IEEE P802.11
Wireless LANs

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| Proposed Resolution for CID 1268 |
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Abstract

This document provides a proposed resolution for CID 1268 from 802.11 letter ballot 232.

This contribution provides a resolution for 802.11 letter ballot 232 CID 1668 [1], summarized below:

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| --- | --- | --- | --- | --- | --- | --- |
| **Clause Number (C)** | **Page(C)** | **Line (C)** | **Type of Comment** | **Part of No Vote** | **Comment** | **Proposed Change** |
| 9.4.2.126 | 1205 | 10 | G | Y | BI is used for beacon interval though out the specification but its is not defined or listed as an acronym. Only the first use of BI, outside the table of context is referenced. Also the label used for the variable in the Query Response info field format PAME-BI is confusing due to the use of -BI. This field name should probably be changed. | Provide a definition of beacon interval and list BI as an acronym. Also rename or change the field name PAME-BI to be different e.g. PAME-bi or some other name to avoid confusion. PAME-BI is used on Page 1169, 9.4.2.92, line 38 and in the figure 9-473 line 20; and on page 2204, 11.23.3.2.5, line 22. Lastly it may be beneficial to use BI consistently though out the specification and replace the ~347 uses of "beacon interval" with BI. |

**Proposed resolution:**

1. Where BI refers to beacon interval, replace BI with the words “beacon interval”.
2. Where BI is in a field or element name – do nothing, keeping the field or element name as is.
3. Where BI is used in an equation or as a variable change BI to *bi* and define *bi* as the beacon interval.
4. For awake BI, doze BI, Awake BI, and Doze BI – which refer to types of beacon intervals (the time between TBTTs) that have particular doze and awake schedule for a STA in a particular power management mode. The STA awake and doze state is determined by the rules of the STA’s power management mode and the beacon interval. e.g. in time interval defined by an awake BI the AP “assumes” the STA will follow an awake/doze cycle as defined for the STA power management mode. The awake BI and doze BI are simply time intervals that correspond to the AP beacon interval (the interval between TBTTs). Where the concept is introduced in the standard (quoted below) they are named in italic:

(2000.56) “A STA wakeup schedule defines a periodic routine of cycling between a set of contiguous beacon intervals referred to as *awake BIs* and a set of contiguous beacon intervals referred to as *doze BIs*.”

But after this definition they are no longer italicized. Therefore, these beacon intervals should be named, but the question is what to name them. Some possibilities are:
awake-bi, awake-BI, AWAKE-BI, *awake-bi, awake-BI*, *AWAKE-BI, awakebi, awakeBI, AWAKEBI, BIawake,* BI-awake, bi-awake, ABI, A-BI.
Propose using A-BI to designate the awake beacon interval.
Following this approach, propose using D-BI to designate the doze beacon interval.

**In addition:**
5. Add definitions for: beacon interval, awake beacon interval, and doze beacon interval
6. Add acronym definitions for: A-BI and D-BI

A detailed proposal for all additions and modification follows. For text edits/changes the page and line number in Draft P802.11REVmd D1.0 [2] (page.line), followed by the current specification text (with highlighting of the areas of concern), followed by the prosed red line changes.

*Add a definition of a beacon interval in clause 3.2:***beacon interval:** The time interval between two consecutive target beacon transmission times

(TBTTs).

*Add a definition for awake beacon interval in clause 3.2:*

**awake beacon interval** (A-BI): A beacon interval of a power save mode wakeup schedule during which a station (STA) is expected to be in the awake or doze state in accordance with the wakeup schedule and the awake and doze rules for an A-BI as defined by the STA’s negotiated power save mode.

*Add a definition for doze beacon interval in clause 3.2:*

**doze beacon interval** (D-BI): A beacon interval of a power save mode wakeup schedule during which a station (STA) is expected to be in the awake or doze state in accordance with the wakeup schedule and the awake and doze rules for a D-BI as defined by the STA’s negotiated power save mode.

*Add the acronyms in clause 3.4:*

A-BI awake beacon interval

D-BI doze beacon interval

**1217.25:**

The BI Start Time field indicates the lower order 4 octets of the TSF timer at the start of the first awake BI in the WS defined by the DMG Wakeup Schedule element.

**Propose:**

The BI Start Time field indicates the lower order 4 octets of the TSF timer at the start of the first A-BI in the WS defined by the DMG Wakeup Schedule element.

**1217.31**

NOTE—The delay between the moment a STA receives a DMG Wakeup Schedule element over the air and the moment the STA interprets the value of the BI Start Time field in the element can be large, to the extent that the beacon interval during which the BI Start Time filed is interpreted is different from the beacon interval during which the DMG Wakeup Schedule element is received. Excluding an interval from the range of BI Start Time values at transmission enables the receiving STA to be able to correctly interpret any received value for the BI Start Time field of the DMG Wakeup Schedule element belonging to a STA in PS mode without having to remember the beacon interval during which the DMG Wakeup Schedule element was received, as long as the beginning of the beacon interval at the time of interpretation has not advanced more than DMGDWSValidPeriod relative to the beginning of the beacon interval at the time of reception.

**Propose:**

NOTE—The delay between the moment a STA receives a DMG Wakeup Schedule element over the air and the moment the STA interprets the value of the BI Start Time field in the element can be large, to the extent that the beacon interval during which the BI Start Time filed is interpreted is different from the beacon interval during which the DMG Wakeup Schedule element is received. Excluding an interval from the range of BI Start Time field values at transmission enables the receiving STA to be able to correctly interpret any received value for the BI Start Time field of the DMG Wakeup Schedule element belonging to a STA in PS mode without having to remember the beacon interval during which the DMG Wakeup Schedule element was received, as long as the beginning of the beacon interval at the time of interpretation has not advanced more than DMGDWSValidPeriod relative to the beginning of the beacon interval at the time of reception.

**1217.41**

The Sleep Cycle field indicates the sleep cycle duration in beacon intervals, i.e., the sum of awake BIs and doze BIs that make up the sleep cycle.

**Propose:**

The Sleep Cycle field indicates the sleep cycle duration in beacon intervals, i.e., the sum of A-BIs and D-BIs that make up the sleep cycle.

**1217.44**

The Number of Awake BIs field indicates the number of awake BIs at the beginning of each sleep cycle. A value of 0 for this field indicates that all BIs in the WS are doze BIs.

**Propose:**

The Number of Awake BIs field indicates the number of A-BIs at the beginning of each sleep cycle. A value of 0 for this field indicates that all beacon intervals in the WS are D-BIs.

**1219.1**

For a PCP in active mode (see 11.2.7 (Power management in a PBSS and DMG infrastructure BSS)), or when applied to a CBAP or SP in a PCP awake BI, a value of 1 for the PCP Active subfield indicates that the PCP is available to transmit or receive during the CBAP or SP, and a value of 0 indicates the PCP unavailability to transmit or receive. The PCP Active subfield is set to 1 at least in the following cases:

**Propose:**

For a PCP in active mode (see 11.2.7 (Power management in a PBSS and DMG infrastructure BSS)), or when applied to a CBAP or SP in a PCP A-BI, a value of 1 for the PCP Active subfield indicates that the PCP is available to transmit or receive during the CBAP or SP, and a value of 0 indicates the PCP unavailability to transmit or receive. The PCP Active subfield is set to 1 at least in the following cases:

**1219.12**

The value of the PCP Active subfield is ignored when it applies to a CBAP or SP that resides in a PCP doze BI.

**Propose:**

The value of the PCP Active subfield is ignored when it applies to a CBAP or SP that resides in a PCP D-BI.

**1222.1**

The Allocation Period is specified as a fraction or multiple of the beacon interval (BI) as defined in

Table 9-253 (Allocation Period field values).

**Propose:**

The Allocation Period is specified as a fraction or multiple of the beacon interval as defined in

Table 9-253 (Allocation Period field values).

**1222.14**

The allocation period is a multiple of the BI, i.e., allocation period = *n* x BI where *n* is the value represented by B0–B14

**Propose:**

The allocation period is a multiple of the beacon interval, i.e., allocation period = *n* x *bi* where *n* is the value represented by B0–B14 and *bi* is the time duration of the beacon interval.

**1222.17**

The allocation period is a fraction of the BI, i.e., allocation period = BI/*n* where *n* is the value represented by B0–B14.

**Propose:**

The allocation period is a fraction of the beacon interval, i.e., allocation period = *bi*/*n* where *n* is the value represented by B0–B14 and *bi* is the time duration of the beacon interval.

**1223.16**

The TSCONST Period subfield is specified as a fraction or multiple of the beacon interval (BI) as defined in Table 9-254 (TSCONST Period values).

**Propose:**

The TSCONST Period subfield is specified as a fraction or multiple of the beacon interval as defined in Table 9-254 (TSCONST Period values).

**1223.30**

The TSCONST period is a multiple of the BI, i.e., TSCONST period = n x BI where n is the value represented by B0–B14.

**Propose:**The TSCONST period is a multiple of the beacon intervals, i.e., TSCONST period = n x *bi* where n is the value represented by B0–B14 and *bi* is the time duration of the beacon interval.

**1223.32**

The TSCONST period is a fraction of the BI, i.e., TSCONST period = BI/n where n is the value represented by B0–B14.

**Propose:**

The TSCONST period is a fraction of the beacon interval, i.e., TSCONST period = *bi*/n where n is the value represented by B0–B14 and *bi* is the time duration of the beacon interval.

**1321.18**

The Minimum Transmission Interval subfield is expressed in units of BIs and indicates the minimum

transmission interval (see 11.3.9.3 (Distributed authentication control)).

**Propose:**

The Minimum Transmission Interval subfield is expressed in units of beacon intervals and indicates the minimum transmission interval (see 11.3.9.3 (Distributed authentication control)).

***Editor please note: the above sentence is in the draft twice – the second instance at 1321.22 should be removed.***

**1814.5**

The AP or PCP shall not transmit Poll frames to a STA whose PP Available field in the STA Availability element is 0. The AP or PCP shall not dynamically allocate a service period to a STA that is in a doze BI (11.2.7 (Power management in a PBSS and DMG infrastructure BSS)).

**Propose:**

The AP or PCP shall not transmit Poll frames to a STA whose PP Available field in the STA Availability element is 0. The AP or PCP shall not dynamically allocate a service period to a STA that is in a D-BI (11.2.7 (Power management in a PBSS and DMG infrastructure BSS)).

**1814.19**

If a non-AP and non-PCP STA is neither source nor an individually addressed destination during a

truncatable SP and the non-AP and non-PCP STA participates in dynamic allocation of service periods and the non-AP and non-PCP STA is in an awake BI, then the non-AP and non-PCP STA should be in the awake state for the duration of the truncatable SP.

**Propose:**

If a non-AP and non-PCP STA is neither source nor an individually addressed destination during a

truncatable SP and the non-AP and non-PCP STA participates in dynamic allocation of service periods and the non-AP and non-PCP STA is in an A-BI, then the non-AP and non-PCP STA should be in the awake state for the duration of the truncatable SP.

**1814.25**

A non-AP and non-PCP STA that participates in dynamic allocation of service periods shall be in the awake state for dot11MinPPDuration from the start of each truncatable SP for which both the source and the destination AID fields are set to the broadcast AID and that occurs within each awake BI of that STA. Following the expiration of dot11MinPPDuration, the non-AP and non-PCP STA should remain in the awake state until the end of the truncatable SP.

**Propose:**

A non-AP and non-PCP STA that participates in dynamic allocation of service periods shall be in the awake state for dot11MinPPDuration from the start of each truncatable SP for which both the source and the destination AID fields are set to the broadcast AID and that occurs within each A-BI of that STA. Following the expiration of dot11MinPPDuration, the non-AP and non-PCP STA should remain in the awake state until the end of the truncatable SP.

**1814.31**

A STA shall be in the awake state for dot11MinPPDuration from the start of each scheduled CBAP that occurs within each awake BI of that STA.

**Propose:**

A STA shall be in the awake state for dot11MinPPDuration from the start of each scheduled CBAP that occurs within each A-BI of that STA.

**1940.34**

In a PBSS, every beacon interval shall start with a BTI or ATI, except in PCP power save (PPS) mode,

(#292)where a PCP doze BI need not start with a BTI or ATI (see 11.2.7.3.3).

**Propose:**

In a PBSS, every beacon interval shall start with a BTI or ATI, except in PCP power save (PPS) mode,

(#292)where a PCP D-BI need not start with a BTI or ATI (see 11.2.7.3.3).

**1996.4**

The AP that does not include the RPS element with the omni RAW, shall be awake for an amount of time not less than *BI* minus dot11MaxAwayDuration immediately following the S1G Beacon frame where *BI* is equal to the value of the beacon interval if dot11ShortBeaconInterval is false and is equal to short beacon interval if dot11ShortBeaconInterval is true.

**Propose:**

The AP that does not include the RPS element with the omni RAW, shall be awake for an amount of time not less than *bi - mad* immediately following the S1G Beacon frame, where *bi* is the beacon interval if dot11ShortBeaconInterval is false and is the short beacon interval if dot11ShortBeaconInterval is true, and *mad* is the dot11MaxAwayDuration.

**2000.56**

A STA wakeup schedule defines a periodic routine of cycling between a set of contiguous beacon intervals referred to as *awake BIs* and a set of contiguous beacon intervals referred to as *doze BIs*. The rules for alternating between awake and doze power states during awake BIs and doze BIs are defined in 11.2.7.2.3 (Non-AP and non-PCP STA operation with a wakeup schedule) and 11.2.7.3.3 (PCP operation with a wakeup schedule).

**Propose:**

A STA wakeup schedule defines a periodic routine of cycling between a set of contiguous beacon intervals referred to as awake beacon intervals (A-BIs)and a set of contiguous beacon intervals referred to as dose beacon intervals (D-BIs). The rules for alternating between awake and doze power states during A-BIs and D-BIs are defined in 11.2.7.2.3 (Non-AP and non-PCP STA operation with a wakeup schedule) and 11.2.7.3.3 (PCP operation with a wakeup schedule).

**2001.2**

A STA in PS mode that is following a wakeup schedule and has also exercised unscheduled power save shall follow the doze BI rules in this subclause and shall follow the ATIM rules in 11.2.7.4 (ATIM frame usage for power management of non-AP STAs) for a non-AP STA without wakeup schedule.

**Proposed:**

A STA in PS mode that is following a wakeup schedule and has also exercised unscheduled power save shall follow the D-BI rules in this subclause and shall follow the ATIM rules in 11.2.7.4 (ATIM frame usage for power management of non-AP STAs) for a non-AP STA without wakeup schedule.

**2001.37**

An AP or PCP may include an Antenna Sector ID Pattern element in Power Save Configuration Response and Probe Response frames transmitted to a non-AP and non-PCP STA. If a non-AP and non-PCP STA uses the information contained in the Antenna Sector ID Pattern element received from its AP or PCP, then during the BTI of an awake BI, the STA might stay awake just to receive DMG Beacon frames transmitted through specific DMG antenna and sector and switch to doze state during other periods in the BTI.

**Proposed:**

An AP or PCP may include an Antenna Sector ID Pattern element in Power Save Configuration Response and Probe Response frames transmitted to a non-AP and non-PCP STA. If a non-AP and non-PCP STA uses the information contained in the Antenna Sector ID Pattern element received from its AP or PCP, then during the BTI of an A-BI, the STA might stay awake just to receive DMG Beacon frames transmitted through specific DMG antenna and sector and switch to doze state during other periods in the BTI.

**2001.42**

Table 11-2 (Power states for an awake BI) lists the power states for a non-AP and non-PCP STA in PS mode and a PCP in PS mode during an awake BI. Each entry indicates the state, either awake or doze, for the non-AP and non-PCP STA or the PCP in PS mode at various times during the awake BI.

**Proposed:**

Table 11-2 (Power states for an awake BI) lists the power states for a non-AP and non-PCP STA in PS mode and a PCP in PS mode during an A-BI. Each entry indicates the state, either awake or doze, for the non-AP and non-PCP STA or the PCP in PS mode at various times during the A-BI.

**2001.46**

Table 11-2—Power states for an awake BI

**Proposed:**

Table 11-2—Power states for an A-BI

**2002.1**

Table 11-2—Power states for an awake BI *(continued)*

**Proposed:**

Table 11-2—Power states for an A-BI *(continued)*

**2002.32**

Table 11-3 (Power states for a doze BI) lists the power states for a non-AP and non-PCP STA in PS mode and a PCP in PS mode during a doze BI. Each entry indicates the state, either awake or doze, for the non-AP and non-PCP STA or the PCP in PS mode at various times during the doze BI.

**Proposed:**Table 11-3 (Power states for a doze BI) lists the power states for a non-AP and non-PCP STA in PS mode and a PCP in PS mode during a D-BI. Each entry indicates the state, either awake or doze, for the non-AP and non-PCP STA or the PCP in PS mode at various times during the D-BI.

**2003.1**

Table 11-3—Power states for a doze BI

**Proposed:**

Table 11-3—Power states for a D-BI

**2004.1**

In Figure 11-11: Awake BI, Dose BI, PS mode BI

**Propose:**

In Figure 11-11: A-BI, D-BI, PS mode beacon interval

**2005.2**

When a non-AP and non-PCP STA that has not set up a wakeup schedule with the AP or PCP enters PS mode, every beacon interval shall be an awake BI for that STA. A non-AP and non-PCP STA that has not set up a wakeup schedule with the AP or PCP and that is in PS mode shall be awake during any allocated SP for which the STA is either the source DMG STA or destination DMG STA during an awake BI. During an awake BI, a non-AP and non-PCP STA that has not set up a wakeup schedule with the AP or PCP and that is in PS mode shall be awake during any allocated CBAP for which the STA is the source DMG STA or destination DMG STA, or the source AID of the CBAP is equal to the broadcast AID or the destination AID of the CBAP is equal to the broadcast AID.

**Proposed:**

When a non-AP and non-PCP STA that has not set up a wakeup schedule with the AP or PCP enters PS mode, every beacon interval shall be an A-BI for that STA. A non-AP and non-PCP STA that has not set up a wakeup schedule with the AP or PCP and that is in PS mode shall be awake during any allocated SP for which the STA is either the source DMG STA or destination DMG STA during an A-BI. During an A-BI, a non-AP and non-PCP STA that has not set up a wakeup schedule with the AP or PCP and that is in PS mode shall be awake during any allocated CBAP for which the STA is the source DMG STA or destination DMG STA, or the source AID of the CBAP is equal to the broadcast AID or the destination AID of the CBAP is equal to the broadcast AID.

**2005.38**

After receiving a PSC-RSP frame from the AP or PCP with a status code indicating success and responding with an acknowledgment, the STA switches to the PS mode at the instant specified by the BI Start Time field of the DMG Wakeup Schedule element transmitted to the AP or PCP. In PS mode, the STA shall cycle between awake BIs and doze BIs following the WS that the STA has established with the AP or PCP.

**Proposed:**After receiving a PSC-RSP frame from the AP or PCP with a status code indicating success and responding with an acknowledgment, the STA switches to the PS mode at the instant specified by the BI Start Time field of the DMG Wakeup Schedule element transmitted to the AP or PCP. In PS mode, the STA shall cycle between A-BIs and D-BIs following the WS that the STA has established with the AP or PCP.

**2005.62**

NOTE 1—The AP or PCP can recommend an alternative WS, for example to align the awake BIs of some or all non-AP and non-PCP STAs.

**Proposed:**

NOTE 1—The AP or PCP can recommend an alternative WS, for example to align the A-BIs of some or all non-AP and non-PCP STAs.

**2005.6**

If a non-AP and non-PCP STA has established a WS with the AP or PCP and the non-AP and non-PCP STA is in PS mode, the non-AP and non-PCP STA shall have *m* successive awake BIs repeating every *n* beacon interval, where *n* is the value of the Sleep Cycle field of the DMG Wakeup Schedule element contained in the PSC-RSP frame received from the AP or PCP during the frame exchange that established the WS, and *m* is the value of the Number of Awake BIs field in the DMG Wakeup Schedule element contained in that PSC-RSP frame. During each of its awake BIs, the non-AP and non-PCP STA shall be awake during the awake window if it is present, and during all allocated SPs in which it is either the source or destination DMG STA.

**Proposed:**

If a non-AP and non-PCP STA has established a WS with the AP or PCP and the non-AP and non-PCP STA is in PS mode, the non-AP and non-PCP STA shall have *m* successive A-BIs repeating every *n* beacon interval, where *n* is the value of the Sleep Cycle field of the DMG Wakeup Schedule element contained in the PSC-RSP frame received from the AP or PCP during the frame exchange that established the WS, and *m* is the value of the Number of Awake BIs field in the DMG Wakeup Schedule element contained in that PSC-RSP frame. During each of its A-BIs, the non-AP and non-PCP STA shall be awake during the awake window if it is present, and during all allocated SPs in which it is either the source or destination DMG STA.

**2006.24**

A non-AP and non-PCP STA in PS mode shall stay awake for dot11MinBHIDuration starting from the

beginning of each awake BI and may switch to the doze state after the expiration of this time.

**Proposed:**

A non-AP and non-PCP STA in PS mode shall stay awake for dot11MinBHIDuration starting from the

beginning of each A-BI and may switch to the doze state after the expiration of this time.

**2006.33**

An AP or PCP shall transmit SP allocation announcements for STAs in PS mode during each of the STAs’ awake BIs and may transmit those SP allocation announcements in other beacon intervals. New SPs shall be allocated to begin either within or after the later awake BI of the source DMG STA and destination DMG STA of the SP.

**Proposed:**

An AP or PCP shall transmit SP allocation announcements for STAs in PS mode during each of the STAs’ A-BIs and may transmit those SP allocation announcements in other beacon intervals. New SPs shall be allocated to begin either within or after the later A-BI of the source DMG STA and destination DMG STA of the SP.

**2008.13**

In Figure 11-12: Awake BI, Dose BI, PS mode BI

**Proposed:**

In Figure 11-12: A-BI, D-BI, PS mode beacon interval

**2008.61**

The first PCP Awake BI of a sleep cycle in a WS starts at the instant specified by the value of the BI Start Time field of the announced DMG Wakeup Schedule element, and the number of successive PCP Awake BIs is specified by the Number of Awake BIs field of the DMG Wakeup Schedule element. Once in PPS mode, the PCP transitions between awake BI and doze BI according to the WS it has established.

**Proposed:**

The first PCP A-BI of a sleep cycle in a WS starts at the instant specified by the value of the BI Start Time field of the announced DMG Wakeup Schedule element, and the number of successive PCP A-BIs is specified by the Number of Awake BIs field of the DMG Wakeup Schedule element. Once in PPS mode, the PCP transitions between A-BI and A-BI according to the WS it has established.

**2009.1**

NOTE—The PCP may need to behave as it is in active mode or in an awake BI to some associated STAs for a number of planned successive PCP doze BIs if it has not been able to confirm the reception of its WS by each associated STA, and it has not transmitted its WS through DMG Beacon or Announce frames over dot11MaxLostBeacons successive beacon intervals.

**Proposed:**

NOTE—The PCP may need to behave as it is in active mode or in an awake A-BI to some associated STAs for a number of planned successive PCP D-BIs if it has not been able to confirm the reception of its WS by each associated STA, and it has not transmitted its WS through DMG Beacon or Announce frames over dot11MaxLostBeacons successive beacon intervals.

**2009.12**

In a PCP doze BI, the PCP should schedule a BTI or ATI. If scheduling an ATI, the PCP should transmit an Announce frame during the ATI to associated STAs.

**Proposed:**

In a PCP D-BI, the PCP should schedule a BTI or ATI. If scheduling an ATI, the PCP should transmit an Announce frame during the ATI to associated STAs.

**2009.21**

The PCP may include in the Extended Schedule element the schedule for the beacon intervals during the PCP doze BIs. The PCP may schedule a SP or CBAP within a doze BI by setting the Allocation Start field of the new SP or CBAP in the Extended Schedule element to a value within a doze BI.

**Proposed:**

The PCP may include in the Extended Schedule element the schedule for the beacon intervals during the PCP D-BIs. The PCP may schedule a SP or CBAP within a D-BI by setting the Allocation Start field of the new SP or CBAP in the Extended Schedule element to a value within a D-BI.

**2009.28**

The PCP shall check that the schedule of pseudo-static allocations transmitted in the last Extended Schedule element before the PCP entered PPS mode is valid during the PCP doze BIs. Thus, a STA participating in such a pseudo-static allocation assumes that the allocation is present during the following consecutive PCP doze BIs.

**Proposed:**

The PCP shall check that the schedule of pseudo-static allocations transmitted in the last Extended Schedule element before the PCP entered PPS mode is valid during the PCP D-BIs. Thus, a STA participating in such a pseudo-static allocation assumes that the allocation is present during the following consecutive PCP D-BIs.

**2009.35**

The availability of the PCP during a CBAP in the awake BI shall be announced by setting the PCP Active subfield within the Allocation Control field to 1 for a CBAP allocation made through the Extended Schedule element.

**Proposed:**

The availability of the PCP during a CBAP in the A-BI shall be announced by setting the PCP Active subfield within the Allocation Control field to 1 for a CBAP allocation made through the Extended Schedule element.

**2009.48**

The first beacon interval is the awake BI in which the PPS PCP is in the awake state to serve non-PCP STAs.

**Proposed:**

The first beacon interval is the A-BI in which the PPS PCP is in the awake state to serve non-PCP STAs.

**2009.55**

In addition, the PCP transmits the DMG Wakeup Schedule element with the information of the start time and the length of the PCP sleep interval, and the STA Availability element to indicate the availability of the PCP for the CBAP of the awake BI.

**Proposed:**

In addition, the PCP transmits the DMG Wakeup Schedule element with the information of the start time and the length of the PCP sleep interval, and the STA Availability element to indicate the availability of the PCP for the CBAP of the A-BI.

**2010.6**

In Figure 11-13: Awake BI (2 locations)

**Proposed:**

In Figure 11-13: A-BI (2 locations)

**2010.43**

A DMG STA in PS mode shall be in the awake state during each awake window that lies within each awake BI for that STA.

**Proposed:**

A DMG STA in PS mode shall be in the awake state during each awake window that lies within each A-BI for that STA.

**2011.16**

The PCP is following a wakeup schedule, with 1 awake BI out of every 4 beacon

intervals. The non-PCP STA A is also following a wakeup schedule, with 1 awake BI out of every 2 beacon intervals. In addition, STA A performs unscheduled power save during BI 0, and also during BI 2 to(#240) BI 4. STA A is required to stay awake during the following CBAP after receiving an ATIM frame in BI 2. An ATIM frame received during BI 4 however serves as a traffic indication and PCP will transmit frames to STA A only after STA A (#234)is in the awake state.

**Proposed:**

The PCP is following a wakeup schedule, with 1 A-BI out of every 4 beacon

intervals. The non-PCP STA A is also following a wakeup schedule, with 1 A-BI out of every 2 beacon intervals. In addition, STA A performs unscheduled power save during beacon interval 0, and also during beacon interval 2 to(#240) BI 4. STA A is required to stay awake during the following CBAP after receiving an ATIM frame in beacon interval 2. An ATIM frame received during beacon interval 4 however serves as a traffic indication and PCP will transmit frames to STA A only after STA A (#234)is in the awake state.

**2011.25**

In Figure 11-14: BI: (10 locations), Awake BI (7 locations), Doze BI (3 locations), and Awake BIs (2 location),

**Proposed:**

In Figure 11-14: beacon interval: (10 locations), A-BI (7 locations), D-BI (3 locations), and A-BIs (2 location),

**2033.40**

a) The STA maintains the following distributed authentication control (DAC) parameters:

1) Authentication control slot duration (Tac) in TU units. The default value is set to 10 TUs.

2) Minimum transmission interval (TImin) in BI units. The default value is set to 8 BIs.

3) Maximum transmission interval (TImax) in BI units. The default value is set to 256 BIs.

b) The STA maintains a transmission interval (TI) in BI units.

c) The TI is initialized to TImin.

d) The STA chooses a random number *m* from [0, TI].

e) The STA chooses a random number *l* from [0, L], where , 0 is the first

authentication control slot.

f) The STA may initiate normal EDCA access procedures for the transmission of the Authentication

Request frame beginning at the authentication control slot *l* in the BI *m*, where *m*=0 is the current BI.

**Proposed:**a) The STA maintains the following distributed authentication control (DAC) parameters:

1) Authentication control slot duration (Tac) in TU units. The default value is set to 10 TUs.

2) Minimum transmission interval (TImin) in beacon interval units. The default value is set to 8 beacon intervals.

3) Maximum transmission interval (TImax) in beacon interval units. The default value is set to 256 beacon intervals.

b) The STA maintains a transmission interval (TI) in beacon intervals units.

c) The TI is initialized to TImin.

d) The STA chooses a random number *m* from [0, TI].

e) The STA chooses a random number *l* from [0, *L*], where , 0 is the first authentication control slot, and *bi* is the beacon interval.

f) The STA may initiate normal EDCA access procedures for the transmission of the Authentication

Request frame beginning at the authentication control slot *l* in the beacon interval *m*, where *m*=0 is the current beacon interval.

*Note: the red boxed formula above is removed and replaced with the red text formula. I didn’t know how else to show this in this document.*

**References:**

1. **11-18-0611-04-000m-revmd-wg-ballot-comments**
2. **IEEE P802.11-REVmd™/D1.0, February 2018.** (Revision of IEEE Std 802.11TM-2016 as amended by IEEE Std 802.11aiTM-2016, and IEEE Std 802.11ahTM-2016)