IEEE P802.11  
Wireless LANs

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| Comment resolution for 27.7.2 (Block 1) | | | | |
| Date: 2017-05-01 | | | | |
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Abstract

This submission proposes resolutions for multiple comments related to TGax D1.0 with the following CIDs (47 CIDs):

* 4839, 4840, 4841, 4842, 5033, 5657, 5658, 5659, 5660, 5661, 5907, 5966, 5967, 6033, 6745, 6747, 7171, 7188, 7620, 7621, 7622, 7623, 7624, 7625, 7626, 7820, 7821, 8097, 8224, 8285, 9574, 9743, 9931, 9932, 9933, 9934, 5890, 6739, 6740, 6741, 6742, 6743, 6744, 7112, 7113, 10278, 10279

Revisions:

* Rev 0: Initial version of the document (CIDs in green are in the editor’s tab).

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** |
| 4839 | Alfred Asterjadhi | 181.33 | The UL MU Response Scheduling A-Control field can be considered as a Trigger frame if at least it allocates resources for the STA to deliver BSRs. | Clarify the specified condition. | Revised –  Agree in principle with the comment. Proposed resolution clarifies the condition as suggested.  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 4839. |
| 4840 | Alfred Asterjadhi | 181.55 | What does the fact that the STA follows APSD have to do with TWT? Please clarify. Also ensure that these conditions are the same for both individual and broadcast TWT for consistency. | As in comment | Revised –  Agree in principle with the comment that it does not have dependency on the PS feature being used by the non-AP STA, but rather depends on the fact that the STA is awake or not. Proposed resolution clarifies this by simply removing that statement and adding a clarificationin the following note. Changes located in two subclauses.  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 4840. |
| 4841 | Alfred Asterjadhi | 182.8 | These are the conditions for individually negotiated TWTs, not for TFs with random access. Please remove the condition on random access allocation. Also the term Cascade Indication is confusing as it is also use fro MU Cascade operation. | Clarify as suggested in the comment. | Revised –  Agree in principle. Proposed resolution is to remove the condition for random allocation, inline with suggestion for CID 5658 as well.  As for the Cascade Indication the proposed resolution is to keep the same name as it is since the differentiation of the features mainly depend on the location of the normative behaviors.  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 4841. |
| 4842 | Alfred Asterjadhi | 182.10 | These are exclusive conditions (based on EOSP setting of the soliciting frame) on whether the soliciting frame does or does not solicit an acknowledgment. Ensure that this consistency is clear. | As in comment. | Revised –  Agree in principle. Proposed resolution accounts for the suggested changes. Changes located in two subclauses.  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 4842. |
| 5033 | Chittabrata Ghosh | 34.37 | Individual TWT agreements discuss about UL MU operation either in Trigger-enabled TWT SP or in unannounced TWT SP; however, STA should be allowed to transmit SU PPDU within a TWT SP; explicit channel access behavior should be described to allow SU PPDU; | Suggest to mention about channel access for SU PPDU transmission within TWT SP using individual TWT agreements | Revised –  The comment refers to P34L37 but the page, line seems to be incorrect. From the context of the comment it seems to be targeting P181L12-16 where it is recommended for STAs to not access the medium (however it is still free to do so). Proposed resolution is to clarify that while the STA is not recommended to access the medium it is still permitted to do so. Please note that there is no need to explicitly call out channel access behavior because such behavior is baseline, unless explicitly forbidden (which it is not).  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 5033. |
| 5657 | Guoqing Li | 180.44 | "..otherwise it is an iimpclit TWT", this sentence is misleading in that it reads like trigger-enabled and implicit are two equavalent alternativies. However, even if a TWT is trigger-enabled, it is still an implicit TWT since the implcit subfield shall set to 1. | change to "..otherwise it is not a trigger-enabled TWT" | Revised –  Agree in principle with the comment. Proposed resolution accounts for the suggestion.  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 5657. |
| 5658 | Guoqing Li | 182.6 | Why the condition includes the exsistence of an random RU? | remove "and does not allcoate any random RU during an unannounced TWT" | Accepted |
| 5659 | Guoqing Li | 182.6 | If cascade indication is 0 allows STA to go to doze mode, then the cascade indication is similar to an EOSP indication. This needs to be defined in the trigger frame format and other parts that explain what this indication is. It is more than an indication that there will not be trigger anymore. This is also related to whether the AP is allowed to send DL traffic or not. | remove case 1) from the early TWT SP termination event list, or define more clearly that this indication is similar to EOSP bit. | Revised –  Agree in principle with the comment that event 1) needs further clarification. Proposed resolution is inline with suggested change from CID 9743 that proposes to clarify that item 1) or a) now is subject to no frame exchange has occurred with the STA from the start of the TWT.  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 5659. |
| 5660 | Guoqing Li | 182 | case 3 and 2 are more related to whether the frame is solicitng an acknoledgement or not. And even in case 2) the STA recevies a frame with EOSP bit set to 1 which is the condition in 3). | Clarify the difference between case 3) and 2) | Revised –  Agree with the comment. Proposed resolution clarifies the inconsistency as suggested by the comment.  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 5660. |
| 5661 | Guoqing Li | 182.20 | The QoS Info field in REVmc is difined differently for AP and STA, and for AP the format of the QoS info field does not contain "more data ACK" field. This is inconsistent with this paragraph which assumes both requesting and responding STA can use this field to indicate the support of more data ACK. | Modify the QoS info field to include a field called "More Data ACK" field for AP. | Revised—  Agree with the comment. The proposed resolution is to modify the QoS Info field as suggested. This change has already been incorporated in D1.2 as part of comment resolutions for CIDs 4721, 5189, 8367, 9355.  Note to TGax editor: No changes are needed to resolve this CID.  TGax editor to make the changes shown in 802.11ax D1.2 with tags for CIDs 4721, 5189, 8367, and 9355. |
| 5907 | James Yee | 180.58 | It is not very clear which rules are superceded by which even though the text only says "respective rules". | Please clarify. | Revised –  Inline with the new editorial style guide the draft explicitly mentions in the HE subclause the rules that supercede the ones in baseline. Essentially all rules defined here are the most recent ones, and if anything is missing hten the reader can go and check in the baseline those missing rules. Proposed resolution is to clarify that all the rules defined here supersede those in baseline.  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 5907. |
| 5966 | Jarkko Kneckt | 180.49 | The TWT Channel subfield should not force the STA to operate only in 20 MHz mode during the TWT SPs. If TWT SPs with different TWT Channel values overlap it is not clear how STA operates. Should the STA operate in multiple 20 MHz channels or in the larger BW. The RX Operating mode also coordinates the BW of the STA. When BW signaling through ROMI and TWT signaling complicates the BW handling. | Please clarify whether the TWT Channel define the primary channel of the STA for the TWT duration. Please clarify what is meant by 20 MHz operation. Please clarify how a STA operates if it is served by two or more overlapping TWT SPs with different TWT Channel values. Please clarify how ROMI and TWT Channel signaling interact. | Revised –  Proposed resolution is to specify that the TWT channel width is set to 0, as suggested by CID 7621, which eliminates the need to answer all these questions.  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 5966. |
| 5967 | Jarkko Kneckt | 180.51 | It is not clear what mechanisms are included to the "NAV protection mechanism"; required by the protection field of the TWT. | Please clarify whether a transmission of a data frame with non-zero Duration field as the first frame in the TXOP belongs to the NAV protection mechanisms required by the Protection field? | Rejected –  The statement is already clear in listing what NAV protection mechanism is specified, quoting: …initiated with a NAV protection mechanism, such as (MU) RTS/CTS, or CTS-to-self frame”. |
| 6033 | Jarkko Kneckt | 180.53 | The protection field of TWT parameters should be set to 0 in the Triggered and unannounced TWTs, because the AP should have flexibility to decide whether it desires to use NAV protection mechanism. | Please add a sentence:" The TWT Protection field shall be set to 0 in Triggered and unannounced TWTs." | Rejected –  The AP can always respond with a TWT response frame that has a TWT Protection field set to 0. As such it already has the flexibility desired by the commenter. |
| 6745 | John Coffey | 181.38 | Inconsistent terminology: here we have "the trigger-based PPDU", whereas almost everywhere else in the draft we have "the HE trigger-based PPDU". If the same thing is intended, the same term should be used. | Change to "the HE trigger-based PPDU". | Revised –  Agree with the comment. Proposed resolution accounts for the suggested change and applies it throught the draft.  TGax editor to replace “[HE] trigger-based PPDU” with “HE TB PPDU” throughout the draft.  TGax Editor to insert the following acronym definition (maintaining alphabetical order):  “TB Trigger-based” |
| 6747 | John Coffey | 181.40 | Inconsistent terminology: here we have "the trigger-based PPDU", whereas almost everywhere else in the draft we have "the HE trigger-based PPDU". If the same thing is intended, the same term should be used. | Change to "the HE trigger-based PPDU". | Revised –  Agree with the comment. Proposed resolution accounts for the suggested change and applies it throught the draft.  TGax editor to replace “[HE] trigger-based PPDU” with “HE TB PPDU” throughout the draft.  TGax Editor to insert the following acronym definition (maintaining alphabetical order):  “TB Trigger-based” |
| 7171 | kaiying Lv | 181.42 | One TWT SP may include multiple TWT agreements negotiated by STAs with an AP which is any member of multiple BSSID set. Therefore a trigger frame is intended for TWT requesting STAs if it is sent by the AP to which the STAs are associated or by any member of the multiple BSSID set. | Please change the text as follows "A trigger frame is intended for one or more TWT requesting STAs if it is sent by the AP to which the STAs are associated or by any member of the multiple BSSID set. " | Revised –  Disagree in principle with the comment and the proposed change. The Trigger is not intended for the STA is the TA of the Trigger frame is not the BSS to which the STA is associated to. The only case that needs a clarififcation is when the Trigger frame contains in the TA the transmitted BSSID which is described in 27.5.2.2.2. As such the propsed reolution is to add this in the note for clarification purposes, in this subclause and the respective note in the broadcast TWT subclause.  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 7171. |
| 7188 | kaiying Lv | 180.44 | Change "otherwise it is an implicit TWT" to "otherwise it set the Trigger field to 0 to indicate it is an implicit TWT with no trigger." | As in comment | Revised –  Agree in principle with the comment. Proposed resolution is inline with the proposed change, using the wording proposed by CIDs 5657.  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 7188. |
| 7620 | Liwen Chu | 180.31 | Change "If the TWT responding STA is an AP then it may set the Responder PM Mode subfield to 1 only if all non-AP STAs, which are associated to it, indicate support of TWT in the role of a TWT requester" to "If the TWT responding STA is an AP then it may set the Responder PM Mode subfield to 1 only if all non-AP STAs, which are associated to it, indicate support of TWT in the role of a TWT requester and the AP announces the TWT Required subfield to 1 in its HE Operation element" | As in comment | Revised –  Agree in principle with the comment (motivation is that the AP indicates its intention to use TWT for its own PS benefit by requiring STAs to negotiate individual TWTs, so that all STAs are aware of the APs sleep schedule). Proposed resolution editorially arranges the proposed change.  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 7620. |
| 7621 | Liwen Chu | 180.48 | 20MHz operation can be indicated by OMI, operation mode management frame. It is not necessary to add another method. | Change "May set the TWT Channel subfield in the TWT element it transmits to a value that corresponds to the primary channel of the BSS to indicate a 20 MHz operation; otherwise it shall set it to 0" to "Shall set the TWT Channel subfield in the TWT element it transmits to 0" | Accepted |
| 7622 | Liwen Chu | 181. 4 | This is not necessary for the following reasons: 1, TWT Information can do this. 2, TWT Information provide accurate behavior, something can be done something can't be done. 3, with unsolicited TWT response, anything can be done which is bad. | Remove "An HE AP may send an unsolicited TWT response frame with the Trigger subfield equal to 1 to an HE non- AP STA that has set the TWT Requester Support subfield to 1 in the HE Capabilities elements that it transmits to the AP." | Rejected –  The TWT response allocates the individual TWTs for the STAs so that the AP can schedule these STAs together. TWT Infromation cannot do it because TWT information is once in a while information that reschedules already setup TWTs |
| 7623 | Liwen Chu | 181. 13 | "(for both implicit TWT and trigger-enabled TWT)" should be "(for both non trigger-enabled TWT and trigger-emabled TWT)" | As in comment | Revised –  Agree in principle with the comment. The text is superfluous so the proposed resolution is to simply remove it.  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 7623. |
| 7624 | Liwen Chu | 181. 19 | With these rules, a trigger-enabled TWT allows DL MU with Trigger/A-Control trigger + UL MU acknowledgement only frame exchange. But DL MU +BA/Ack+BAR+BA frame exchange is disallowed. | Allow DL MU +BA/Ack+BAR+BA frame exchange in Trigger-enabled TWT. The simple way is to define trigger-enabled TWT as the STA's transmission is always triggered/solicited by AP's transmission. | Rejected –  The comment fails to identify a technical issue. There is no normative behavior in none of these subclauses that forbid the AP to send DL MU frames to STAs, as a response to which it can BAR/BA the way out of it. |
| 7625 | Liwen Chu | 181. 22 | "The TWT responding STA that intends to transmit additional Trigger frames during a trigger-enabled TWT SP shall set the Cascade Indication field of the Trigger frame to 1 to indicate that it will transmit another Trigger frame within the same TWT SP. The TWT responding STA shall set the Cascade Indication 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 TWT SP."  The sentences are not in line with the behavior of STA's definiiton about the last Trigger frame to a STA. | Harmonize them. | Revised –  Proposed resolution is inline with those for CIDs 9743, 9934, and 5659 where it is clarified that the early servide termination event that depends on the cascade indication equal to 0 is valid when there is no frame exchange with the STA during that TWT SP.  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 7625. |
| 7626 | Liwen Chu | 182. 6 | The behavior of a STA which is scheduled by Trigger with Cascade Indicate being 0 is not defined. | Add the following text:"The finishing of frame exchange solicted by a Trigger frame with the Cascade Indication field equal to 0 that is intended to the STA and does not allocate any random RU during an unannounced TWT" | Revised –  Proposed resolution is inline with those for CIDs 9743, 9934, and 5659 where it is clarified that the early servide termination event that depends on the cascade indication equal to 0 is valid when there is no frame exchange with the STA during that TWT SP.  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 7626. |
| 7820 | Mark Hamilton | 181. 2 | Use proper normative verbs | Change "shall not be required to" to "may optionally" | Revised –  Agree in principle that a “shall not” is not proper. The proposed resolution is inline with the suggested change, however added a statement that the STA is not required to since 11.2.2.1 defines the listening of the beacon as a mandatory requirement.  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 7820. |
| 7821 | Mark Hamilton | 181. 28 | Use proper normative verbs | Change "is not required to" to might optionally". Same thing at P184L25. | Revised –  Agree in principle with comment. However the intention is to indicate a negative condition. Proposed resolution is to specify as “might not”, in both cited locations.  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 7821. |
| 8097 | Matthew Fischer | 180. 26 | The TWT negotiation process can be improved. Specifically, if a timeslot bitmap were added to the process then a STA could more concisely indicate its preferred TWT SP times and it could observe the allocated TWT SP times of OBSS neighbors and request time slots that avoid those times. | Add a time slot bitmap to allow simpler negotation of TWT SP times and to allow a simple method of determining when OBSS interference is more likely. Expect a submission detailing some changes. | Rejected –  The draft already contains a mechanism (proposed by the commenter) that is inline with this type of behavior, where the STA can specify to the AP which broadcast TWTs (broadcast TWT ID concept) it plans to follow and the AP can allocate the STA to that particular broadcast TWT SP. And the OBSS neighbors can already do what is mentioned in the comment by checking the TWT times specified in the beacon frames generated by another AP and as such suggest to their AP non-coinciding TWT SPs.  As such there is no need to define another mechanism that serves the same purpose. |
| 8224 | Osama Aboulmagd | 180. 23 | Let's consider a scenario where all STAs have individual TWT agreements with the AP. Would the AP group STAs to start a TWT SP and MU transmissions? I think some explanation is needed to be added for the AP behaviour. | as in comment | Rejected –  The comment fails to identify a technical issue. The AP can use different metrics to allocate the resources and the details how the AP groups STAs at the start of the TWT SPs are implementation specific and out of scope for the standard. |
| 8285 | Pascal VIGER | 181. 12 | The term "A TWT requesting STA should not initiate transmission of frames " is not so clear. I suppose "initiate transmission" means "accessing the medium by the STA itself in order to transmit". In case "initiate transmission" would just mean "transmit", it is no sense for the end of the sentence: "A TWT requesting STA ...should not " <transmit> "frames to the TWT responding STA within trigger-enabled TWT SPs for that TWT agreement." | Please modify the sentence, by replacing "should not initiate transmission of frames" by "should not initiate a medium access to transmit frames". | Revised –  Agree in principle with the comment that a better wording can be found for such behavior. Proposed resolution is inline with the proposed change, and is incorporated in this location, and in equivalent text for broadcast TWT.  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 8285. |
| 9574 | Yonggang Fang | 181. 1 | If a TWT STA is not required to listen to beacon frame, it may need a mechanism to update the BSS information when AP udpates BSS info in the beacon frames. | define a rule or mechanism for TWT stations to synchronize the BSS information change when AP updates the BSS information in beacon frame. | Rejected –  The AP can transmit any frame during the TWT SP to the STA (such as Probe Response, TIM Broadcast frames and so on, each of which can be used for this purpose). There is no need to define new mechanisms for this purpose. |
| 9743 | Yongho Seok | 182. 2 | A TWT requesting STA in PS mode that is awake for a TWT SP may transition to the doze state after an early TWT SP termination event if there is at least one frame exchange with the STA during AdjustedMinimumTWTWakeDuration. But, I think that the below early TWT SP termination event requires no frame exchange. "The reception of a Trigger frame with the Cascade Indication field equal to 0 that is not intended to the STA and does not allocate any random RU during an unannounced TWT" If a frame exchange like a PS-Poll frame or an APSD trigger frame was occured, the AP will attempt to transmit a DL BU frame to the TWT requesting STA. | Change as the following: "...or after an early TWT SP termination event 2) and 3) if there is at least one frame exchange with the STA during AdjustedMinimumTWTWakeDuration, or after an early TWT SP termination event 1) if there is no frame exchange with the STA from the TWT SP start time." | Revised –  Agree with the comment. Proposed resolution incorporates the suggested change in this subclause.  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 9743. |
| 9931 | Young Hoon Kwon | 180. 18 | It is not clear what "shall negotiate individual TWT agreements" mean if TWT Required subfield is set to 1. Negotiation does not imply active individual TWT agreement. For example, during the negotiation, it is possible that responding STA may not Accept TWT. So, further clarification is needed on what each STA needs to do if TWT Required subfield is set to 1. | As in the comment. | Rejected –  The existing text is clear in the sense that the STA needs to negotiate with the AP a TWT session. The same wording is used in baseline, for example HT Immediate. Citing an example from REVmc D8.0, in P1398L40:  “A PBAC STA may choose to negotiate a block ack agreement with a non-PBAC STA if dot11RSNAPBACRequired is 0; otherwise, it shall negotiate a block ack agreement only with other PBAC STAs. If a PBAC STA is communicating with a non-PBAC STA, it shall follow the rules for a nonprotected block ack agreement.” |
| 9932 | Young Hoon Kwon | 180.14 | Definition of trigger enabled TWT may need to be present before its description, or at least reference number for operation on trigger enabled TWT may need to be inserted here. | As in the comment. | Rejected –  Trigger-enabled TWT is defined in the same subclause as where this term is mentioned. As such there is no need for a cross-reference to self subclause. |
| 9933 | Young Hoon Kwon | 181.14 | What will be TWT requesting STA's behavior for trigger-enabled TWT SP which is an announced TWT SP? Transmission of PS-Poll or APSD trigger frame is considered as initiating transmission of frames, current texts may not be well in line with each other. Further clarification is needed. | As in the comment. | Rejected –  The normative behavior for the TWT requesting STA is already defined for the announced TWT SP. Quoting from D1.0 in this subclause:  “A TWT requesting STA that is in PS mode and is awake shall include a PS-Poll frame or an APSD trigger frame in the HE TB PPDU if the TWT is an announced TWT unless the STA has already transmitted the PS-Poll or APSD trigger frame within that TWT SP. The STA may include other frames in the HE TB PPDU.” |
| 9934 | Young Hoon Kwon | 182.6 | Event shown in 1) only implies that the AP will not schedule any UL MU transmission during remaining TWT SP, and it does not give any information on DL transmission. Therefore, the event 1) does not prohibit an AP from sending DL transmission during the TWT SP. Then, it is not sure how can a STA go to doze state with event 1)? Further clarification is needed. | As in the comment. | Revised –  Agree in principle with the comment. Proposed resolution is inline with suggested change from CID 9743 that proposes to clarify that item 1) or a) now is subject to no frame exchange has occurred with the STA from the start of the TWT.  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 9934. |
| 5890 | James Yee | 180.33 | Typo in Reference to 11.2.2.2.6. | Should reference 11.2.2.6, not 11.2.2.2.6 | Revised –  Agree with comment.  TGax editor to replace “11.2.2.2.6” with “11.2.2.6” throughout the draft. |
| 6739 | John Coffey | 180.58 | Grammatical error: "all non-AP STAs, which are associated to it". The comma has the effect of saying that all non-AP STAs are associated to the AP, rather than the presumably intended meaning of restricting the set of non-AP STAs to those that are so associated. | Delete comma. | Revised –  Agree in principle. Proposed resolution accounts for the suggested change (wrong P/L).  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 6739. |
| 6740 | John Coffey | 180.59 | "Wicked which": in standard American English usage, "that" is preferred to "which" in this context. ("Fowler's rule"; still debated by the language mavens.) | Change "which" to "that". | Revised –  Agree in principle. Proposed resolution accounts for the suggested change (wrong P/L).  TGax editor to make the changes shown in 11-17/0295r0 under all headings that include CID 6740. |
| 6741 | John Coffey | 180.60 | Spelling error: "supercede" should be "supersede", the former is incorrect whether we are using American or British English. (The 2016 rollup of the base standard has three instances of "supercede": oy vey!) | Change to "supersede". | Accepted |
| 6742 | John Coffey | 181.31 | Missing space: "that is setup". | Change "setup" to "set up". | Accepted |
| 6743 | John Coffey | 181.36 | Missing space: "that is setup". | Change "setup" to "set up". | Accepted |
| 6744 | John Coffey | 184.38 | Missing right parenthesis. | Add right parenthesis. | Accepted |
| 7112 | Junichi Iwatani | 180.39 | "trigger-based PPDU" should be "HE trigger-based PPDU" | as in comment | Revised –  Replace all occurrences of “trigger-based PPDU” with “HE TB PPDU” throughout the draft. |
| 7113 | Junichi Iwatani | 181.19 | "Table 9.248l1" should be "Table 9-262k1" (Also in Page 184 Line 43 and Page 186 Line 28) | as in comment | Accepted |
| 10278 | Yusuke Tanaka | 180.33 | No period at the end. L41, L44 and L46, neither. | Add period. | Accepted |
| 10279 | Yusuke Tanaka | 180.58 | "of" may be needed between "transmission" and "a Trigger". L28, neither. | Add "of". | Rejected –  The current sentence is correct as it indicates the schedule for transmission. Adding “of” is incorrect. Quoting the sentence under discussion:  *“The TWT responding STA of a trigger-enabled TWT agreement shall schedule for transmission a Trigger frame for the TWT requesting STA, as described in 27.5.2 (UL MU operation), within each TWT SP for that TWT agreement.”* |

**Discussion: *…***

**3.4 Abbreviations and acronyms**

**TGax Editor: *Insert the following acronym definition (maintaining alphabetical order): (#CID 6745, 6747):***

TB Trigger-based*(#6745, 6747)*

* Individual TWT agreements

**TGax Editor: *Change the paragraph below of this subclause as follows (#CID 5657, 7188, 7620, 6739, 6740, 7621, 5966):***

An HE STA may negotiate individual TWT agreements with another HE STA as defined in 10.43.1 (TWT overview), except that the STA:

* May set the Responder PM Mode subfield to 1 if it is a TWT responding STA that intends to go to doze state outside of TWT SPs.
* If the TWT responding STA is an AP then it may set the Responder PM Mode subfield to 1 only if all non-AP STAs that are associated to it*(#6739,6740)* indicate support of TWT in the role of a TWT requester and the AP has set the TWT Required subfield to 1 in the HE Operation element it transmits*(#7620)*; otherwise it shall set it to 0.
* An AP that sets the Responder PM Mode subfield to 1 follows the rules defined in 10.43.7 (TWT Sleep Setup).
* Shall set the Implicit subfield to 1 and the NDP Paging Indicator subfield to 0 in the TWT element it transmits during the TWT setup
* May set the Trigger subfield to 1 in the TWT element it transmits during the TWT setup to negotiate a trigger-enabled TWT
* A successful TWT agreement whose Trigger subfield in the TWT response sent by the AP is 1 is a trigger-enabled TWT; otherwise it is not a trigger-enabled TWT*(#5657, 7188)*
* A successful TWT agreement whose Flow Type subfield is 1 is an unannounced TWT; otherwise it is an announced TWT
* Shall set the TWT Channel subfield in the TWT element it transmits to 0*(#7621, 5966)*.
* May set the TWT Protection field to 1 to indicate that TXOPs within the TWT SPs shall be initiated with a NAV protection mechanism, such as (MU) RTS/CTS, or CTS-to-self frame; otherwise it shall set it to 0.

**TGax Editor: *Change the paragraph below of this subclause as follows (#CID 6741, 5907, 6742, 6744, 6743):***

An HE STA that successfully sets up a TWT agreement with another HE STA shall follow the rules defined in 10.43.1 (TWT overview) and 10.43.4 (Implicit TWT operation), except that all the additional rules defined in this subclause supersede all the respective rules*(#6741, 5907)* defined in 10.43.1 (TWT overview) and 10.43.4 (Implicit TWT operation). A TWT or TWT SP that is set up*(#6742)* under an implicit TWT agreement is an implicit TWT or implicit TWT SP, respectively (see 10.43.1 (TWT overview)) *(#6744)*. A TWT or TWT SP that is set up*(#6743)* under a trigger-enabled TWT agreement is a trigger-enabled TWT or trigger-enabled TWT SP, respectively.

**TGax Editor: *Change the paragraph below of this subclause as follows (#CID 7820):***

An HE STA that successfully sets up an individual TWT agreement and operates in PS mode may optionally listen to Beacon frames, i.e., without being required to, as defined in 11.2.2.1 (General).*(#7820)*

An HE AP may send an unsolicited TWT response frame with the Trigger subfield equal to 1 to an HE non-AP STA that has set the TWT Requester Support subfield to 1 in the HE Capabilities elements that it transmits to the AP.An HE STA shall not transmit BAT, TACK, or STACK frames.

**TGax Editor: *Change the paragraph below of this subclause as follows (#CID 5657, 7188, 7623, 8285):***

A TWT requesting STA should not access the medium for transmitting*(#8285)* frames to the TWT responding STA outside of negotiated TWT SPs *(#5657, 7188, 7623)* for that TWT agreement and should not access the medium for transmittin*(#8285)* frames to the TWT responding STA within trigger-enabled TWT SPs for that TWT agreement.

**TGax Editor: *Change the note below of this subclause as follows (#CID 5033):***

NOTE—The STA decides what frames to transmit within or outside TWT SPs, and while it is not recommended to access the medium it is still permitted to do so*(#5033)*.

The TWT responding STA of a trigger-enabled TWT agreement shall schedule for transmission a Trigger frame for the TWT requesting STA, as described in 27.5.2 (UL MU operation), within each TWT SP for that TWT agreement. The TWT responding STA that intends to transmit additional Trigger frames during a trigger-enabled TWT SP shall set the Cascade Indication field of the Trigger frame to 1 to indicate that it will transmit another Trigger frame within the same TWT SP. The TWT responding STA shall set the Cascade Indication 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 TWT SP.

**TGax Editor: *Change the note below of this subclause as follows (#CID 7821):***

NOTE 1—The TWT responding STA might not*(#7821)* schedule for transmission a Trigger frame for the TWT requesting STA when the TWT agreement is not a trigger-enabled TWT agreement or when the TWT requesting STA has sent an OM Control field that has the UL MU disable bit equal to 1 (see 27.8 (Operating mode indication).

**TGax Editor: *Change the note below as follows (#CID 4839):***

NOTE 2— The Trigger frame can also be an UMRS Control field 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*(#4839)*.

A TWT requesting STA transmits an HE TB PPDU as a response to a Trigger frame that is intended for it and is sent during a trigger-enabled TWT SP (see 27.5.2 (UL MU operation)). A TWT requesting STA that is in PS mode and is awake shall include a PS-Poll frame or an APSD trigger frame in the HE TB PPDU if the TWT is an announced TWT unless the STA has already transmitted the PS-Poll or APSD trigger frame within that TWT SP. The STA may include other frames in the HE TB PPDU.

**TGax Editor: *Change the note below as follows (#CID 7171):***

NOTE–A Trigger frame is intended for a TWT requesting STA if it is sent by the AP to which the STA is associated and the frame contains the 12 LSBs of the STA’s AID in any of its User Info fields. The Trigger frame can have multiple recipients, each of which is identified by the presence of the 12 LSBs of recipient’s AID in any of its User Info fields (see 27.5.2 (UL MU operation)), and can have in the TA field the MAC address of the transmitted BSSID under the conditions defined in 27.5.2.2.2 (Allowed settings of the Trigger frame fields and UL MU Response Scheduling A-Control subfields).*(#7171)*

**TGax Editor: *Change the paragraph below of this subclause as follows (#CID 4840, 5890, 4851):***

A TWT responding STA that receives a PS-Poll frame or an APSD trigger frame from a TWT requesting STA during an announced TWT SP shall follow the rules defined in 11.2.2.6*(#5890)* (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 responding STA may deliver multiple buffered BUs to the TWT requesting STAs during:

* An announced TWT SP, without following the rules in 11.2.2.6*(#5890)* (AP operation during the CP) if the BU delivery does not exceed the duration of the TWT SP and the TWT requesting STA has indicated to be awake for that TWT SP.*(#4840)*
* An unannounced TWT SP, without following the rules in 11.2.2.6*(#5890)* (AP operation during the CP) if the BU delivery does not exceed the duration of the TWT SP.

NOTE—The TWT responding STA can deliver the buffered BUs in an A-MPDU under a block ack agreement if the TWT is an announced TWT and the TWT requesting STA is awake for that TWT SP*(#4840)*, or if the TWT is an unannounced TWT. The TWT responding STA can exceed the duration of the TWT SP if the TWT requesting STA is in Active mode. *(#4840, 4851)*

**TGax Editor: *Change the paragraph below of this subclause as follows (#CID 4841, 4842, 5658, 5660, 9743, 9934, 5659, 7625, 7625):***

A TWT requesting STA in PS mode that is awake for a TWT SP may transition to the doze state after AdjustedMinimumTWTWakeDuration time has elapsed from the TWT SP start time as identified by the TWT requesting STA, or after an early TWT SP termination event a) if there is no frame exchange with the STA from the TWT SP start time, or after an early TWT SP termination event b) or c) if there is at least one frame exchange with the STA during AdjustedMinimumTWTWakeDuration, whichever occurs first *(#9743, 9934, 5659, 7625, 7626)*. The TWT requesting STA may classify any of the following events as an early TWT SP termination event:

1. The reception of a Trigger frame sent by the TWT responding STA with the Cascade Indication field equal to 0 that is not intended to the STA*(#5658, 4841)*
2. The transmission of an acknowledgement in response to a frame, which solicits an immediate response,*(#4842, 5660)* sent by the TWT responding STA that had either the EOSP subfield equal to 1 or the More Data field equal to 0 when the frame does not contain an EOSP subfield
3. The reception of a frame, which does not solicit an immediate response,*(#4842, 5660)* sent by the TWT responding STA that had either the EOSP subfield equal to 1 or the More Data field equal to 0 when the frame does not contain an EOSP subfield.

The classification of a More Data field equal to 0 in an Ack, BlockAck and Multi-STA BlockAck frame as an early termination event can occur only when both STAs have indicated support of transmitting or receiving the frame with a nonzero More Data subfield, which is indicated in the More Data Ack subfield of the QoS Info field of frames they transmit (see 11.2.2 (Power management in a non-DMG infrastructure network)).

* Rules for TWT scheduling AP(#6919)

**TGax Editor: *Change the note below of this subclause as follows (#CID 7821):***

NOTE 1—The TWT scheduling AP(#6919) might not*(#7821)* schedule for transmission 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)).

**TGax Editor: *Change the paragraph below of this subclause as follows (#CID 4840):***

A TWT scheduling AP(#6919) that receives a PS-Poll or an APSD trigger frame from a TWT scheduled STA during an announced TWT SP shall follow the rules defined in 11.2.2.2.6 (AP operation during the CP) to deliver buffered BUs to the STA. A TWT scheduling AP(#6919) may deliver multiple buffered BUs to the TWT scheduled STA during:

* An announced TWT SP, without following the rules in 11.2.2.2.6 (AP operation during the CP) 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)*.
* An unannounced TWT SP, without following the rules in 11.2.2.2..6 (AP operation during the CP) if the BU delivery does not exceed the duration of the TWT SP and the STA has switched to AM.

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*(#4840)*.

* Rules for TWT scheduled STA

**TGax Editor: *Change the paragraph below of this subclause as follows (#CID 8285):***

A TWT scheduled STA should not access the medium for transmitting frames*(#8285)* to the TWT scheduling AP(#6919) outside of broadcast TWT SPs and within trigger-enabled TWT SPs.

**TGax Editor: *Change the items below of this subclause as follows (#CID 4842):***

1. The reception from the TWT scheduling AP(#6919) of a Trigger frame with a Cascade Indication field equal to 0 that is not intended to the STA and does not allocate any random RU.
2. The transmission of an acknowledgement in response to a frame, which solicits an immediate response,*(#4842)* sent by the TWT responding STA that has either the EOSP subfield equal to 1 or the More Data field equal to 0 when the frame does not contain an EOSP subfield.
3. The reception of a frame, which does not solicit an immediate response,*(#4842)* sent by the TWT responding STA that has either the EOSP subfield equal to 1 or the More Data field equal to 0 when the frame does not contain an EOSP subfield.

**TGax Editor: *Change the note below of this subclause as follows (#CID 7171):***

NOTE—A Trigger frame, sent by the TWT scheduling AP(#6919), is defined as intended for the TWT scheduled STA when the Trigger frame contains the AID of the STA in one of its Per User Info fields (see 27.5.2 (UL MU operation)), and can have in the TA field the MAC address of the transmitted BSSID under the conditions defined in 27.5.2.2.2 (Allowed settings of the Trigger frame fields and UL MU Response Scheduling A-Control subfields) *(#7171)*. Otherwise, the Trigger frame is not intended for the STA. If the Trigger frame contains one or more random RU(s) for which the STA can gain access according to 27.5.2.6 (UL OFDMA-based random access (UORA)) then the STA can follow the rules defined in 27.14.2 (Power save with UORA) to determine an early TWT SP termination event.