IEEE P802.11
Wireless LANs

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| Comment resolutions for transmitter ID |
| Date: 2019-04-10 |
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Abstract

This submission proposes resolutions for multiple comments related to TGba D2.0 with the following CIDs (10 CIDs):

* 2043, 2139, 2204, 2207, 2403, 2405, 2429, 2683, 2816, 2817

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Revised version that contains feedback received offline from Po-Kai, Jeongki, and Rojan. Changes in green.
* Rev 2: Minor revision to one of the resolutions. No technical changes.

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.***

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| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 2043 | Alfred Asterjadhi | 64.34 | Maybe good to specify that these STAs are not expected to receive WUR Wake Up frames sent by the transmitter ID since they are not associated to it. | As in comment. | Revised –Agree in principle with the comment. Proposed resolution clarifies that STAs associated with a nontransmitting BSSID are not expected to receive other WUR frame types sent with transmitter ID.TGba editor to make the changes shown in 11-19/0582r2 under all headings that include CID 2043. |
| 2139 | James Lepp | 64.28 | Is a STA associated to a BSSID? | Change to BSS | Revised –Agree with the comment that it is not technically correct to the state of association to an identifier. Proposed resolution is to clarify that it is associated with the AP corresponding to the transmitted BSSID.TGba editor to make the changes shown in 11-19/0582r2 under all headings that include CID 2139. |
| 2204 | Joseph Levy | 64.25 | The statement that "A WUR frame with transmitter ID in the ID field is defined as a broadcast WUR frame ..." is not true. The statement should be more inline with "A WUR frame with the Type element of the Frame control field set to 0 is a broadcast WUR frame and all broadcast WUR frames have a transmitter ID in their ID field." | Clarify the description of the Transmitter ID so that it provides only a description of the Transmitter ID. Any discussion of where the Transmitter ID is used should be provided elsewhere in clause 30. | Rejected –The comment fails to identify a technical issue and misinterprets the Type field of the Frame Control as a condition for a frame to be broadcast, which is not true. The Type field defines the type of WUR frame (beacon, Wake up frame and so on), while the contents of the ID field define as to whether the frame is broadcast or not (depending on whether it contains a transmitter ID or not).  |
| 2207 | Joseph Levy | 65.41 | Clause 30.4.5 contains both the definition of Nontransmitter ID and some discussion of the use of the Nontransmitter ID. This clause should only contain the definition of the Nontransmitter ID. The use of the Nontransmitter ID should be provided elsewhere in clause 30. | As in comment. This clause should only provide the definition of the Nontransmitter ID. Any discussion of where the Nontransmitter ID is used should be provided elsewhere in clause 30. | Rejected –The comment fails to identify a technical issue. Clause 30 defines WUR MAC operations, and transmitter ID and nontransmitter ID selection and operations related to them are WUR MAC functionalities. Hence it is appropriate to be covered in one of its dependent subclauses. |
| 2403 | Mark RISON |  | It's not clear what a "broadcast WUR frame" is, and arguably what a "broadcast WUR Wake-up frame" is | In 30.4.2 change "A WUR frame with transmitter ID inthe ID field is defined as a broadcast WUR frame that is addressed to all the WUR non-AP STAs that areassociated with the WUR AP if dot11MultiBSSIDImplemented is false or to all the WUR non-AP STAs thatare associated to the transmitted BSSID if dot11MultiBSSIDImplemented is true or to all the WUR non-APSTAs that are performing WUR scanning to discover the transmitting WUR AP. " to "A WUR Wake-up frame is a <italic>broadcast WUR frame</italic> if it has a transmitter ID inthe ID field that addresses all the WUR non-AP STAs that areassociated with the WUR AP if dot11MultiBSSIDImplemented is false or all the WUR non-AP STAs thatare associated to the transmitted BSSID if dot11MultiBSSIDImplemented is true, or that addresses all the WUR non-APSTAs that are performing WUR scanning to discover the transmitting WUR AP." In 30.4.5 change "A WUR Wake-up frame with nontransmitter ID in the ID field is a broadcast WURWake-up frame that is addressed to all the WUR STAs that are associated with the nontransmitted BSSID." to "A WUR Wake-up frame is a <italic>broadcast WUR frame</italic> if it has a nontransmitter ID in the ID field that addresses all the WUR non-AP STAs that are associated with the nontransmitted BSSID.". In 30.8.1 change "The WUR AP may transmit a broadcast WUR wake-up frame (see 30.4.2 (Transmitter ID))" to "The WUR AP may transmit a broadcast WUR wake-up frame (see 30.4.2 (Transmitter ID) and 30.4.5)". In 30.9.3.1 change "broacasted" to "broadcast" | Revised –Agree in principle with the comment. Proposed resolution accounts for the suggested changes in principle, however, does not italicize the broadcast portion, and uses “broadcast addressed” instead of “broadcast” to be inline with other portins of the spec, and adds a separate sentence for WUR Discovery and WUR Beacon frames. Please refer to the document for more specific details. It additionally provides further clarification as to which STA needs to calculate the nontransmitter ID for transmitting and receiving broadcast addressed WUR Wake up frames with nontransmitter ID in the ID field.TGba editor to make the changes shown in 11-19/0582r2 under all headings that include CID 2403. |
| 2405 | Mark RISON | 64.28 | "or to all the WUR non-APSTAs that are performing WUR scanning to discover the transmitting WUR AP" does not make sense. A WUR Wake-up frame is not the same thing as a beacon | Delete the cited text at the referenced location | Revised –Agree in principle with the comment. Proposed resolution deletes the cited text and adds a sentence to cover the case of WUR Beacon frames and WUR Discovery frames, which contain the transmitter ID in the ID field.TGba editor to make the changes shown in 11-19/0582r2 under all headings that include CID 2405. |
| 2429 | Ming Gan | 64.26 | what is WUR non-AP STA? Is it WURx or PCR? | The concept of PCR was removed in D2.0. Now it seems that it is WUR TX or RX if there is WUR prefix . But in some cases, it is difficult to distinguish WUR TX/RX from PCR. Make a amendment on it. | Rejected –The comment fails to identify a technical issue and is asking a question. Please refer to clause 3.2 for a definition of WUR non-AP STA. Quoting for ease of review:“wake-up radio (WUR) non-access-point (non-AP) station (STA): A non-AP STA is a non-HT, HT, VHT, or HE non-AP STA that is capable of receiving a WUR physical layer (PHY) protocol data unit (PPDU) and is not capable of transmitting a WUR physical layer (PHY) protocol data unit (PPDU) and supports the WUR mechanism.” |
| 2683 | Woojin Ahn | 65.38 | If an HE BSS, managed by a WUR-capable AP, is a member of co-located BSSID set but not a member of multiple BSSID set, what is the expected WUR identifier setting for that BSS? Should the BSS use a different Transmitter ID and have indepedent ID assignment from other co-located BSSs? | Please clarify | Rejected –Each co-located AP within a co-located set generate Beacons on their own, each of which containing their own BSSIDs, as such the identifiers are independent.  |
| 2816 | Yunsong Yang | 64.32 | The first sentence in the Note is confusing and wrong. Non-AP STAs are never identified by the nontransmitter ID. Otherwise, it would contradict to the definition of nontransmitter ID in 30.4.5. Instead, it should say that non-AP STAs assocaited with a nontransmitted BSSID should receive WUR Beacons transmitted with the transmitter ID of the transmitted BSSID of the same WUR APπÇé | Replace the first sentence with "WUR non-AP STAs associated to a nontransmitted BSSID should receive WUR Beacons transmitted with the transmitter ID of the transmitted BSSID of the WUR AP." | Revised –Agree in principle with the comment. Proposed resolution is to delete the sentence that brings ambiguity and specify that these STAs are not expected to receive other types of WUR frames sent with transmitter ID in the ID field.TGba editor to make the changes shown in 11-19/0582r2 under all headings that include CID 2816. |
| 2817 | Yunsong Yang | 64.33 | The second sentence in the Note is speculating on a recipient's behavior. Instead, the draft should define what the transmitting AP should do. | Repalce the second sentence with "When dot11MultiBSSIDImplemented of the WUR AP is true, WUR Beacons and WUR Discovery frames are always sent with the transmitter ID of the transmitted BSSID." | Revised –Disagree in principle with the comment. Since this is a note it is okay to be speculative, which was the intention of the note. However, agree with the proposed change that we need to specify that the WUR Beacons and WUR Discovery frames have the transmitter ID in the ID field.TGba editor to make the changes shown in 11-19/0582r2 under all headings that include CID 2817. |

**Discussion: *None.***

* Transmitter ID

**TGba Editor: *Change the paragraph below of this subclause as follows (#CID 2139, 2403, 2405, 2817):***A transmitter ID identifies the WUR AP transmitting the WUR frame.

A WUR Wake-up frame is a broadcast addressed WUR Wake up frame if the WUR Wake-up frame has a transmitter ID in the ID field. The WUR Wake-up frame isaddressed to all the WUR non-AP STAs that are associated with the WUR AP if dot11MultiBSSIDImplemented is false or addressed to all the WUR non-AP STAs that are associated with the AP corresponding to the transmitted BSSID if dot11MultiBSSIDImplemented is true.

WUR Beacon frames and WUR Discovery frames sent by a WUR AP shall have a transmitter ID in the ID field.*(#2403, 2139, 2405, 2817)* (#398, #496, #527, #99, #826, #863)

**TGba Editor: *Change the paragraph below of this subclause as follows (#CID 2043, 2816):***

NOTE—WUR non-AP STAs associated with the AP corresponding to a nontransmitted BSSID in a multiple BSSID set are only expected to receive WUR Beacons and WUR Discovery frames sent with a transmitter ID in the ID field and are not expected to receive other types of WUR frames sent with a transmitter ID in the ID field.*(#2043, 2816)* (#99, #826, #863)

A WUR AP shall use the 12 LSBs of the compressed BSSID as the transmitter ID of WUR frames it transmits.(#87, #88)(#853, #1175)

* Nontransmitter ID

**TGba Editor: *Change the paragraph below of this subclause as follows (#CID 2403):***

A nontransmitter ID identifies a nontransmitted BSSID from the multiple BSSID set (see 11.1.3.8 Multiple BSSID procedure).

A WUR Wake-up frame is a broadcast addressed WUR Wake up frame if the WUR Wake-up frame has a nontransmitter ID in the ID field. The WUR Wake up frame is , addressed to all the WUR non-AP STAs that are associated with the AP corresponding to a nontransmitted BSSID in a multiple BSSID set. *(#2403)*

A WUR AP that operates a multiple BSSID set containing a nontransmitted BSSID and a WUR non-AP STA that is a member of a BSS corresponding to a nontransmitted BSSID shall calculate the *nontransmitter ID* as *k* + *transmitter ID*, where *k* is equal to the value of the BSSID index field corresponding to that BSS (see 9.4.2.73 (Multiple BSSID-Index element) for the nontransmitted BSSID, the *transmitter ID* is defined in 30.4.2 (Transmitter ID), and the addition performed between the two identifiers is circular modulo 212. *(#2403)*#91, #99, #826, #131)

30.8 Wake-up Operation

30.8.1 General

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**TGba Editor: *Change the paragraph below of this subclause as follows (#CID 2403):***

The WUR AP may transmit a broadcast addressed WUR Wake-up frame (see 30.4.2 (Transmitter ID) and 30.4.5 (Nontransmitter ID)) with the Group Addressed BU subfield of the Misc subfield set to 1 to indicate that group addressed BU(s) are available for all the associated WUR non-AP STA(s).*(#2403)*

The WUR AP may transmit a broadcast addressed WUR Wake-up frame to associated WUR non-AP STA(s) to indicate that a critical update to the BSS parameters has occurred for the associated WUR non-AP STA (see 30.8.2 (WUR AP Operation)). The critical update is indicated in the Counter subfield of the Type Dependent Control field.*(#2403)*

**30.9.3.1 Generation of the IPN by a WUR AP**

**TGba Editor: *Change the paragraph below of this subclause as follows (#CID 2403):***

The WUR AP that intends to transmit a protected WUR frame shall construct the IPN as follows:

…

* If the Common IPN subfield is equal to 0:
	+ IPN = PN0||PN1||PN2||PN3||PN4||PN5, where IPN shall be incremented by one for each transmitted WUR frame using the same temporal key and <ID, Embedded BSSID> duple.
	+ The IPN shall never repeat for protected WUR frames generated using the same temporal key and <ID, Embedded BSSID> duple
	+ The WUR AP shall include PN0||PN1[0:3] (i.e., the PPN) in the Type Dependent Control field of the WUR Wake-up frame, if the WUR Wake-up frame is not broadcast addressed*(#2403)*