IEEE P802.11
Wireless LANs

|  |
| --- |
| Comment resolutions for 9.10.3.2 - Part 2 |
| Date: 2018-12-10 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Alfred Asterjadhi | Qualcomm Inc. | 5775 Morehouse Dr, San Diego, CA 92109 | +1-858-658-5302 | aasterja@qti.qualcomm.com |
| Woojin Ahn | WILUS |  |  |  |

Abstract

This submission proposes resolutions for multiple comments related to TGba D1.0 with the following CIDs (23 CIDs):

* 31, 89, 92, 100, 102, 309, 401, 525, 526, 717,
* 718, 719, 721, 788, 790, 851, 882, 883, 1074, 1122,
* 1169, 1170, 1240, 1075

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Incoporated suggestions from Yunsong and Lei. And added CID 1075 to the resolution list. Changes in green.
* Rev 2: Incorporated some further suggestions from Yunsong. Changes in blue.

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.***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 31 | Albert Petrick | 43.35 | A set of criteria is established for setting the Address field of the WUR Wake-Up frame. 0 is set for multiple WIDs. The term "multiple" should be expanded to state 2 or more WIDs, |  | Revised –Proposed resolution removes that bullet to define these items for the FL WUR frame and have a separate sentence for the VL WUR Wake Up frame. Also inline with other CIDs related to this topic the resolution clarifies that the identifier used for this frame is a group ID rather than the value 0.TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 31. |
| 89 | Alfred Asterjadhi | 43.35 | Value 0 means that all WUR STAs need to decode this frame independently of which BSS is coming from. So early drop is not possible. Please find another means of signaling this particular WUR Wake up version. | As in comment. | Revised –Found another way to signal this type of frame as suggested by several other CIDs. Options considered were the WUR ID of the first STA, transmit ID and group ID. Since this is a group addressed frame then group ID is appropriate to identify it.TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 89. |
|  |  |  |  |  |  |
| 92 | Alfred Asterjadhi | 44.47 | This can be a group ID as well, provided that all the STAs of that group support its reception. | As in comment. | Revised –Agree in principle with the comment. However, since the proposal to identify the VL WUR Wake up frame is to use a group ID then we cannot use group IDs in the Frame Body since it would create complications in the ordering rules of the identifiers in the Frame Body. Proposed resolution is to clarify that the group ID is used for the ID field of the VL WUR Wake Up frame.TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 92. |
| 100 | Alfred Asterjadhi | 49.49 | A Group ID can be contained in the Frame Body field of the VL WUR Wake UP frame as well provided that all STAs that are assigned that Group ID support reception of VL WUR frames. | As in comment. | Revised –Agree in principle with the comment. However, since the proposal to identify the VL WUR Wake up frame is to use a group ID then we cannot use group IDs in the Frame Body since it would create complications in the ordering rules of the identifiers in the Frame Body. Proposed resolution is to clarify that the group ID is used for the ID field of the VL WUR Wake Up frame.TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 100. |
| 102 | Alfred Asterjadhi | 50.43 | Specify what the Address field value is for a VL WUR Wake Up frame. | As in comment. | Revised –Proposed resolution is to clarify that the group ID is used for the ID field of the VL WUR Wake Up frame.TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 102. |
| 309 | Hanseul Hong | 44.40 | For WUR Wake-up frame with Frame Body field, the number of reserved bits in STA Info field may cause too many reserved bits(up to 32 bits), resulting in long transmission delay | Define the optimization method to shorten the length of WUR Wake-up frame with multiple WIDs, or use the reserved bits to help the WUR operation | Rejected –The maximum length of VL WUR frames is fixed across all WUR frames and is independent of the use (or functionality) of the bits that it carries. These 4 bits are left as reserved since they can address future use cases that can be addressed with these WUR frames.  |
| 401 | James Lepp | 43.29 | How does the receiver of a WUR frame determine which of the 4 IDs is present in the Address field when it receives a WUR Wake-up frame? | Explicitly state that Individual and group address share a sincel 12-bit namespace with the "all zeros" case is a reserved value. And that seperately transmit ID is indicated by the Frame Type =0. | Revised –The rules are defined in subclause 31.3 where it should be specified that these identifiers do not overlap with each other. And removed the pathological case of value 0 from the list replacing it with a group ID value.TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 401. |
| 525 | Lei Huang | 43.27 | It is better to explicitly mention in the standard that "The Frame Body field is not present in the broadcsat WUR Wake-up frame." | as per comment | Revised –Agree with comment. Broadcast WUR frame is a FL WUR frame. Specified that only VL WUR frame contains the Frame Body field.TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 525. |
| 526 | Lei Huang | 43.27 | It is better to explicitly mention in the standard that "The Frame Body field is not present in the unicast WUR Wake-up frame." | as per comment | Revised –Agree with comment. Specified that only VL WUR frame contains the Frame Body field. TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 526. |
| 717 | Minyoung Park | 43.35 | The WUR Wake-up frame can be individually addressed, group addressed, and broadcast addressed by setting the Address field to WID, group ID, and transmit ID, which is clear. The following description "0 when multiple WIDs are included in the Frame Body field of the frame" is not that clear what type of WUR Wake-up frame this is. This sentence should be replaced to "0 when the frame is addressed to a group of WUR non-AP STAs with WIDs listed in the Frame Body field." This type of WUR Wake-up frame should be named as "multi-WID Wake-up frame." | As shown in the comment. | Revised –Agree in principle, although proposed resolution is to use group ID instead of value 0 to identify these frames. And specified that these are the VL WUR wake up frames for terminology consistency.TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 717. |
| 718 | Minyoung Park | 43.24 | The WUR Wake-up frame has the Frame Body field only when it is "multi-WID Wake-up frame", which is when the Address field is set to 0 and a list of WIDs are contained in the Frame Body field.Therefore, the following sentence"The Frame Control field is as defined in 9.10.2.1.1 (Frame Control field), with the Length Present subfield set to 1 if the Frame Body field is present and the Length Present subfield set to 0 otherwise."should be replaced to "The Frame Control field is as defined in 9.10.2.1.1 (Frame Control field). The Length Present subfield set to 1 when a list of WIDs are contained in the Frame Body field for the multi-WID WUR Wake-up frame. For the individually addressed WUR Wake-up frame, group addressed WUR Wake-up frame, and broadcast WUR Wake-up frame, the Length Present subfield set to 0." | As shown in the comment. | Revised –In order to keep consistency between the terms the proposed resolution is to clarify that the FL (fixed length WUR Wake up frames, which do not contain a FB) have the possibility of having the Address field to carry individual, group , and broadcast. And specify that the VL WUR Wake Up frame address field contains the group ID. This way it is clear that only FL WUR Wake up frames can have Address field with those three types of identifiers. TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 718. |
| 719 | Minyoung Park | 44.32 | The following sentence is vague: "The Frame Body field of the WUR Wake-up frame, when present, contains one or more STA Info fields." because the Frame Body field is only present when the Address field is set to 0 for the multi-WID WUR Wake-up frame.Replace this sentence to "The Frame Body field of the WUR Wake-up frame contains one or more STA Info fields if the Address field is set to 0. Otherwise the Frame Body field is not present." | As shown in the comment. | Revised –Agree in principle. Since these are called VL WUR Wake up frames the proposed resolution is to specify that this Frame Body applies to VL WUR wake up frames.TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 719. |
| 721 | Minyoung Park | 49.40 | The following paragraph is not correct because the identifier value 0 has a special meaning (indicates multiple-WID WUR Wake-up frame) and cannnot be assigned as a transmitter ID, group ID, or WUR ID: "The Address field of WUR frames contains an identifier (ID) that is selected from the range 0 to 4095. Each identifier can be a transmit ID, which is obtained from the compressed BSSID (see 31.3.2 (Transmit ID)), group ID (see 31.3.3 (Group ID)), or a WUR ID (see 31.3.4 (WUR ID))."Please replace the paragraph above with the following:"The Address field of WUR frames contains an identifier (ID) that is selected from the range 0 to 4095. Each identifier can be a transmit ID, which is obtained from the compressed BSSID (see 31.3.2 (Transmit ID)), group ID (see 31.3.3 (Group ID)), or a WUR ID (see 31.3.4 (WUR ID)) except the identifier value of 0." | As shown in the comment. | Revised –Proposed resolution is to clarify that the group ID is used for the ID field of the VL WUR Wake Up frame.TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 721. |
| 788 | Osama Aboulmagd | 43.28 | "The Address field of the WUR Wake-up frame is set to" The address field is not set to all the values underneath this sentence. I think the right sentence is "The Address field of the WUR Wake-up frame is set to one of the following values" | as in comment | Revised –Agree in principle. Proposed resolution accounts for the suggested change.TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 788. |
| 790 | Osama Aboulmagd | 44.32 | "The Frame Body field of the WUR Wake-up frame, when present, contains one or more STA Info fields. The format of the STA Info field is defined in Figure 9-963f (STA Info field format)" In this case what is the address type of the wake up frame (Transmitting, WUR ID, or Group ID). Explain. | as in comment | Revised –Agree in principle with the comment. Proposed resolution clarifies that the address is set to the group ID.TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 790. |
| 851 | Po-Kai Huang | 43.54 | We should just say "Contains the BSS update counter". | As in comment. | Rejected –The comment fails to identify a technical issue. The comment seems to imply that instead of saying contains the BSS update counter if the frame is broadcasted, we should just say in any frame. However, if the STA receives an individually addressed frame for which it will wake anyways then what is the benefit of an increased value? |
| 882 | Rojan Chitrakar | 44.02 | It is stated: "The TSF timer is obtained as defined in 31.4.1 (General)," However, 31.4.1 only has description about obtaining TSF[5:16] for WUR Beacon frames and not for Protected Wake-up frames. | Either add procedure in section 31.4.1 to obtain TSF[9:16] for Protected Wake-up frames, or make the description in 31.4.1 generic by removing the reference to TSF[5:16] and WUR Beacon frames. | Revised –Agree in principle with the comment. This was already addressed as part of the resolution for CID 295, 390., where the proposal was to refer to the correct subclause 31.8.3.1.Note to TGba editor: No further changes are needed fo this comment.TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 882. |
| 883 | Rojan Chitrakar | 13.13 | Presence of Misc field implicitely implies that broadcast WUR Wake-up frames can only be ML WUR frames. Add description to make it explicit. | Add a sentence at the end of paragraph on P43L24 as below:The Length Present field of a broadcast WUR Wake-up frame is set to 0. | Revised –Based on discussion for other CIDs the proposed resolution is to use the group ID to identify a VL WUR Wake up frame. Proposed resolution is to clarify that this setting of the Misc field is applicable to the ML WUR Wake up frame (which is now called fixed length (FL) WUR Wake-up frame as per suggestions in another document).TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 883. |
| 1074 | Woojin Ahn | 43.35 | Having a fixed address value is not aligned with the design concept of WUR ID space. Furthermore, VL WUF Address 0 requires all WUR STAs including OBSS STAs to check the frame body contents resulting iunnecessary power consumption.A recommedation is to use Transmit ID for the address value. As the Transmit ID provides AP identification, WUR STA can filter out any VL WUF from OBSSs ealier without checking the Frane Body. In addtition, it is reasonable to use Transmit ID considering the definition of Transmit ID, because VL WUR Wake-up frame is a broadcast WUR frame that all WUR STAs within that BSS should receive and check the Frame Body. | Use Transmit ID for the address value of VL WUR Wake-up frame | Revised –There were multiple discussions on whether to use the transmit ID or the WUR ID of the first STA that is the intended receiver of this WUR Wake Up frame. The proposal is to use the group ID since this is a group addressed frame.TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 1074. |
| 1122 | Xiaofei Wang | 43.34 | why is WID used on L34 and WUR ID is used on L30? The notation should be the same | please use the same notation in the same paragrah of spec text for WUR IDs | Revised –This sentence is redundant. The definition in P44L32 is specifying these to be WUR IDs, which are already defined. Proposed resolution is to remove the bullet.TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 1122. |
| 1169 | yujin noh | 43.35 | define what WIDs are. For example, WID that identifies a non-AP STA.... Clarity what is different from WUR ID being used through draft spec | as in comment | Revised –This sentence is redundant. The definition in P44L32 is specifying these to be WUR IDs, which are already defined. Proposed resolution is to remove the bullet.TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 1169. |
| 1170 | yujin noh | 43.35 | Clarify the meaning of the multiple WIDs. For example, It could mean 1) one or more WIDs or 2) two or more WIDs. | as in comment | Revised –Agree in principle with the comment. Proposed resolution is to remove this bullet since this is already defined in P44L32 where it specifies that the Frame Body field contained one or more STA Info fields. TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 1170. |
| 1240 | Yunsong Yang | 49.34 | In P43L35, identifier in the Address field is "0 when multiple WIDs are included in the Frame Body field of the frame". But in clause 31.3, there is no such description. | Please clarify. | Revised –Proposed resolution is to clarify that the group ID is used for the ID field of the VL WUR Wake Up frame and add correct terminology for the reference.TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 1240. |
| 1075 | Woojin Ahn | 49.60 | Group IDs can also be used for the address of VL WUR Wake-up frame. It is useful when AP wants to wake-up a part WUR STAs identified by a certain Group ID. In this case, all WUR STAs except the group can discard the group addressed VL WUR Wake-up frame without checking the Frame Body. | Allow Group ID to be used in VL WUR Wake-up frame as described in this comment | Revised –Proposed resolution is to clarify that the group ID can be used for the ID field of the VL WUR Wake Up frame and add correct terminology for the reference.TGba editor to make the changes shown in 11-18/2130r2 under all headings that include CID 1240. |

**Discussion: *None.***

* WUR Wake-up frame format

The frame format of the WUR Wake-up frame is as defined in Figure 9-963a (WUR frame format).

The Frame Control field is as defined in 9.10.2.1.1 (Frame Control field), with the Length Present subfield set to 1 if the Frame Body field is present and the Length Present subfield set to 0 otherwise.

**TGba Editor: *Change the paragraphs below of this subclause as follows (#CID 31, 89, 92, 100, 401, 717, 718, 788, 790, 883, 1074, 1122, 1169, 1170, 102, 721, 1240, 1075):***

The ID field of the FL WUR Wake-up frame contains one of the following:

* The WUR ID when the frame is individually addressed
* The group ID when the frame is group addressed
* The transmitter ID when the frame is broadcast addressed

The ID field of the VL WUR Wake-up frame contains a group ID (see 31.3.3).*(#31, 89, 92, 100, 401, 717, 718, 788, 790, 883, 1074, 1122, 1169, 1170, 102, 721, 1240, 1075)*

The Type Dependent Control field of a WUR Wake-up frame contains the Counter subfield and the Sequence Number subfield as defined in 9-963d (Type Dependent Control field of WUR Wake-up frame).

|  |  |  |
| --- | --- | --- |
|  | B0             B3 | B4                   B11 |
|  | Counter | Sequence Number |
| Bits: | 4 | 8 |
| * Type Dependent Control field of WUR Wake-up frame
 |

The Counter subfield:

* Contains the 4 LSBs of the PPN (see 31.8 (Protected WUR frames)) if the WUR Wake-up frame is not broadcast addressed, the Protected subfield in the Frame Control field is 1, and the most recently sent WUR Operation element has the Common IPN subfield equal to 0, or
* Is reserved otherwise.

**TGba Editor: *Change the paragraphs below of this subclause as follows (#CID 882):***

The Sequence Number subfield:

* Contains the TSF timer [9: 16] if the Protected subfield in the Frame Control field is 1 and the most recently sent WUR Operation element has the Common IPN subfield equal to 1 (see 31.8.3.1 (Generation of the IPN by a WUR AP)), or*(#882)*
* Contains the 8 MSBs of the PPN (see 31.8 (Protected WUR frames)) if the WUR Wake-up frame is not broadcast addressed, the Protected subfield in the Frame Control field is 1, and the most recently sent WUR Operation element has the Common IPN subfield equal to 0, or
* Is reserved otherwise.

The Misc subfield of the broadcast WUR Wake-up frame contains the Group Addressed BU subfield and Reserved subfield as defined in Table 9-963e (Misc subfield of broadcast WUR Wake-up frame).

|  |  |  |
| --- | --- | --- |
|  | B0 | B1                B2 |
|  | Group Addressed BU | Reserved |
| Bits: | 1 | 2 |
| * Misc subfield of broadcast WUR Wake-up frame
 |

The Group Addressed BU subfield is set to 1 when an AP has buffered group addressed BU(s). Otherwise, the Group Addressed BU subfield is set to 0.

**TGba Editor: *Change the paragraphs below of this subclause as follows (#CID 525, 526, 719):***

The Frame Body field is only present in a VL WUR Wake-up frameand contains one or more STA Info fields. The format of the STA Info field is defined in Figure 9-963f (STA Info field format).*(#525, 526, 719)*

|  |  |  |
| --- | --- | --- |
|  | B0          B11 | B12                B15 |
|  | WUR ID | Reserved |
| Bits: | 12 | 4 |
| * STA Info field format
 |

**TGba Editor: *Change the paragraphs below of this subclause as follows (#CID 92, 100, 102, 721, 1240):***

The WUR ID field is defined in 31.3 (Setting the identifiers of WUR frames.*(#92, 100, 102, 721, 1240)*

**31.3.3 Group ID**

A group ID identifies a group of one or more WUR non-AP STAs and is selected from a group ID space which is a subset of consecutive values obtained from the identifier’s space. A WUR frame with group ID in the ID field is a group addressed WUR frame that is addressed to all the WUR non-AP STAs identified by that group ID. A FL WUR Wakeup frame with group ID in the ID field is a group addressed WUR frame that is addressed to all the WUR non-AP STAs identified by that group ID. A VL WUR Wakeup frame with group ID in the ID field is a group addressed WUR frame that is addressed to all the WUR non-AP STAs identified by the WUR IDs included in the Frame Body field.

**TGba Editor: *Change the paragraphs below of this subclause as follows (#CID 31, 89, 92, 100, 401, 717, 718, 788, 790, 883, 1074, 1122, 1169, 1170, 102, 721, 1240, 1075):***

A WUR AP may assign one or more group IDs to a WUR non-AP STA if the STA has set the Group IDs Support field of the WUR Capabilities element it transmits to a nonzero value and may assign a single group ID to the WUR non-AP STA if the STA has set the Group IDs Support subfield of the WUR Capabilities element to 0 and has set VL WUR Frame Support subfield of the WUR Capabilities element to 1; otherwise the AP shall not assign a group ID to the STA.

The WUR AP shall indicate the group IDs assigned to a WUR non-AP STA in the Group ID List subfield of the WUR Parameters field of the WUR Mode element that is sent to the STA. The WUR AP shall ensure that the difference between the largest group ID and the lowest group ID assigned to the WUR non-AP STA does not exceed the value indicated in the Group IDs Support field of the WUR Capabilities element sent by the WUR non-AP STA, where the comparison performed between the two identifiers is circular modulo 212*.*

NOTE—The WUR AP might assign different group IDs to different WUR STAs.*(#31, 89, 92, 100, 401, 717, 718, 788, 790, 883, 1074, 1122, 1169, 1170, 102, 721, 1240, 1075)*

**9.4.2.275 WUR Mode element**

**TGba Editor: *Change the paragraphs below of this subclause as follows (#CID 31, 89, 92, 100, 401, 717, 718, 788, 790, 883, 1074, 1122, 1169, 1170, 102, 721, 1240, 1075):***

The Starting Group ID field contains the value of the first group ID of the Group ID Bitmap field if the Group ID Bitmap Size field is set to a non-zero value. The Starting Group ID field contains a starting group ID (SGID) assigned by the WUR AP to the WUR non-AP STA if the Group ID Bitmap Size field is set to 0.*(#31, 89, 92, 100, 401, 717, 718, 788, 790, 883, 1074, 1122, 1169, 1170, 102, 721, 1240, 1075)*

31.3.4 WUR ID

**TGba Editor: *Change the paragraphs below of this subclause as follows (#CID 31, 89, 92, 100, 401, 717, 718, 788, 790, 883, 1074, 1122, 1169, 1170, 102, 721, 1240, 1075):***

A WUR AP shall assign to each WUR non-AP STA a WUR ID that uniquely identifies the WUR non-AP STA within the BSS of the WUR AP. The WUR AP shall either select the WUR ID randomly from the identifier’s space or calculate the WUR ID as *AID* + *transmitter ID*, where the *AID* is the association identifier of the STA, the *transmitter ID* is defined in 31.3.2 (Transmitter ID) and the addition performed between the two identifiers is circular modulo *212*. The WUR AP shall ensure that the selected or calculated WUR ID is not any of *Group ID,* or the *transmitter ID* of the WUR AP. The WUR AP shall indicate the WUR ID assigned to a WUR non-AP STA in the WUR ID field of the WUR Mode element it sends to the STA.*(#31, 89, 92, 100, 401, 717, 718, 788, 790, 883, 1074, 1122, 1169, 1170, 102, 721, 1240, 1075)*

**9.4.2.273 WUR Capabilities element**

**TGba Editor: *Change the table below of this subclause as follows (#CID 31, 89, 92, 100, 401, 717, 718, 788, 790, 883, 1074, 1122, 1169, 1170, 102, 721, 1240, 1075):***

|  |
| --- |
| * Subfields of the WUR Capabilities Information field
 |
| Subfield | Definition | Encoding |
| …. |  |  |
| Group IDs Support | Indicates Group IDs support. | For a WUR non-AP STA:* Set to 0 to indicate no support for group IDs if the VL WUR Frame Support subfield is 0 and to indicate support for one group ID when the VL WUR Frame Support subfield is 1.
* Set to 1 to indicate support for up to 16 group IDs.
* Set to 2 to indicate support for up to 32 group IDs.
* Set to 3 to indicate support for up to 64 group IDs.*(#31, 89, 92, 100, 401, 717, 718, 788, 790, 883, 1074, 1122, 1169, 1170, 102, 721, 1240, 1075)*

Reserved for a WUR AP. |