### IEEE P802.11Wireless LANs

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| 11ba D6.0 Comment Resolution for editorial 7109 |
| Date: 2020-04-20 |
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Abstract

This submission proposes resolutions for comments of TGba Draft D6.0 with the following CIDs:

7109

Revisions:

* Rev 0: Initial version of the document.

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 D6.0 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGba D6.0 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** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 7109 | 22.7 | 3.2 | A WUR AP may also transmit (only) WUR Short Wake-up frames on a WUR channel.In general, since a WUR Short Wake-up frame is not a special case of a WUR Wake-up frame, all the occurrances of "WUR Wake-up frame" need to be checked, to see if there should be a "... or WUR Short Wake-up frame" added, depending on the context. The statement in 29.9.2 (P119.44, "... may be used interchangably ...") is not sufficient to blanket cover these cases, becuase it says that is according to the rules in this subclause. It's unclear what that means for rules specified elsewhere. One possible solution is to generalize this statement, but it is likely to lead to error to assume that a premissive statement burried in a bullet list within a specific (optional) operation subclause will be noticed to apply globally in contexts where there is no mention of the Short frame operation. | At P22.7, after "WUR Wake-up frames" add ", WUR Short Wake-up frames". At P22.65, after "WUR Wake-up frames" add "and WUR Short Wake-up frames". Same thing (twice) at P27.61, P56.61, P66.12, P89.20, P89.31, P89.45, P89.55, P89.56, P90.11, P90.62, P92.45, P93.11, P94.50, P97.35, P105.38, P107.26, P136.20. At P58.37, after "WUR Wake-up frame" add "or WUR Short Wake-up frame", and also at P58.42 and P68.42 (adding an 's') and P116.59, P116.65, P117.8, P118.15, P118.62, P119.4, P120.30, P120.44, P121.8, P122.1, P122.25, P122.44, P134.14, P178.63. In Table 9-321e, replace "WUR Wake-up frames" with "wake up frames" (7 occurrences); same thing in Table 30-1 (7 occurrences). Same thing at P68.45 and P68.47, and at P122.7, .9 and .10 (without the 's'). At P106.32, change "the WUR Wake-up frame" to "WUR Wake-up frames and WUR Short Wake-up frames". At P115.49, change "individually or group addressed WUR Wake-up frames" to "individually addressed WUR Wake-up or WUR Short Wake-up frames or group addressed WUR Wake-up frames". | Revised – Agree in principle with the commenter. We fix the instances mentioned by the commenter except the following.22.65: No change because WUR Short Wake-up frame is not protected. 27.61: No change because WUR Short Wake-up frame is not protected.56.61: No change because WUR Short Wake-up frame is not protected.89.20: No change because WUR Short Wake-up frame is not protected.89.31: No change because WUR Short Wake-up frame is not protected.89.45: No change because WUR Short Wake-up frame is not protected.89.55: No change because WUR Short Wake-up frame is not protected.89.56: No change because WUR Short Wake-up frame is not protected.90.11: No change because WUR Short Wake-up frame is not protected.90.62: No change because WUR Short Wake-up frame is not protected.92.45: No change because WUR Short Wake-up frame is not protected.93.11: No change because WUR Short Wake-up frame is not protected.94.50: No change because WUR Short Wake-up frame is not protected.97.35: No change because WUR Short Wake-up frame is not protected.121.8: No change because WUR Short Wake-up frame does not indicate group addressed buffered BU.122.10: No change because if WUR short wake-up frame fails, then we retransmit WUR wake-up frame.121.44: No change because WUR Short Wake-up frame does not indicate group addressed buffered BU.TGba editor to make the changes shown in 11-20/0692r0 under all headings that include CID 7109. |

**Discussion:** *None.*

***TGba editor: Change 3.2 Definitions specific to IEEE Std 802.11 as follows (track change on):***

**3.2 Definitions specific to IEEE Std 802.11
*Insert the following definitions maintaining alphabetical order:***

(…existing texts…)

**wake-up radio (WUR) channel:** A channel in which a WUR access point (AP) transmits WUR Short Wake-up frames, WUR Wake-up frames, and WUR Vendor Specific frames.(#7109)

(…existing texts…)

***TGba editor: Change 9.4.2.291 WUR Mode element as follows (track change on):***

**9.4.2.291 WUR Mode element**

(…existing texts…)

**Table 9-321d—Subfields of WUR Parameters field from WUR AP**

|  |  |  |
| --- | --- | --- |
| **Subfield**  | **Definition**  | **Encoding** |
| WUR ID  | A WUR identifier that uniquelyidentifies the WUR non-AP STAwithin the BSS of the AP | The size of the subfield is 12 bits. |
| WUR Channel Offset  | Indicates the offset of the WURchannel on which WUR Short Wake-up frames or WUR Wake-upframes or WUR Vendor Specific frames are transmitted relative tothe WUR primary channel (see29.11 (WUR FDMA operation)).(#7109) | The size of the subfield is 3 bits. Theencoding is described in Table 9-321e(WUR Channel Offset subfield encoding). |

(…existing texts…)

***TGba editor: Change 29.2 WUR channel, WUR primary channel, and WUR discovery channel as follows (track change on):***

**29.2 WUR channel, WUR primary channel, and WUR discovery channel**

A WUR primary channel of a WUR AP is the channel in which the WUR AP transmits WUR Beacon frames (see 29.6.2 (WUR Beacon frame generation)). The WUR primary channel is indicated in the WUR Operating Class and the WUR Channel subfields in the WUR Operation element contained in a Beacon, Association Response, Reassociation Response, or Probe Response frame transmitted by the WUR AP.

A WUR channel of a WUR AP is the channel in which the WUR AP transmits WUR Short Wake-up frames, WUR Wake-up frames, and WUR Vendor Specific frames to an associated WUR non-AP STA.(#7109)

(…existing texts…)

***TGba editor: Change 29.5.1 General as follows (track change on):***

**29.5.1 General**

(…existing texts…)

The list of IDs maintained by the WUR non-AP STA includes:
— A WUR ID for WUR Short Wake-up frames and individually addressed FL WUR Wake-up frames.(#7109)
— A transmitter ID for WUR Beacon, WUR Discovery frames, and for broadcast WUR Wake-up
frames sent by the AP corresponding to the transmitted BSSID.
— A nontransmitter ID for broadcast WUR Wake up frames sent by the AP corresponding to the nontransmitted BSSID.
— A set containing zero or more instances of 12 LSBs of an OUI for WUR Vendor Specific frames.
— A set containing zero or more instances of a group ID for group addressed FL WUR frames and for
VL WUR Wake-up frames.

***TGba editor: Change Table 30-1—TXVECTOR and RXVECTOR parameters as follows (track change on):***

**Table 30-1—TXVECTOR and RXVECTOR parameters**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Condition**  | **Value** | **TXVECTOR** | **RXVECTOR** |
| (…existing texts…) |
| WUR\_ CH\_OFFSET | FORMAT isWUR\_BASIC orWUR\_FDMA | Determines the WUR channel.(#7109)Enumerated type:— 0 indicates the WUR Short Wake-up frames or the WUR Wake-up frame or the WUR Vendor Specific frames is transmitted inthe WUR primary channel.— 1 indicates the WUR Short Wake-up frames or the WUR Wake-up frame or the WUR Vendor Specific frames is transmitted infirst higher frequency 20 MHz channel relative to theWUR primary channel.— 2 indicates the WUR Short Wake-up frames or the WUR Wake-up frame or the WUR Vendor Specific frames is transmitted infirst lower frequency 20 MHz channel relative to theWUR primary channel— 3 indicates the WUR Short Wake-up frames or the WUR Wake-up frame or the WUR Vendor Specific frames is transmitted insecond higher frequency 20 MHz channel relative to theWUR primary channel.— 4 indicates the WUR Short Wake-up frames or the WUR Wake-up frames or the WUR Vendor Specific frames are to be transmitted in second lower frequency 20 MHz channel relativeto the WUR primary channel.— 5 indicates the WUR Short Wake-up frames or the WUR Wake-up frames or the WUR Vendor Specific frames are to be transmitted in third higher frequency 20 MHz channel relative tothe WUR primary channel.— 6 indicates the WUR Short Wake-up frames or the WUR Wake-up frames or the WUR Vendor Specific frames are to be transmitted in third lower frequency 20 MHz channel relative tothe WUR primary channel. | **MU** | **N** |

***TGba editor: Change Table 9-222—TFS Action Code field values as follows (track change on):***

**Table 9-222—TFS Action Code field values**

|  |  |  |
| --- | --- | --- |
| **Bit(s)**  | **Name**  | **Notes** |
| 1  | Notify | If a STA is a WUR non-AP STA:* Setting this field to 1 indicates the STA is to be sent a WUR Short Wake-up frame or a WUR Wake-up frame as described in 29.9 (Wake-up operation) upon the first frame matching to the traffic filter set or the first frame match after the AP receives a Notify Response frame containing the corresponding TFS ID. Setting this field to 0 indicates the AP does not send a WUR Short Wake-up frame or a WUR Wake-up frame to the requesting STA.(#7109)

If a STA is not a WUR non-AP STA:* Setting this field to 1 indicates the STA is to be sent a TFSNotify frame upon the first frame matching to the traffic filter set or the first frame match after the AP receives a NotifyResponse frame containing the corresponding TFS ID. Setting this field to 0 indicates the AP does not send TFSNotify frame to the requesting STA
 |

***TGba editor: Change “Recommended WUR Wake-up Frame Rate field” to “Recommended WUR Short Wake-up Frame or WUR Wake-up Frame Rate field” across the spec***

***TGba editor: Change 9.4.2.291 WUR Mode element as follows (track change on):***

**9.4.2.291 WUR Mode element**

(…existing texts…)

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 Short Wake-up frames or WUR Wake-up frames. The Recommended WUR Wakeup Frame Rate field is set to 1 to indicate that LDR is recommended to be used for WUR Short Wake-up frames or individually or group addressed WUR Wake-up frames transmitted to the WUR non-AP STA. The Recommended WUR Wake-up Frame Rate field is set to 2 to indicate that HDR is recommended to be used for WUR Short Wake-up frames or individually or group addressed WUR Wake-up frames transmitted to the WUR non-AP STA. 3 is reserved.(#7109)

(…existing texts…)

***TGba editor: Change 29.8.3 WUR power management operation for a WUR AP as follows (track change on):***

**29.8.3 WUR power management operation for a WUR AP**

(…existing texts…)

If a WUR non-AP STA is in WUR mode, then:
— The negotiated WUR parameters between the WUR AP and the WUR non-AP STA are maintained
by the WUR AP.
— The WUR AP shall schedule for transmission a WUR Wake-up frame or a WUR Short Wake-up frame for the WUR non-AP STA during a WUR duty cycle service period that is negotiated with the WUR non-AP STA to notify the WUR non-AP STA that the WUR AP intends to have operation with the WUR non-AP STA as described in 29.9.3 (WUR AP operation) and 29.9.4 (WUR non-AP STA operation) if the WUR non-AP STA is in the doze state (see 11.2.1 (General)). The WUR Short Wake-up frame or the WUR Wake-up frame classifies as a keep-alive WUR frame for a WUR non-AP STA that has requested the transmission of keep-alive WUR frames during WUR mode setup.
— The WUR AP shall schedule for transmission a WUR Beacon frame during a WUR duty cycle service period that is negotiated with the WUR non-AP STA as a keep-alive WUR frame if the WUR AP does not schedule for transmission a WUR Short Wake-up frame or a WUR Wake-up frame for the WUR non-AP STA during that WUR duty cycle service period and the WUR non-AP STA has requested the transmission of keep-alive WUR frames during a successful WUR mode setup (see 29.8.2 (WUR mode setup)).

—The existing negotiated service periods between the WUR AP and the WUR non-AP STA for the
WUR non-AP STA’s schedule are suspended, i.e., the WUR non-AP STA is not required to be in
the awake state (see 11.2.1 (General)) during the existing negotiated service period:

• After the WUR AP transmits a WUR Short Wake-up frame or a WUR Wake-up frame addressed to the WUR non-AP STA with an indication of individually addressed buffered BU(s), the WUR AP expects that the WUR nonAP STA is in the awake state (see 11.2.1 (General)) at the earliest service period, which has end time larger than the received time of the frame plus the transition delay indicated by the WUR non-AP STA in the WUR Capabilities elements, following the existing PS operation (e.g., individual TWT) agreed between the WUR AP and the WUR non-AP STA(#7109)

(…existing texts…)

***TGba editor: Change 29.8.4 WUR power management operation for a WUR non-AP STA***

 ***as follows (track change on):***

(…existing texts…)

— The existing negotiated service periods between WUR AP and WUR non-AP STA for the WUR
non-AP STA’s schedule are suspended, and the WUR non-AP STA may be in the doze state (see
11.2.1 (General)) during the negotiated service periods until the schedule is resumed as described
below:

• After the WUR non-AP STA receives a WUR Short Wake-up frame or a WUR Wake-up frame addressed to it from the WUR AP with an indication of individually addressed BU(s), the WUR non-AP STA shall be in the awake state (see 11.2.1 (General)) at the earliest service period, which has end time larger than the
received time of the frame plus the transition delay indicated by the WUR non-AP STA in the
WUR Capabilities element, following the existing PS operation (e.g., individual TWT) agreed
between the WUR AP and the WUR non-AP STA. (#7109)

(…existing texts…)

***TGba editor: Change 29.9.1 General as follows (track change on):***

**29.9.1 General**

(…existing texts…)

A WUR AP shall not send a WUR Short Wake-up frame or a WUR Wake-up frame or a WUR Vendor Specific frame with HDR to associated WUR non-AP STA(s) that does not support HDR as indicated by the 20 MHz WUR PPDU with HDR Support subfield in the WUR Capabilities element sent by the WUR non-AP STA(s). (#7109)

If a WUR AP and an associated WUR non-AP STA support traffic filtering service (TFS) as specified in
11.22.12 (TFS Procedures), then the WUR AP and the WUR non-AP STA may reuse existing traffic filter
sets to control a WUR Short Wake-up frame or a WUR Wake-up frame transmission as described in 29.9.3 (WUR AP operation). (#7109)

(…existing texts…)

***TGba editor: Change 29.9.3 WUR AP operation as follows (track change on):***

**29.9.3 WUR AP operation**

A WUR AP that transmits a WUR Short Wake-up frame or a WUR Wake-up frame to a WUR non-AP STA that indicates the availability of individually addressed BU(s) shall follow the existing operation, which is any PS operation that the WUR AP and the WUR non-AP STA has agreed to use (e.g., active mode and PS mode change, U-APSD, TWT, etc.), to deliver individually addressed BU(s) to the WUR non-AP STA and follow the timing information (e.g., the next service period) that is provided along with the agreed PS operation. (#7109)

NOTE—As described in 29.3 (Channel access), a WUR AP can transmit multiple WUR Wake-up frames in a TXOP
(see 10.24.2.8 (Multiple frame transmission in an EDCA TXOP)).

If the WUR AP schedules a transmission that is not a WUR PPDU to the WUR non-AP STA, the WUR AP
shall verify that either of the conditions below is met:
— The transition delay indicated by the WUR non-AP STA in the WUR Capabilities elements following the most recent transmitted WUR Short Wake-up frame or WUR Wake-up frame intended to the WUR non-AP STA has expired.
— The WUR non-AP STA has indicated that it is in the awake state (see 11.2.1 (General)) by transmitting a frame to the WUR AP. (#7109)

NOTE—The frames scheduled by the WUR AP to be delivered are not limited to individually addressed BU(s).

(…existing texts…)

After a WUR AP sends a WUR Short Wake-up frame or a WUR Wake-up frame with the ID field equal to a WUR ID that identifies a WUR non-AP STA, the WUR AP waits for a timeout interval that is larger than the transition delay indicated by the WUR non-AP STA in the WUR Capabilities elements:
— If the WUR AP receives any transmission from the WUR non-AP STA within the timeout interval,
then the WUR Short Wake-up frame or the WUR Wake-up frame transmission is successful.
— Otherwise, the WUR Short Wake-up frame or the WUR Wake-up frame transmission fails, and the WUR AP may retransmit the WUR Wake-up frame to the WUR non-AP STA(#7109)

(…existing texts…)

***TGba editor: Change 29.9.4 WUR non-AP STA operation as follows (track change on):***

**29.9.4 WUR non-AP STA operation**

A WUR non-AP STA that receives a WUR Short Wake-up frame or a WUR Wake-up frame addressed to it with an indication of individually addressed BU(s) (see 29.9.1 (General)) shall follow existing operation, which is any PS operation the associated WUR AP and the WUR non-AP STA has agreed to use (e.g., power management mode change, UAPSD, TWT, etc.), to retrieve individually addressed BU(s) and follow the wake up timing information
(e.g., the next service period) that is provided along with the agreed PS operation. In this case, the WUR
non-AP STA may be in the doze state (see 11.2.1 (General)) until the time indicated by the wake up timing
information (e.g., the next service period) that is provided along with the agreed PS operation. (#7109)

(…existing texts…)

***TGba editor: Change 30.1 Introduction as follows (track change on):***

**30.1 Introduction**

(…existing texts…)

A WUR non-AP STA may support the following features:
— Reception of a WUR Basic PPDU with 20 MHz channel width, WUR HDR, and single stream.
— Reception of a WUR Beacon frame in one channel at one time and a WUR Short Wake-up frame or a WUR Wake-up frame or a WUR Vendor Specific frame in a different channel at a different time (see 29.11 (WUR FDMA operation)) (#7109)

(…existing texts…)

***TGba editor: Change C.3 MIB Detail as follows (track change on):***

**C.3 MIB Detail**

(…existing texts…)

dot11WURFDMAChannelSwitchImplemented OBJECT-TYPE
SYNTAX TruthValue
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This is a capability variable.
Its value is determined by device capability. This attribute when true,
indicates that the STA is capable of switching the WUR channel for receiving WUR Beacon and WUR Short Wake-up frames or WUR Wake-up frames or WUR Vendor Specific frames that are transmitted in different channels (see 29.11 (WUR FDMA operation)). The capability is disabled otherwise." (#7109)

DEFVAL { false }
::= { dot11WURStationConfigEntry 2}

(…existing texts…)

***TGba editor: Change 9.4.2.291 WUR Mode element as follows (track change on):***

**9.4.2.291 WUR Mode element**

(…existing texts…)

**Table 9-321e—WUR Channel Offset subfield encoding**

|  |  |
| --- | --- |
| **WUR ChannelOffset subfield**  | **Meaning** |

|  |  |
| --- | --- |
| 0  | The WUR Short Wake-up frames or WUR Wake-up frames or the WUR Vendor Specific frames are to be transmitted in the WUR primary channel, which is indicated in the WUR Operation Class and the WUR Channel subfields in the WUR Operation element. (#7109) |
| 1  | The WUR Short Wake-up frames or WUR Wake-up frames or the WUR Vendor Specific frames are to be transmitted in first higher frequency 20 MHz channel relative to the WUR primary channel. (#7109) |
| 2  | The WUR Short Wake-up frames or WUR Wake-up frames or the WUR Vendor Specific frames are to be transmitted in first lower frequency 20 MHz channel relative to the WUR primary channel. (#7109) |
| 3  | The WUR Short Wake-up frames or WUR Wake-up frames or the WUR Vendor Specific frames are to be transmitted in second higher frequency 20 MHz channel relative to the WUR primary channel. (#7109) |
| 4  | The WUR Short Wake-up frames or WUR Wake-up frames or the WUR Vendor Specific frames are to be transmitted in second lower frequency 20 MHz channel relative to the WUR primary channel. (#7109) |
| 5  | The WUR Short Wake-up frames or WUR Wake-up frames or the WUR Vendor Specific frames are to be transmitted in third higher frequency 20 MHz channel relative to the WUR primary channel. (#7109) |
| 6  | The WUR Short Wake-up frames or WUR Wake-up frames or the WUR Vendor Specific frames are to be transmitted in third lower frequency 20 MHz channel relative to the WUR primary channel. (#7109) |

(…existing texts…)

***TGba editor: Change 29.3 Channel access as follows (track change on):***

**29.3 Channel access**

(…existing texts…)

NOTE—When the WUR Channel Offset subfield is equal to 0, the WUR Channel is the same as the WUR primary
channel, i.e., the WUR Short Wake-up frame, the WUR Wake-up frame, the WUR Vendor Specific 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)). (#7109)

***TGba editor: Change 29.8.2 WUR mode setup as follows (track change on):***

**29.8.2 WUR mode setup**

(…existing texts…)

A WUR non-AP STA may indicate in the WUR Mode element its recommendation on which WUR channel
to assign for itself if the WUR FDMA Support subfield in the WUR Capabilities element sent by the WUR
non-AP STA is equal to 1; otherwise, the WUR non-AP STA shall not recommend a WUR channel. The
WUR non-AP STA may indicate in the WUR Mode element its recommendation on which data rate (LDR
or HDR) to use for WUR Short Wake-up frames or individually or group addressed WUR Wake-up frames or WUR Vendor Specific frames transmitted to the WUR non-AP STA if the 20 MHz WUR PPDU with HDR Support subfield in the WUR Capabilities element sent by the WUR non-AP STA is equal to 1; otherwise, the WUR non-AP STA shall not recommend a WUR data rate. The WUR non-AP STA should avoid repeatedly renegotiating WUR power management with the same proposed WUR parameters in the WUR Mode element for the remainder of the association if the WUR AP doesn’t use the recommended value(s) from the WUR non-AP STA. (#7109)

(…existing texts…)