subfield, which includes a Recommended Wake Up Frame Rate field, in the WUR Parameter subfield by the WUR non-AP STA.  Instruction to the editor: please make changes included in 11-19/0036r1. |
| 1100 | Xiaofei Wang | 9.4.2.273 | 31 | 38 | A non-AP STA should be able to opt to receive a WUR frame at low data rate. High and low data rates are defined in the draft, but a non-AP STA has no remedy if the AP decides to transmit to in high data rate. | add a row on "preferred data rate" in Table 9-318e and the associated procedures so that a non-AP STA can have some remedy if an AP decides to transmit to it using high data rate. Otherwise, there is no point to define a high data rate if high data rate is not being used at all. | Revised—  Agree in principle with the comment. Added an optional Recommended WUR Parameter subfield, which includes a Recommended Wake Up Frame Rate field, in the WUR Parameter subfield by the WUR non-AP STA.  Instruction to the editor: please make changes included in 11-19/0036r1. |
| 1132 | Xiaofei Wang | 31.6.1 | 55 | 1 | A WUR non-AP should have a remedy in case the WUR AP chooses to transmit to it using HDR and if HDR doesn't work well as a part of the WUR negotiation process. | Provide a remedy in the WUR negotiation process for WUR non-AP STA to switch to a LDR if HDR doesn't work well for the current channel condition. | Revised—  Agree in principle with the comment. Added an optional Recommended WUR Parameter subfield, which includes a Recommended Wake Up Frame Rate field, in the WUR Parameter subfield by the WUR non-AP STA.  Instruction to the editor: please make changes included in 11-19/0036r1. |
| 1099 | Xiaofei Wang | 9.4.2.273 | 31 | 43 | A non-AP STA should have the capability to indicate the preferred WUR channel to its AP since there may be quite a bit of frequency selectivity for a 4 MHz wide channel. Currently, a non-AP STA doesn't have any remedy if it is assigned a bad channel by its WUR AP. | add a row on "preferred channel" in Table 9-318e and the associated procedures so that a non-AP STA can have some remedy if it is assigned to a bad channel by its AP. | Revised—  Agree in principle with the comment. Added an optional Recommended WUR Parameter subfield, which includes a Recommended WUR Channel Offset field, in the WUR Parameter subfield by the WUR non-AP STA.  Instruction to the editor: please make changes included in 11-19/0036r1. |
| 1141 | Xiaofei Wang | 31.9 | 62 | 60 | A STA should have remedy if a WUR channel assigned to it by the AP is not desired, due to channel condictions etc. | Add the signaling and procedures for a STA to remedy the case when a WUR channel is assigned to itself but the channel condition is bad and need to be switched. | Revised—  Agree in principle with the comment. Added an optional Recommended WUR Parameter subfield, which includes a Recommended WUR Channel Offset field, in the WUR Parameter subfield by the WUR non-AP STA.  Instruction to the editor: please make changes included in 11-19/0036r1. |

**Discussion: *None***

* WUR Mode element

**TGba Editor: *Change Figure 9-751b (802.11ba Draft 1.0) as follows:***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | B0 | | B1 | B2                                 B7 |
|  | Group ID List Present | | Recommended WUR Parameters Present | Reserved |
| Bits: | 1 | | 1 | 6 |
|  | | * WUR Parameters Control field format | | |

**TGba Editor: *Insert the following text at Page 29 Line 42 (802.11ba Draft 1.0):***

The Recommended WUR Parameters Present subfield is set to 1 if the Recommended WUR Parameters subfield are present in the following WUR Parameters field and set to 0 otherwise.

**TGba Editor: *Modify Figure 9-751k (802.11ba Draft 1.1) as follows:***

|  |  |  |  |
| --- | --- | --- | --- |
|  | On Duration | Duty Cycle Period | Recommended WUR Parameters |
| Octets: | 4 | 2 | 0 or 1 |
| * WUR Parameters field format from WUR non-AP STA | | |  |

**TGba Editor: *Change Table 9-318e (802.11ba Draft 1.0) as follows:***

|  |  |  |
| --- | --- | --- |
| * Subfields of the WUR Parameters field from WUR non-AP STA | | |
| **Subfield** | **Definition** | **Encoding** |
| On Duration | Indicates the preferred On Duration that the WURx of the WUR non-AP STA will be in WURx awake state for each the WUR duty cycle schedule (see 31.5 (WUR duty cycle operation)). | The size of the field is 4 bytes. The unit of the field is 256 µs.The size of the field is 4 octets. The unit of the field is 4 µs. |
| Duty Cycle Period | Indicates the preferred elapsed time between the start times of two successive WUR duty cycle schedules with units indicated by the Duty Cycle Period Units field in the most recently received WUR Operation element from the associated WUR AP (see 31.5 (WUR duty cycle operation)). | The size of the field is 2 bytes.The size of the field is 2 bytes.The size of the field is 2 octets. |
| Recommended WUR Parameters | Indicates one or more recommentded WUR parameters. | The format is shown in Figure 9-751x (Recommended WUR Parameters subfield format).The format is shown in Figure 9-751x (Recommended WUR Parameters subfield format) |

**TGba Editor: *Insert the following at Page 31 Line 62 (802.11ba Draft 1.0):***

|  |  |  |  |
| --- | --- | --- | --- |
|  | B0                          B1 | B2                                 B4 | B5                                 B7 |
|  | Recommended WUR Wake Up Frame Rate | Recommended WUR Channel Offset | Reserved |
| Bits | 2 | 3 | 3 |
|  | Figure 9-751x -- Recommentded WUR Parameters subfield format | | | |

The format of the Recommeneded WUR Parameters subfield is shown in Figure 9-751x (Recommended WUR Parameters subfield format). This field is present if the Recommended WUR Parameters Present subfield of the WUR Parameter Control field is set to 1. Otherwise this field is not present.

The Recommended WUR Wake Up Frame Rate field is set to 0 to indicate that the WUR non-AP STA has no recommendation on the data rate to be used for WUR wake up frames. This field is set to 1 to indicate that LDR is recommended to be used for individually or group addressed WUR wake up frames transmitted to the WUR non-AP STA. This field is set to 2 to indicate that HDR is recommended to be used for individually or group addressed WUR wake up frames transmitted to the WUR non-AP STA. The value of 3 is reserved.

The Recommended WUR Channel Ofsset field is set to 7 to indicate that the WUR non-AP STA has no recommendation regarding the WUR Channel Offset. Otherwise, the encoding of this field is described in Table 9-318e (WUR Channel Offset subfield encoding).

**TGba Editor: *Modify Table 9-318f as follows (802.11ba Draft 1.0):***

|  |  |  |
| --- | --- | --- |
| WUR Channel Switching Support | When sent by a WUR non-AP STA, indicates whether the WUR channel switching capability for receiving WUR Beacon and WUR Wake-up frames that are transmitted in different channels is enabled or disabled (see 31.9 (WUR FDMA operation)).  When sent by a WUR AP, indicates whether the WUR AP is capable of switching the WUR channel based on the recommendation from the WUR non-AP STAs. | Set to 0 if the WUR channel switching capability is supported.  Set to 1 if the WUR channel switching capability is not supported. |

**TGba Editor: *Insert the following text at Page 54 Line 61 (802.11ba Draft 1.0):***

A WUR non-AP STA may indicate in the WUR Mode element its recommendation on which data rate (LDR or HDR) to use for individually or group addressed WUR wake up frames transmitted to that WUR non-AP STA.

**TGba Editor: *Insert the following text at Page 55 Line 8 (802.11ba Draft 1.0):***

After a WUR non-AP STA has negotiated WUR service with a WUR AP, the WUR non-AP STA may request to update the WUR parameters with the associated WUR AP STA by using the PCR component to transmit a WUR Mode Setup frame with the Action Type in the WUR Mode element set to “Enter WUR Mode Request” or “Enter WUR Mode Suspend Request” and updated WUR parameters in the WUR Mode element. The WUR AP shall follow the procedure defined in Section 31.6.1 (WUR Mode Setup) when responding to the WUR Mode Setup frame.

**TGba Editor: *Insert the following text at Page 62 Line 58 (802.11ba Draft 1.0):***

A WUR non-AP STA may indicate in the Recommended WUR Channel Offset field in the WUR Mode element its recommendation on which WUR channel to assign for the WUR non-AP STA. If the WUR Channel Switching Support bit is set to 1 in the WUR Capabilities element received from its associated AP, the WUR STA shall not recommend on the WUR Channel Offset. In that case, the Recommended WUR Channel Offset field is either not sent at all, if the WUR STA has no recommendation on the data rate to be used for WUR wake up frames, or is sent with value 7, if the WUR STA has a recommendation regarding the data rate to be used for WUR wake up frames (i.e., when the value in the Recommended WUR Wake Up Frame Rate field is either value 1 or value 2).