IEEE P802.11
Wireless LANs

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| LB 203 Comment Resolution for 10.46 and 10.49 |
| Date: 2014-08-01 |
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Abstract

This submission proposes resolutions for comments in clauses 10.46, and 10.49 of TGah Draft 2.0 with the following CIDs (TOT 7 CIDs):

* 3065, 3155, 3156, 3157
* 3113, 3160, 4184

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

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

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

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3065 | 334.17 | 10.46 | """The S1G STA shall attempt to eitherreceive""'shall attempt' is not very useful. How about 'shall try really, really hard'?" | "Reword in terms of observables:""shall be awake to receive, and shall queue for transmission""" | Revised –Agree in principle with the commenter. Proposed resolution rewords the statement in terms of observables as suggested.TGah editor to make the changes shown in 11-14/1020r0 under all headings that include CID 3065. |
| 3155 | 334.13 | 10.46 | "An S1G AP Can classify other changes in the S1G Beacon frame as critical updates as described in 10.2.2.17 (TIM Broadcast)." Instead of referring the reader to a subclause that contains redundant information (most of which applicable to non-S1G) it is better to list all the events that can be classified as critical updates here. | Remove this sentence and add all the applicable events in S1G that can be found in 10.2.2.17 in the list that precedes this sentence. Any other events need to be classified critical which are not present in this set? | Revised –Note that in general an AP can classify other changes in the Beacon frame as critical updates (and these changes are not limited to the list in 10.2.2.17 and the choice is at the discretion of the AP. The proposed resolution is to clarify that the S1G AP can classify other updates as critical updates and among these updates can be considered the ones that are listed in 10.2.2.17 for the Beacon frame. TGah editor to make the changes shown in 11-14/1020r0 under all headings that include CID 3155. |
| 3156 | 334.17 | 10.46 | The next S1G Beacon frame may not contain the updated information. Specify that the target Beacon to be received is one that is transmitted in a TBTT. | Replace "receive the next S1G Beacon frame" with " receive the next S1G Beacon frame that is transmitted at a TBTT". | Revised –Agree with the commenter. Proposed resolution accounts for the suggested change.TGah editor to make the changes shown in 11-14/1020r0 under all headings that include CID 3156. |
| 3157 | 334.20 | 10.46 | The Change Sequence that may be included in the Probe Request frame is an element not a field. | Replace "Change Sequence field" with " Change Sequence element" | Revised –Agree with the commenter. Proposed resolution accounts for the suggested change.TGah editor to make the changes shown in 11-14/1020r0 under all headings that include CID 3157. |

**Discussion:** *None.*

* **System information update procedure**

The S1G AP shall increase the value (modulo 256) of the Change Sequence field in the next transmitted S1G Beacon frame(s) when a critical update occurs to any of the elements inside the S1G Beacon frame. The following events shall classify as a critical update:

* Inclusion of an Extended Channel Switch Announcement
* Modification of the EDCA parameters
* Modification of the S1G Operation element

***TGah Editor: Change the paragraph below as follows (#3155):***

An S1G AP can classify other changes in the S1G Beacon frame as critical updates and among these updates can be included those that are described in 10.2.2.17 (TIM Broadcast).

***TGah Editor: Change the paragraph below as follows (#3065, 3156):***

The S1G STA shall either be awake to receive the next S1G Beacon frame that is transmitted at a TBTT or shall queue for transmission a Probe Request frame when it receives a Change Sequence field that contains a value that is different from the previously received Change Sequence field. When an S1G STA transmits a Probe Request frame to obtain the updated system information, it may include the Change Sequence element in the Probe Request frame to request a compressed Probe Response frame.

***TGah Editor: Change the paragraph below as follows (#3157):***

When an S1G AP receives a Probe Request frame that contains a Change Sequence element from an S1G STA associated with the S1G AP, it compares the value of the received Change Sequence with the value of its current Change Sequence. If the value of the received Change Sequence is not equal to the value of the current Change Sequence, the S1G AP should send a compressed Probe Response frame which is a Probe Response frame that includes the Change Sequence element and only the elements that need be updated by the STA. Otherwise, the AP shall send a Probe Response frame as defined in 10.1.4.3.4 (Sending a probe response).

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3113 | 338.35 | 10.49 | "An EL STA may indicate these limitations to an S1G STA" or "An EL STA may indicate these limitations to an S1G AP"? | As in comment. Also L51 and L56: "An S1G AP ..." and "The S1G AP ...". | Rejected –The current normative text is correct because the EL STA may indicate these limitations to either an S1G AP or a (T)DLS STA (refer to the presence of the Activity Specification element in TDLS Action frames in 8.6.13 (TDLS Action field formats). Hence, in general to an S1G STA. |
| 3160 | 338.44 | 10.49 | The AP cannot change support from non-sensor to sensor-only (see 10.48). | remove " or that changes support from Sensor type STAs to non-Sensor STAs". | Revised –Agree with the commenter. Proposed resolution accounts for the suggested change.TGah editor to make the changes shown in 11-14/1020r0 under all headings that include CID 3160. |
| 4184 | 338.28 | 10.49 | Everything achieved by this new TWT mode seems to be achievable by using the existing APSD mechanisms. | Consider reusing APSD mechanisms in S1Gs instead of creating a new mechanism just for one band. If a new mechanism is required make it band agnostic and backwards compatible. | Rejected –The commenter fails to identify a specific issue and is also out of scope (the comment actually refers to TWT).In reply to the commenter: Please note that APSD is a mechanism for the delivery of DL BUs to power saving STAs in an unscheduled or scheduled way. While the EL STA operation enables STAs that are limited in terms of their ability to transmit/ receive in certain intervals of time to successfully exchange frames with their peer STA. And regarding the differences with TWT, please note that TWT procedure does not require the STA to wake up to receive the Beacon as the STAs receive synchronization information during the TWT SP via TACK/BAT/STACK frames, something that APSD does not provide. |

**Discussion:** *None.*

* **Support for energy limited STAs**

An energy limited (EL) STA is an S1G STA with dot11S1GActivityEnabled equal to true that is powered by a small energy supply and is limited in terms of its ability to transmit or receive in certain intervals of time. An EL STA may indicate these limitations to an S1G STA that intends to communicate with it by using the signalling described in this subclause. The procedure described below increases the likelihood that frame exchanges between these two STAs are performed successfully.

An EL STA shall include an Activity Specification element in Probe Request and (Re) Association Request frames and may send Activity Specification frames.

***TGah Editor: Change the paragraph below as follows (#3160):***

An S1G AP that sets the STA Type Support in the S1G Capabilities element to 2 (i.e., supports only non-Sensor type STAs), as described in 10.48 (Sensor Only BSS), may refuse (re) association or can disassociate an EL STA. The S1G AP that refuses (re) association or disassociates an EL STA shall set the Status code field in the (Re) Association Response or in the Disassociation frame to ENERGY\_LIMITED\_OPERATION\_NOT\_SUPPORTED.

An S1G STA receiving an Activity Specification element from an EL STA shall not transmit to the EL STA, or cause the EL STA to transmit, a unicast PPDU that would exceed a time of Max Awake Interval following the most recent transition of the EL STA from Doze to Awake state as known at the S1G STA.

The S1G STA estimates the time of the most recent transition of the EL STA from Doze to Awake state based on the latest of the following events:

* the time a PS-Poll or trigger frame sent by the EL STA is received by the S1G STA
* the start of a TWT for the EL STA, setup with the S1G STA
* the start time of a RAW slot in a RAW scheduled for the EL STA by the S1G STA
* a T(S)BTT at which the EL STA shall receive an S1G Beacon frame

An S1G STA receiving an Activity Specification element from an EL STA shall not schedule a transmission of a unicast PPDU intended for the EL STA, or cause the EL STA to transmit a unicast PPDU, before a Recovery Time interval has expired since the EL STA’s last transition to Doze state, as known at the S1G STA. An EL STA may indicate the Recovery time interval by including the Recovery time interval in the Duration field of an NDP (PS-Poll-)Ack frame with Idle Indication set to 1.

The S1G STA estimates the time the EL STA transition to Doze state based on the latest of the following events:

* the reception of an acknowledgment for a transmission to the EL STA of a Buffered Unit sent in response to a PS-Poll generated by the EL STA
* the reception of an acknowledgment for the transmission to the EL STA of a frame with EOSP field equal to 1
* the reception of an NDP (PS-Poll-)Ack sent by the EL STA that has a Idle Indication equal to 1 and a non-zero value of the Duration field which is sent as a response to a frame generated by the STA
* the end of Adjusted wake time for a TWT for the EL STA setup with the S1G STA
* the end time of a RAW slot in a RAW scheduled for the EL STA by the S1G STA
* the end of an S1G Beacon frame’s transmission that the EL STA is scheduled to receive
* the end of group addressed BU(s)’s transmission the EL STA is scheduled to receive following a DTIM.

When the S1G STA cannot complete frames exchanges within Max Awake Interval, a new back-off procedure is invoked after stopping the current transmission.