IEEE P802.11
Wireless LANs

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| Comment resolutions for 27.7.3.2 |
| Date: 2018-01-05 |
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Abstract

This submission proposes resolutions for multiple comments related to TGax D2.0 with the following CIDs:

* 11038, 11039, 11348, 11349, 11354, 11839, 11841, 11843, 11873, 11874,
* 11875, 12031, 12522, 13785, 13786, 13787, 13788 (17 CIDs)

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Revised based on discussions during the presentation. Revised text in green.

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 TGax Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGax Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGax Editor: Editing instructions preceded by “TGax Editor” are instructions to the TGax editor to modify existing material in the TGax draft. As a result of adopting the changes, the TGax editor will execute the instructions rather than copy them to the TGax Draft.***

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| --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 11038 | Abhishek Patil | 275.59 | The paragraph is missing description of the 'Last Broadcast Parameter Set' subfield. Delete reference to Implicit subfield. | As in comment | Revised –Agree with the comment. The Implicit subfield is not present in a broadcast TWT element, as it is used as a Last Broadcast Parameter Set indication. Proposed resolution removes the cited portion and adds the normative behavior for setting the Last Broadcast Parameter Set subfield.TGax editor to make the changes shown in 11-18/0663r1 under all headings that include CID 11038. |
| 11039 | Abhishek Patil | 276.08 | The spec provides a mechanism to signal when to expect a change to the TWT Parameter set for a particular TWT session (Setup Command = Alternate along with Persistence field). However, it doesn't provide information on what the change would be. Advertising what is being changed is just as important as when to expect the change. A good example is the Channel Switch Announcement or BSS Color Change Announcement. | As in comment | Revised –Agree in principle with the comment. Proposed resolution accounts for the suggested change.TGax editor to make the changes shown in 11-18/0663r1 under all headings that include CID 11039. |
| 11348 | Alfred Asterjadhi | 277.16 | This is not an or. It is an "And" condition. Replace "or" with "and". | As in comment. | Accepted |
| 11349 | Alfred Asterjadhi | 278.53 | Value of Wake TBTT Negotiation is 0 for an announcment. Replace 1 with 0 in both columns of the first row. Also check throughout this subclause the references to tables. They seem to not be live references. | As in comment. | Revised –Agree in principle with the comment. To avoid ambiguity, the proposed resolution is to remove this portion of the headings, since the settings are already provided in the TWT element and else where. Also providing an instruction to the editor to ensure that all references to subclauses and tables are live references.TGax editor to make the changes shown in 11-18/0663r1 under all headings that include CID 11349. |
| 11354 | Alfred Asterjadhi | 276.18 | How does the STA know what the new values will be? If the STA knows then it can decide whether to continue being a member or not. Easiest way is that when a change in parameters occurs then the AP also advertises the future schedule | As in comment. | Revised –Agree in principle with the comment. Proposed resolution accounts for the suggested change.TGax editor to make the changes shown in 11-18/0663r1 under all headings that include CID 11354. |
| 11839 | Guoqing Li | 275.60 | Regarding "...the Responder PM Mode sugfield to 0". As specified in 27.7.2, an AP is allowed to set Responder PM Mode to 1 for individtual TWT, it should also be allowed to set this bit to 1 for Broadcast TWT | Remove "and the Responder PM Mode subfield to 0" in this sentence. | Revised –Agree in principle. Proposed resolution is to specify that the field may be set to 1. TGax editor to make the changes shown in 11-18/0663r1 under all headings that include CID 11839. |
| 11841 | Guoqing Li | 278.04 | regarding "to indicate that it is in awake state", Active mode can not be in awake state even though it is available to recevie frames. | change to "to indicate that it is in Active mode" or "it is available to receive frames" | Rejected –STAs that are in Active mode are in awake state. Please refer to 11.2.3.2 (STA power management modes):“*Active mode: The STA receives and transmits frames at any time. The STA remains in the awake**state.*” |
| 11843 | Guoqing Li | 278.37 | When AP sets up unsolicted broadcast or individual TWT, it is requiring the STAs to be awake during those TWT SPs. However, there may be times that STAs won't be available due to various activitivies: p2p data exchange, bluetooth connections etc.. Therefore, the unsoclited TWT, Broadcast or individual can only be announced TWT, i.e, the AP needs to make sure the STA is available before start exchangning data frames. Please add statement that unsolicited TWT, broadcast or individual, can only be announced TWT. | Please add statement that unsolicited TWT, broadcast or individual, can only be announced TWT. | Rejected –A STA that has timing issues due to coexistence or overlapping activities have multiple options to solve these issues, send a TWT Information frame that suspends/resumes the schedule in those times, or simply tear down the session/schedule. No further changes are needed for this case. |
| 11873 | Hemanth Sampath | 278.19 | What is the need to differentiate the case where b-TWT element is carried in a broadcast mgmt frame versus an individually addressed mgmt frame to negotiate (or change/terminate)? Keep Wake TBTT operation and corresponding field separate from Broadcast TWT operation. Same comment applies to 3rd and 4th paragraph in section 27.7.3.3 | Delete the referenced paragraphs. Simplify the procedure - AP/STA can exchange individually addressed mgmt frames containing B-TWT element (Broadcast subfield = 1) to negotiate membership (i.e., joining or leaving) of a TWT schedule (identified based on Broadcast TWT ID). | Revised –Agree in principle with the comment. The comment resolution for CID 11007 that was approved last F2F renamed these two fields as one field “Negotiation Type”. Proposed resolution is to use the same terminology throughout this subclause. There is a need to differentiate between individually addressed and broadcast MGMT frames, because one is used to indicate joining/leaving a schedule, while the later one is used to specify the schedule and its parameters.TGax editor to make the changes shown in 11-18/0663r1 under all headings that include CID 11873. |
| 11874 | Hemanth Sampath | 278.33 | Update the note to remove any dependency on Wake TBTT subfield. It shouldn't matter if the b-TWT element is carried in negotiation frame (individually addressed) or broadcasted. Same comment applies to Note 1 after Table 27-4 | As in comment | Revised –Agree in principle with the comment. The comment resolution for CID 11007 that was approved last F2F renamed these two fields as one field “Negotiation Type”. Proposed resolution is to use the same terminology throughout this subclause. There is a need to differentiate between individually addressed and broadcast MGMT frames, because one is used to indicate joining/leaving a schedule, while the later one is used to specify the schedule and its parameters.TGax editor to make the changes shown in 11-18/0663r1 under all headings that include CID 11874. |
| 11875 | Hemanth Sampath | 278.44 | Remove reference to Wake TBTT Negotiation subfield from the table. B-TWT element carried in a unicast negotiation frames doesn't require a separate indication. The fact that it is in an individually addressed frame means that it is meant for the addressed STA. Same comment applies to Table 27-4. | Remove reference to Wake TBTT Negotiation subfield from the table. Also, shorten the column titles by removing any reference to the Broadcast and Wake TBTT Negotiation subfields. | Revised –Agree in principle with the comment. The comment resolution for CID 11007 that was approved last F2F renamed these two fields as one field “Negotiation Type”. Proposed resolution is to use the same terminology throughout this subclause. There is a need to differentiate between individually addressed and broadcast MGMT frames, because one is used to indicate joining/leaving a schedule, while the later one is used to specify the schedule and its parameters.TGax editor to make the changes shown in 11-18/0663r1 under all headings that include CID 11875. |
| 12031 | Jarkko Kneckt | 314.37 | The Announced TWT should be the mechanism how TWT SPs are initiated in ID 0 TWT Flows. When TWT ID 0 is used, the AP should receive a UL data / null frame before it may send data to a STA in power save mode and has not transmitted a frame in the ongoing beacon interval. This ensures good power save for STAs using BC TWT, because too frequent wakeups increase STA power consumption. | Reduce the TWT types that can be used after TWT ID 0 to announced or OPS TWT. Require that in these cases the TWT SP shall be initiated as in announced TWT, i.e. A STA in power save mode shall transmit an UL frame in the beacon interval before the AP may send DL data frame to the STA. This ensures that STAs are not needed to wake up for the TWT unless they have data to transmit. | Revised –Agree in principle that the rules between the broadcast ID of 0 and the rules for nonzero should be clearly separated. However, the unannounced delivery is always viable in the nonzero broadcast TWT ID case provided that the STA joins it or is assigned to. Proposal is to clearly indicate this separation.TGax editor to make the changes shown in 11-18/0663r1 under all headings that include CID 12031. |
| 12522 | Liwen Chu | 279.01 | Condition parts of Alternae TWT and Reject TWT don't consider persistent field. | Fix the issue mentioned in comment. | Revised –Agree in principle with the comment. Proposed resolution clarifies the relation with the persistence field.TGax editor to make the changes shown in 11-18/0663r1 under all headings that include CID 12522. |
| 13785 | Yanjun Sun | 275.59 | The Implicit subfield is overloaded when Broadcast subfield is 1. It is called the 'Last Broadcast Parameter Set' subfield and indicates whether or not this is the last TWT parameter set in the TWT element. | Update the sentence to remove reference to the Implicit subfield. Add a new sentence with makes reference to the overloaded subfield name and describe the operation (i.e., what it means when the value is 0 versus 1). | Revised –Agree with the comment. The Implicit subfield is not present in a broadcast TWT element, as it is used as a Last Broadcast Parameter Set indication. Proposed resolution removes the cited portion and adds the normative behavior for setting the Last Broadcast Parameter Set subfield. The instructions to the editor below refer to the resolution of CID 11038 that points to the same issue and is resolved in doc 11-180662r1.TGax editor to make the changes shown in 11-18/0662r1 under all headings that include CID 11038. |
| 13786 | Yanjun Sun | 276.04 | The procedure to update or terminate a b-TWT schedule doesn't work for STAs in lower power mode that have negotiated a long Wake TBTT schedule (or have a long Listen interval). Since the Broadcast TWT Persistence subfield is only 3-bits long, it can represent only up to 6 beacon intervals (BIs) [value 7 is reserved]. This is is way too short. A TWT STA that is skipping beacons (due to long Wake TBTT negotiated interval or long Listen interval) can easily miss such an announcement. | Increasing the size of the Broadcast TWT Persistence field to at least 1 octet. Define an encoding scheme so the field can represent larger intervals and consider having the update interval to be DTIM instead of a Beacon interval. | Revised –This was already addressed as part of the comment resolution for CID 11005, which most of the changes are already present in the IEEE802.11ax D2.3. Proposed resolution is to specify that the normative behavior in this subclause is inline with those changes.TGax editor to make the changes shown in 11-18/0663r1 under all headings that include CID 13786. |
| 13787 | Yanjun Sun | 276.08 | An AP should indicate the new set of TWT parameters when advertising an upcoming change to the schedule | As in comment | Revised –Agree in principle with the comment. Proposed resolution accounts for the suggested changes.TGax editor to make the changes shown in 11-18/0663r1 under all headings that include CID 13787. |
| 13788 | Yanjun Sun | 276.24 | It is not clear if Trigger subfield = 0 means AP shall not be transmitting any TFs during the TWT SPs corresponding to that TWT schedule. | As in comment | Revised –Agree in principle with the comment. Proposed resolution clarifies that the AP does not intend to transmit any TFs during the non-trigger-enabled TWT, however it might send (i.e, it is not forbidden to do so).TGax editor to make the changes shown in 11-18/0663r1 under all headings that include CID 13788.TGax editor to make the changes shown in 11-18/0663r1 under all headings that include CID AA. |

**Discussion:** *The changes tagged with (#AA) are part of the harmonization of passed CRs in the TWT element, which changes were not spread to this subclause or are part of harmonization with CIDs in other subclauses that asked similar changes.*

**27.7 TWT operation**

**TGax Editor: *Replace the references to tables, figures, and tables with their respective live references in this subclause, and its subsubclauses (#CID 11349).***

* Rules for TWT scheduling AP(#6919)

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 11038, 11839, 13785):***

A TWT scheduling AP(#6919) may transmit a broadcast TWT announcement by including a broadcast TWT element in a Beacon frame that is scheduled at a TBTT (see 11.1.3.2 (Beacon generation in non-DMG infrastructure networks)). The TWT scheduling AP(#6919) shall include one or more TWT parameter sets in the TWT element, and each TWT parameter set may indicate a periodic occurrence of TWTs. The TWT scheduling AP shall set the Last Broadcast Parameter Set subfield to 0 in each TWT parameter set except for that the last (or only) TWT parameter set of the TWT element that shall have the Last Broadcast Parameter Set subfield set to 1. The TWT scheduling AP(#6919) shall set the NDP Paging Indicator subfield to 0, the Negotiation Type subfield to 2(#4845) and may set the Responder PM Mode subfield to 1 in the TWT element (see 10.43.7 (TWT Sleep Setup))*(#11038, 11839, 13785)*. Each TWT parameter set specifies the TWT parameters of a specific broadcast TWT that are valid within a broadcast TWT SP. Each specific broadcast TWT is identified as indicated in 27.7.3.1 (General). Individual STAs may have membership in broadcast TWTs as the result of negotiation with a TWT scheduling AP as described in 27.7.3.1 (General).(#4845)

 (#8145, #8130, #9576)The TWT scheduling AP(#6919) sets the TWT parameters of each TWT parameter set as described below.

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

* The TWT scheduling AP(#6919) shall set the TWT Request subfield to 0 and the TWT Setup Command subfield as defined in Table 27-3 (Broadcast TWT announcements) and shall include the broadcast TWT element in the Beacon frames for as long as there is at least one active broadcast TWT schedule. *(#AA)*

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 13786):***

shallExponent and Broadcast Persistence Mantissa sTBTTsTBTTTBTT *(#13786)*

A TWT scheduling AP that sets the TWT Setup Command subfield to Reject TWT shall indicate the TBTT at which the periodic broadcast TWT will be terminated by setting the Broadcast TWT Persistence Exponent and Broadcast TWT Persistence Mantissa subfields to indicate the number of TBTTs that remain until broadcast TWT schedule is terminated. The broadcast TWT schedule terminates at the next TBTT, which follows the TBTT at which the TWT scheduling AP transmits the broadcast TWT element with Broadcast TWT Persistence Mantissa subfield for that broadcast TWT schedule equal to 0.*(#13786)*

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 11039, 13787, 11354, 13786, AA):***

A TWT scheduling AP that sets the TWT Setup Command subfield to Alternate TWT shall indicate the TBTT at which the periodic broadcast TWT parameter set will be modified by setting the Broadcast TWT Persistence Exponent and Broadcast TWT Persistence Mantissa subfields to indicate the number of TBTTs that remain until the broadcast TWT schedule is modified. The broadcast TWT schedule will be modified at the next TBTT, which follows the TBTT at which the TWT scheduling AP transmits the broadcast TWT element with Broadcast TWT Persistence Mantissa subfield for that broadcast TWT schedule equal to 0. The AP should include in the broadcast TWT element the modified broadcast TWT parameter set that will take effect at that TBTT. The modified broadcast TWT parameter set shall have the same values in the TWT Setup Command and Broadcast TWT ID subfields as the broadcast TWT parameter set that is being modified and switch the TWT Setup Command subfield from Alternate TWT to Accept TWT at that TBTT.*(#11039, 13787, 11354, 13786)*

TBTTs t when t*(#AA)*

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 13788):***

The TWT scheduling AP(#6919) shall set the Trigger field to 1 to indicate a trigger-enabled TWT. Otherwise, it shall set the Trigger field to 0 (i.e., the TWT is not a trigger-enabled TWT)(#7420). The AP is not expected to schedule for transmission Trigger frames during a non-trigger-enabled TWT SP and is expected to schedule Trigger frames during a trigger-enabled TWT SP as described below.*(#13788)*

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

The TWT scheduling AP(#6919) shall schedule for transmission of(#10280) a Trigger frame addressed to one or more TWT scheduled STAs during a trigger-enabled TWT SP. A TWT scheduling AP(#6919) should not include the 12 LSBs of the(#7817) STA's AID in a User Info field of a Trigger frame transmitted within a broadcast TWT SP unless the STA is in the awake state, has established membership in the broadcast TWT with that Broadcast TWT ID, or has indicated to receive the Beacon preceding the beacon interval that contains this TWT SP (see 27.7.6 (Negotiation of wake TBTT and wake interval)) (#7398, #6044, #7635, #4847).*(#AA)* The TWT scheduling AP shold poll as many STAs as possible among TWT scheduled STAs that are members of that nonzero Broadcast TWT ID so that the STAs can perform a frame exchange with the TWT scheduling AP during that TWT SP.*(#AA)*

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

The TWT scheduling AP(#6919) that intends to transmit additional Trigger frames during a trigger-enabled TWT SP shall set the More TF field of the Trigger frame to 1 to indicate that it will transmit another Trigger frame within the same TWT SP. The TWT scheduling AP(#6919) shall set the More TF field to 0 when the Trigger frame is the last Trigger frame of the TWT SP or when the Trigger frame is sent outside of a trigger-enabled TWT SP(#4848).*(#AA)*

NOTE 1—The TWT scheduling AP(#6919) does not(#7821) intend to schedule for transmission of(#10280) a Trigger frame for the TWT scheduled STA when the broadcast TWT is not a trigger-enabled TWT or when the TWT scheduled STA has sent an OM Control field(#4727) that has the UL MU disable bit equal to 1 (see 27.8 (Operating mode indication)).

NOTE 2—The Trigger frame can also be an UMRS Control field(#Ed) contained in an MPDU carried in a DL MU PPDU, provided that the AP allocates enough resources in the HE TB PPDU for the STA to at least deliver its BSRs in response to the soliciting DL MU PPDU(#4849).

The TWT scheduling AP(#6919) shall set the Flow Type field to 1 to indicate an unannounced TWT. Otherwise, it shall set the Flow Type field to 0 to indicate an announced TWT.

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID AA, 12031):***

The TWT scheduling AP(#6919) should schedule delivery of individually addressed DL BUs during unannounced TWT SPs with nonzero Broadcast TWT ID subfield. If the TWT scheduling AP has scheduled a zero value Broadcast TWT ID then the AP shall schedule the delivery of group addressed DL BUs during the unannounced TWT SPs that are located within the beacon interval that follows the DTIM Beacon frame.*(#AA)*

The TWT scheduling AP(#6919) shall set the TWT Flow Identifier field according to Table 9.262kl (TWT Flow Identifier field for a broadcast TWT element)(#8132). The TWT scheduling AP shall set the Trigger field to 1 if the TWT Flow Identifier field is 1 or 2, and may set the Trigger field to any value if the TWT Flow Identifier field is 0 or 3.*(#12031)* (#7631)A Trigger frame transmitted during a broadcast TWT SP whose TWT parameter set has the TWT Flow Identifier subfield equal to 0 or 3(#7632) may contain zero or more random access RU(17/646r4) (see 27.5.5 (UL OFDMA-based random access (UORA))). A Trigger frame transmitted during a broadcast TWT SP whose TWT parameter set has the TWT Flow Identifier subfield equal to 1 shall contain no random access RU.(17/646r4)

At least one of the Trigger frames transmitted during a broadcast TWT SP whose TWT parameter set has the TWT Flow Identifier subfield equal to 2 shall contain at least one random access RU(17/646r4) (see 27.5.5 (UL OFDMA-based random access (UORA))). The TWT scheduling AP shall additionally follow the rules defined in 27.14.2 (Power save with UORA) if the Broadcast TWT ID subfield is 0.*(#12031)*

The TWT scheduling AP sends a TIM frame or FILS Discovery frame at the start of a broadcast TWT SP whose TWT parameter set has the TWT Flow Identifier subfield equal to 3. The TWT scheduling AP shall additionally follow the rules defined in 27.14.3.2 (AP operation for opportunistic power save) if the Broadcast TWT ID subfield is 0.*(#12031)* (#7399)The TWT scheduling AP(#6919) shall set the TWT field to the TSF timer [10: 25] at which the first TWT is scheduled for this TWT parameter set..*(#AA)*

NOTE—Bits 0 to 9 of the target wake time obtained from the TWT field are assumed to be zero.*(#AA)*

The TWT scheduling AP(#6919) shall include a nonzero value for the TWT wake interval in the TWT Wake Interval Exponent and TWT Wake Interval Mantissa fields for a periodic TWT and a zero value for an aperiodic TWT.

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 11348):***

The TWT parameters are valid for each successive TWT of the periodic TWT and*(#11348)* for the only TWT of the aperiodic TWT.

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 13786):***

 *(#13786)*

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 11039, 13787, 11354, 13786):***

The TWT scheduling AP shall include a unique value in the Broadcast TWT ID subfield for each Broadcast TWT to allow identification of each Broadcast TWT except when the TWT Command is Alternate TWT.*(#11039, 13787, 11354, 13786)*

The TWT scheduling AP(#6919) may set the TWT Protection field to 1 to indicate that TXOPs within the TWT SP shall be initiated with a NAV protection mechanism defined in 10.3.2.4 (Setting and resetting the NAV), 27.2.5 (MU-RTS/CTS procedure), or CTS-to-self as described in 10.3.2.13 (NAV distribution); otherwise it shall set it to 0.

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

A TWT scheduling AP(#6919) that receives a PS-Poll or an APSD trigger frame or any other indication from a TWT scheduled STA that is in PS mode that the STA is in the awake state during, or prior to the start of *(#AA)* an announced TWT SP shall follow the rules defined in 11.2.3.6 (AP operation during the CP)(#5084) to deliver buffered BUs to the STA except that it may deliver multiple buffered BUs as defined here(#5665). A TWT scheduling AP that sends frames to a TWT scheduled STA that is in PS mode during an unannounced TWT SP shall follow the rules defined in 11.2.3.6 (AP operation during the CP) to deliver buffered BUs to the STA except that it may deliver multiple buffered BUs as defined here.(#5660) A TWT scheduling AP(#6919) may deliver multiple buffered BUs to the TWT scheduled STA during:

* An announced TWT SP, without following the rules regarding the number of buffered BUs to be delivered in 11.2.3.6 (AP operation during the CP)(#5084) as long as the BU delivery does not exceed the duration of the TWT SP and the TWT scheduled STA has indicated to be awake for that TWT SP(#4840) and as long as the TWT scheduled STA has not entered the doze state (see 27.7.4.2 (TWT information for individual TWT) and 27.7.5 (PS operation during TWT SPs)).
* An unannounced TWT SP, without following the rules regarding the number of buffered BUs to be delivered in 11.2.3.6 (AP operation during the CP)(#5084) as long as the BU delivery does not exceed the duration of the TWT SP and as long as the TWT scheduled STA has not entered the doze state (see 27.7.4.2 (TWT information for individual TWT) and 27.7.5 (PS operation during TWT SPs)).(#9313, #5664, #4851)

NOTE—The TWT scheduling AP(#6919) can deliver the buffered BUs in an A-MPDU under a BlockAck agreement if the TWT is an announced TWT and the TWT scheduled STA is awake for that TWT SP, or if the TWT is an unannounced TWT (at the start of which the TWT scheduled STA is assumed to already be awake)*(#AA)*(#4840). The TWT scheduling AP can exceed the duration of the TWT SP if the TWT scheduled STA is in Active mode.(#9313, #5664)

A TWT scheduling AP may transmit to a TWT scheduled STA that is in Active mode at any time.

NOTE—A TWT scheduled STA that is in the Active mode does not need to transmit a frame during an announced TWT SP to indicate that it is in the awake state.

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

* *(#AA)*

*(#AA)***TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 11873):***

A TWT scheduling AP that receives a TWT element with the TWT Request field equal to 1, the Negotiation Type subfield equal to 3 and the TWT Command field set to Suggest or Demand may respond with a frame containing a TWT element as shown in Table 27aa (Broadcast TWT Membership exchanges).*(#11873)* (#4767)(#4846)(#4777)(#4778) (#4779) (#5777) (#5778) (#7210) (#7211) (#7212) (#7213) (#7214) (#7215) (#8423)

A TWT scheduling AP that receives a TWT element with the TWT Request field equal to 1, the Negotiation Type subfield equal to 3 and the TWT Command field set to Reject shall delete the membership of the STA corresponding to the TA of the MMPDU that contained the TWT element from the broadcast TWT schedule that has the Broadcast TWT ID value that is equal to the value of the Broadcast TWT ID field of the TWT element.*(#11873)* (#4767, #4846, #4777, #4778, #4779, #5062, #5777)

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 11874):***

 *(#11874)*(#7402)

Valid broadcast TWT announcements are described in Table 27-3 (Broadcast TWT announcements).(#7210, #7211, #7212, #7213, #7214, #7215)

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 12522, 11349, 11875, 11874, AA):***

|  |
| --- |
| * Broadcast TWT announcements
 |
| Initiating frame: TWT Setup Command field value within a TWT Setup frame transmitted from a first STA to a second STA*(#11349, 11875)* | Response frame: TWT Setup Command field value within a TWT Setup frame transmitted from the second STA to the first STA *(#11349, 11875)* | Condition after the completion of the exchange(#8425) |
| Accept TWT*(#AA)* |  No frame transmitted | Only an HE AP is permitted to transmit this sequence. TWT scheduled STAs that receive this frame use the provided TWT parameters to determine the broadcast TWT schedule.*(#AA)* The broadcast TWT schedule is identified by the broadcast TWT ID and the TA of the initiating frame. |
| Alternate TWT |  No frame transmitted | When transmitted by a TWT scheduling AP, some of the parameters of the broadcast TWT schedule identified by the broadcast TWT ID and the TA of the initiating frame will change at the TBTT that occurs after the Broadcast TWT Persistence Mantissa field of that broadcast TWT parameter set reaches 0.*(#12522)* The new parameters will be present in the the first Beacon frame transmitted by the TWT scheduling AP at the TBTT, which has a broadcast TWT parameter set with the same broadcast TWT ID and same TA, but with the TWT command value set to Accept TWT.*(#12522)* |
| Reject TWT |  No frame transmitted | When transmitted by a TWT scheduling AP, the broadcast TWT schedule identified by the broadcast TWT ID and the TA of the initiating frame will be terminated at the TBTT that occurs after the Broadcast TWT Persistence Mantissa field of that broadcast TWT parameter reaches 0.*(#12522)* The termination occurs at the TBTT at which a Beacon frame is transmitted by the TWT scheduling AP that does not include a broadcast TWT parameter set with the same broadcast TWT ID and same TA as the initiating frame.*(#12522* |
| NOTE—MMPDUs that contain a broadcast TWT element generated by a TWT scheduling AP can be broadcast Probe Response, FILS Discovery, and Beacon frames. The TWT element has the TWT Request field equal to 0 and the Negotiation Type subfield equal to 2. The TWT scheduling AP can include a TWT parameter set with Broadcast TWT ID value 0 to indicate a TWT allocated for all STAs, and Broadcast TWT ID greater than 0 to indicate a TWT intended to TWT scheduled STAs that are members of that broadcast TWT.*(#11874)* |