IEEE P802.11  
Wireless LANs

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| **Comment Resolution for Subclause 9.32p** | | | | |
| **Date:** 2013-08-01 | | | | |
| **Author(s):** | | | | |
| **Name** | **Affiliation** | **Address** | **Phone** | **email** |
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Abstract

This document provides comment resolution for TGah Draft 0.1 Comment Collection 9 with these CIDs: 536 537, 842, 888, 889, 890, 891, 892, 893, and 895.

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 “Instruction to 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** | **SC** | **Comment** | **Proposed Change** | **Resolution** |
| 537 | 163.8 | 9.32p | It is necessary to control whether an Activity Specification element is included in Probe Request or Association Request frames. | "Modify the second paragraph of subclause 9.32p as following.  ----  A S1G STA with dot11S1GActivityEnabled set to true shall include an Activity Specification element in Probe Request and Association Request frames. A S1G STA with dot11S1GActivityEnabled set to true may send Activity Specification frames." | Revised –  TGah editor to make changes shown in 11-13-0970-01-00ah under the heading for CIDs 537. |

**Discussion:***Agree with the commenter. In addition the Activity Specification element was added in in Reassociation Request frames.*

* **Support for energy limited STAs**

**Instruction to Editor: *Please modify the second paragraph of subclause 9.32p as follows*:**

A STA powered by a small energy supply can be limited in terms of its ability to transmit or receive in certain intervals of time. The indications described in this clause allow a STA to indicate such limitations to another STA that intends to communicate with it, so that operations can be performed successfully.

A S1G STA with dot11S1GActivityEnabled set to true shall include an Activity Specification element in Probe Request and (Re) Association Request frames. A S1G STA with dot11S1GActivityEnabled set to true may send Activity Specification frames.

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| **CID** | **P.L** | **SC** | **Comment** | **Proposed Change** | **Resolution** |
| 842 | 163.1 | 9.32p | The recovery time can be indicated dynamically by the ACK resposne to a data frame | add a rule to enable the recovery time through the NDP ACK | Revised –  TGah editor to make changes shown in 11-13-0970-01-00ah under the heading for CIDs 842, 890, 891, 892, 893, and 895. |
| 890 | 163.23 | 9.32p | """Note: the most recent transition of the STA from Doze to Awake state is known by the transmitter because indicated by  one of the following events:  - the start time of a slot in a RAW defined by the transmitter STA for the receiver STA.""  The start time of a slot in a RAW does not mean that the STA has been changed from Doze to Awake state." | Remove the condition of the third bullet. | Revised –  TGah editor to make changes shown in 11-13-0970-01-00ah under the heading for CIDs 842, 890, 891, 892, 893, and 895. |
| 891 | 163.25 | 9.32p | """Note: the most recent transition of the STA from Doze to Awake state is known by the transmitter because indicated by  one of the following events:  - a (S)TBTT at which the STA shall receive a beacon""  I think that the condition of the third bullet is required for Beacon transmission.  But, if a STA transmitting an Activity Specification element indicates a very small Max Awake Interval and the Beacon transmission time never meet the restriction of the Max Awake Interval, AP couldn't send any Beacon frame.  So, my suggestion is to remove the fourth bullet and add that the multicast/broadcast transmission does not follow the the restriction of the Max Awake Interval." | Remove the fourth bullet and add that the multicast/broadcast transmission does not follow the the restriction of the Max Awake Interval. | Revised –  TGah editor to make changes shown in 11-13-0970-01-00ah under the heading for CIDs 842, 890, 891, 892, 893, and 895. |
| 892 | 163.12 | 9.32p | """A transmitter S1G STA receiving an Activity Specification Element from an associated or peer receiver S1G STA shall not transmit to the receiver STA, or cause the receiver STA to transmit, a PPDU that would exceed a time of Max Awake Interval following the most recent transition of the STA from Doze to Awake state as known at the transmitter.""  I think that a S1G AP receiving an Activity Specification element from an unassociated S1G STA follows the rule of the Max Awake Interval. (e.g., Probe Request/Response procedure)" | "Modify the sentence as the following:  ""A transmitter S1G STA receiving an Activity Specification Element from an S1G STA shall not transmit to the receiver STA, or cause the receiver STA to transmit, a PPDU that would exceed a time of Max Awake Interval following the most recent transition of the STA from Doze to Awake state as known at the transmitter.""" | Revised –  TGah editor to make changes shown in 11-13-0970-01-00ah under the heading for CIDs 842, 890, 891, 892, 893, and 895. |
| 893 | 163.29 | 9.32p | """A transmitter S1G STA receiving an Activity Specification Element from an associated or peer receiver S1G STA shall not start the transmission of a PPDU intended for the receiver STA, or cause the receiver STA to transmit a PPDU, before a Recovery Time interval has expired since the STA last transitioned to Doze state, as known at the transmitter.""  Normally, when a STA changed from Awake state to Doze state, AP does not transmit any PPDU to the STA before the STA explicitly indicates changing from Doze state to Awake state.  However, I know AP can transmit a PPDU to the STA during the TWT SP of the STA even if no PS-Poll or U-APSD trigger frame has been transmitted by the STA.  And, in section 9.32g.3, AP can reschedule wake/doze cycle of non-TIM STAs.  I think that the better wording is as the following:  ""A transmitter S1G STA receiving an Activity Specification Element from an associated or peer receiver S1G STA shall not schedule a transmission of a PPDU intended for the receiver STA...""" | "Change the sentence as the following:  ""A transmitter S1G STA receiving an Activity Specification Element from an associated or peer receiver S1G STA shall not schedule a transmission of a PPDU intended for the receiver STA...""" | Revised –  TGah editor to make changes shown in 11-13-0970-01-00ah under the heading for CIDs 842, 890, 891, 892, 893, and 895. |
| 895 | 163.42 | 9.32p | """- the end time of a slot in a RAW for that STA defined by the transmitter STA for the receiver STA  - the end of transmission of a beacon that the STA is supposed to receive  - the end of transmission of group addressed BUs the STA is supposed to receive following a DTIM.""  I agree that the fourth, fifth and sixth bullets are needed.  But, I am not sure that the above bullets correspond to the the conditions of changing from the Awake State to the Doze state.  I think that ""the time the STA transitioned to Doze state"" in the Note should be changed to alternative term." | Change the "the time the STA transitioned to Doze state" into the better expression. | Revised –  TGah editor to make changes shown in 11-13-0970-01-00ah under the heading for CIDs 842, 890, 891, 892, 893, and 895. |

**Discussion:***CID 842 – added a rule to enable recovery time through NDP ACK. CID 890 and 895 – clarified that the time the STA transitioned from/to Doze state is not known but it is estimated by the transmitter using information inferred from one of the events listed. An energy limited STA that has scheduled a RAW with the AP has done so that it can go to sleep for the remaining time (outside the RAW slot) and be able to use its limited TX/RX capabilities during that limited time within the RAW slot. CID 891 – specified that transmitting STA limits transmissions according to this procedure only for unicast PPDUs (hence no multicast or broadcast frames limitations in terms of TX/RX time). CID 892 – Agree in principle with the commenter. 893 – There is no technical difference between existing text and proposed resolution.*

* **Support for energy limited STAs**

**Instruction to Editor: *Please modify subclause 9.32p starting from the third paragraph as follows*:**

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

The transmitter STA estimates the time of the most recent transition of the receiver 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 receiver STA is received by the transmitter STA,

— the start of a TWT for the receiver STA setup with the transmitter STA

— the start time of a RAW slot in a RAW scheduled for the receiver STA by the transmitter STA

— a (S)TBTT at which the receiver STA shall receive a (Short) Beacon

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

The transmitter STA estimates the time the receiver STA transitioned to Doze state based on the latest of the following events

* the reception of an acknowledgment for a transmission to the receiver STA of a Buffered Unit sent in response to a PS-Pollgenerated by the receiver STA
* the reception of an acknowledgment for the transmission to the receiver STA of a frame with EOSP field set to 1
* the reception of an NDP (Modified) ACK sent by the receiver STA that has a Duration Indication set to 1 and a non-zero value of the Duration field which is sent as a response to a frame generated by the transmitter STA
* the end of Adjusted Wake Time for a TWT for the receiver STA setup with the transmitter STA
* the end time of a RAW slot in a RAW scheduled for the receiver STA by the transmitter STA
* the end of a (Short) Beacon’s transmission that the receiver STA is scheduled to receive
* the end of group addressed BU(s)’s transmission the receiver STA is scheduled to receive following a DTIM.

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| **CID** | **P.L** | **SC** | **Comment** | **Proposed Change** | **Resolution** |
| 536 | 36.49 | 8.3.3.5 | In spite of the second paragraph of subclause 9.32p, definitions of Association request frame (8.3.3.5) and Probe request frame (8.3.3.9) do not include Activity Specification element. | "Insert the following row to Table 8-26 and Table 8-30.  ---  TBD | Activity Specification | Activity Specification element is optionally present if dot11S1GActivityEnabled is true." | Revised –  TGah editor to make changes shown in 11-13-0970-01-00ah under the heading for CIDs 536, 888, and 889. |
| 888 | 163.8 | 9.32p | """A transmitter S1G STA receiving an Activity Specification Element from an associated or peer receiver S1G STA shall not transmit to the receiver STA, or cause the receiver STA to transmit, a PPDU that would exceed a time of Max Awake Interval following the most recent transition of the STA from Doze to Awake state as known at the transmitter.""  If the peer receiver S1G STA means the (T)DLS peer STA,  Activity Specification Element shall be also included in (T)DLS Setup Request and Response frames." | Clarify the meaning of the peer receiver S1G STA. | Revised –  TGah editor to make changes shown in 11-13-0970-01-00ah under the heading for CIDs 536, 888, and 889. |
| 889 | 163.9 | 9.32p | """A S1G STA may include an Activity Specification element in Probe Request, Association Request and Activity Specification frames.""  Section 8.3.3.5 and 8.3.3.9 are missing the Activity Specification IE." | Inlcude the Activity Specification IE into Table 8-26 and Table 8-30. | Revised –  TGah editor to make changes shown in 11-13-0970-01-00ah under the heading for CIDs 536, 888, and 889. |

**Discussion:***Agree with the commenters. Also added in Reassociation Request.*

* **Association Request frame format**

**Instruction to Editor: *Please modify Table 8-26 in Clause 8.3.3.5 (@REVmc D1.1) as follows:***

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| * **Association Request frame body** | | |
| **Order** | **Information** | **Notes** |
| … |  |  |
| TBD | S1G Capabilities | S1G Capabilities element is optionally present if dot11S1GOptionImplemented is true. |
| TBD | Activity Specification | Activity Specification element is present if dot11S1GActivityEnabled is true. |

**Instruction to Editor: *Please modify Table 8-28 in Clause 8.3.3.7 (@REVmc D1.1) as follows:***

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| * **Reassociation Request frame body** | | |
| **Order** | **Information** | **Notes** |
| … |  |  |
| TBD | S1G Capabilities | S1G Capabilities element is optionally present if dot11S1GOptionImplemented is true. |
| TBD | Activity Specification | Activity Specification element is present if dot11S1GActivityEnabled is true. |

* **Probe Request frame format**

**Instruction to Editor: *Please modify Table 8-30 in Clause 8.3.3.9 (@REVmc D1.1) as follows:***

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| * **Probe Request frame body** | | |
| **Order** | **Information** | **Notes** |
| … |  |  |
| TBD | S1G Capabilities | S1G Capabilities element is optionally present if dot11S1GOptionImplemented is true. |
| TBD | Activity Specification | Activity Specification element is present if dot11S1GActivityEnabled is true. |

* + - 1. **DLS Request frame format**

**Instruction to Editor: *Please modify Table 8-243 in Clause 8.6.4.2 (@REVmc D1.1) as follows:***

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| **Table 8-243 -- DLS Request frame Action field format** | | |
| **Order** | **Information** | **Notes** |
| … |  |  |
| 9 | HT Capabilities | The HT Capabilities element is present when the dot11HighThroughputOptionImplemented attribute is true. |
| TBD | Activity Specification | Activity Specification element is present if dot11S1GActivityEnabled is true. |