IEEE P802.11
Wireless LANs

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| Proposed Resolution to Channel Power Management Element |
| Date: 2011-01-16 |
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Abstract

Submission for P802.11af draft text. This document contains proposed resolutions for comments39, 40, 105, 150, 184, 276, 277, 278, 280, 281, 282, 283, 284, 285, 330, 388, 407, 408, 487, 488, 489, 743, 963, 1011, 1072 and 1228 from LB171.

The baseline of this text is P802.11af\_D1.05.

## Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are auctioned in the TGaf Draft. This introduction is not part of the adopted material.

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

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

***Submission Note: Notes to the reader of this submission are not part of the motion to adopt. These notes are there to clarify or provide context.***

**Relevant comments and discussion**

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 39 | 30.45 | 8.4.2.af3 | "The element is present only when a channel power management is pending." where is it only present? I guess you mean Beacon & probe responses. | Remove "The element is present only when a channel power management is pending." and specify when the IE is present in the clauses that talk about the frames where this IE can be used. |
| 105 | 30.45 | 8.4.2.af3 | "The element is present only when a channel power management is pending."What do you mean by "pending"? where is "channel power management"? Do you mean "Channel Power Management" in Extended Capabilities element? | Clarify it. |
| 276 | 30.45 | 8.4.2.af3 | What does this mean: "The element is present only when a channel power management is pending" - present where? And what does it meant to say that a "channel power management" is pending? | Clarify. |
| 278 | 30.45 | 8.4.2.af3 | poor reference - "after the announcement" - what exactly, is the announcement? Transsmission of a frame of some sort, perhaps? This statement needs more detail and it should be moved to a behavioral subclause. | As per the comment. |

**Discussion:**

CIDs 39,105, 276 and 278 requests for clarification of a particular sentence.

CIDs 39, 105 and 276 requests to clarify the sentence, "The element is present only when a channel power management is pending”.

CID 278 requests to clarify the following clause, "after the announcement".

**Propose** Revised for CIDs 39, 105 and 276. Proposed editorial instructions are included in this document.

**Propose** Revised for CID 278. P802.11af D1.05 contains approved comment resolutions that removed the available channel announcement in CMP, resolving this comment.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 330 | 30.52 | 8.4.2.af3 | The format of the IE as currently defined is difficult to parse. | Please simplify the frame format for easy parsing |
| 184 | 32.01 | 8.4.2.af3 | Table 8-41paf1: The entries for channel power management mode =2&3 as well as for = 4&5 are exactly the same. I assume mode =3 & 5 were meant to cover the case where the Constrained Max. Trans. Power field is NOT present. | Correct text or delete duplicate entries. |
| 40 | 31.01 | 8.4.2.af3 | Using the "Channel Power Management Mode" to signal the presence of the "Channel Power Switch Count" and "Constrained Maximum Transmit Power" fields is a problem for forward compatibility. Adding any new values of "Channel Power Management Mode" will cause existing implementations to be unable to determine which optional fields are present. | Split the "Channel Power Management Mode" field in to a set of bit-fields that indicate the presence of the optional fields and channel switch. |
| 487 | 30.38 | 8.4.2.af3 | “The Channel Power Management Announcement ….when the channel availability is changed…”, should the information about channel availability change be included in White Space Map instead of Channel Power Management? Also, in IBSS, only the IDO STA will use this element, so it will be better to use "an IDO STA in an IBSS". | As per the comments |
| 488 | 32.00 | 8.4.2.af3 | The way different possible modes are defined for CPM looks very complex. The main functions are to indicate required channel switch, and/or power changes. Too many options embedded in each mode are confusing. For example, why the stopping transmissions immediately or not requires to be indicated in two modes. This may be signaled by channel power switch count field as well.  | Suggest to simplify the text by only covering channel switch and changes in maximum transmit power levels. May be a bit map representation for various options would be the better approach.  |
| 743 | 32.01 | 8.4.2.af3 | Table 8-42paf1—Channel Power Management Mode valuesIt might help to instead have a bit field indicating which fields are actually present and possible action, instead of having enumerated values | Assign bits in Channel Power Management Mode value to reflect what all fields are present and possible action corresponding to each bit. |
| 963 | 32.01 | 8.4.2.af3 | Table 8-42paf1—Channel Power Management Mode valuesIt might help to instead have a bit field indicating which fields are actually present and possible action, instead of having enumerated values | Assign bits in Channel Power Management Mode value to reflect what all fields are present and possible action corresponding to each bit. |
| 280 | 32.43 | 8.4.2.af3 | "requested"? Then there is not much of a point. Either you require or your don't. | Change "requested" to "required" - make appropriate, corresponding changes elsewhere where behavioral description of this interaciton exists. |
| 388 | 33.22 | 8.4.2.af3 | I don't understand the following sentence "Stopping transmissions until the actual change(s) in the Constrained Maximum Transmit Power(s) is requested." Who requests what? Who should do what? The sentence occurs also in slighty different form as "Stopping transmissions until the actual channel switch(es) is requested." | Clarify |
| 489 | 32.45 | 8.4.2.af3 | Is the indication of primary and secondary channels in mode 4 or 5 is meant for .11n 40 MHz bandwidth? In the current channelization plan for TVWS band in E.1 does not have primary and secondary channels. | Clarify. |
| 407 | 31.09 | 8.4.2.af3 | What is a "power switch"? Is it a change in permitted power level?  | Replace "power switch" with "change in permitted power level".  |
| 408 | 31.10 | 8.4.2.af3 | Sets the field on transmission of what? | Sets this field in every one of its transmissions? Specify which transmissions. |

**Discussion:**

CIDs 330, 184, 40, 487, 488, 743, 963, 280, 388, 489, 407 and 408 are related to Channel Power Management Mode.

CID 330 requests to simplify the frame format. CID 487 requests not to use Channel Power Management for the purpose of announcement of changes in available channels.

CIDs 40, 184, 488, 748 and 963 requests to simplify the options embedded in the Channel Power Management Mode.

CIDs 280, 388 and 489 asks for clarification on the description of each Channel Power Management Mode timing, which is the same as Extended Channel Switch Announcement timing.

CIDs 407 and 408 asks for the clarification on the use of Channel Power Management Mode, and 11-11/1102r1 adds the necessary language to P802.11 D1.05..

**Propose** Revised for CID487. P802.11af D1.05 contains approved comment resolutions that removed the available channel announcement in CMP, resolving this comment.

**Propose** Revised for CIDs 40, 184, 488, 743 and 963. The format of the Channel Power Management IE in P802.11af D1.05 contains approved comment resolutions that simplify the Management mode, but the explanatory text has not reflected the simplification. Editorial instructions to resolve these comments are included in this document.

**Propose** Revised for CIDs 280, 388 and 489. P802.11af D1.05 contains approved comment resolutions that use ECSA language to describe switch timing, similar to the REVmb baseline language.

**Propose** Accepted CIDs 330 and 407.

**Propose** Revised for CID 408, per discussion and editing instructions in 11-11/1102r1.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 281 | 33.35 | 8.4.2.af3 | "immediately before the next TBTT" - does that mean, "immediately upon receipt of the element, and independent of the TBTT", or does it mean, in the epsilon time as close to the next TBTT as is physically possible? | Change "immediately before the next TBTT" to "immediately, upon receipt of the element" - if you really do mean right before the next TBTT, then say "one microsecond before the next TBTT" because one microsecond is the minimum resolution for MAC time that is known by STAs in the standard. |
| 282 | 33.37 | 8.4.2.af3 | wrong side of the exchange | change "transmitted" to "received" |
| 283 | 33.36 | 8.4.2.af3 | "Anytime" - so next year, Tuesday, is ok, for example? | Be more specific - replace "anytime" with something more specific. |
| 284 | 33.37 | 8.4.2.af3 | Wording | Change "For the change power limit without a channel switch" to "When the element is transmitted to signal a change in the power limit without a simultaneous channel switch" |
| 285 | 33.42 | 8.4.2.af3 | wording - I think that somewhere, the phrase "channel power management change" needs to be defined, because it possibly includes more or less than just a power change. I propose changing "channel power management" as a noun to "channel status management" throughout the document. And in many places, where "channel power management" is used, it is used in the sense of a specific procedure, and not a more generic set of functions. The two concepts are confused throughout the document. | Change "channel power management" to "channel status management" throughout the document when the general concept is being discussed and then define "channel status management" somewhere in the doc, as any change in channel availability, power, etc. - also change "Channel power announcement element" to "channel status change announcement element" and the MIB variable changes as well from channelpowermangementactivated to channelstatusmanagementactivated, etc. etc. etc. Create a new name and use it when appropriate for the activity vs the concept - that is - create something like "Channel Status Change" and use that as the name for the procedure of sending a channel status change to allow it to be differentiated from the concept of Channel Status Management. |

**Discussion:**

CIDs 281, 282, 283, 284, and 285 asks for clarification of the use of Channel Power Switch Count field. CIDs 282 and 284 request for the description to be written clearly and correctly.

CIDs 281 and 283 request to describe in more detail when the channel power management takes effects. CID 285 requests to change "channel power management" to "channel status management", however other approved comment resolutions removed the CPM available channel function, so channel status is no longer being announced.

**Propose** Acceptedfor CIDs 282 and 284.

**Propose** Rejectedfor CIDs 281 and 283, per discussion in 11-11/1102r1. The CPM Announcement timing is the same as the ECSA timing.

**Propose** Rejectedfor CID 285: Other approved comment resolutions removed the CPM available channel function, so channel status is no longer being announced.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 150 | 33.48 | 8.4.2.af3 | The definition of Constrained Maximum Transmit Power field needs the word 'maximum' to be precise: The Constrained Maximum Transmit Power field, if present, indicates the maximum power, in dBm... . | per comment |
| 1072 | 33.48 | 8.4.2.af3 | "The Constrained Maximum Transmit Power field, if present, indicates the power, in dBm" - this field does not indicate if the value is signed or unsigned. | The Constrained Maximum Transmit Power field, if present, contains an unsigned integer value representing the power, in dBm... |
| 1228 | 33.48 | 8.4.2.af3 | Format ambiguity on Constrained Maximum Transmit Power field. Are negative numbers allowed? Are fractional numbers allowed? Are scaling factors used? |  |

**Discussion:**

CIDs 150, 1072 and 1228 asks for clarification on the definition of maximum transmit power.

CID 150 requests to add “maximum” to be clear.

CID 1072 and 1228 requests to define the values which can be assigned to the Constrained Maximum Transmit Power field in detail.

**Propose** Revised for CIDs 150, 1072 and 1228. P802.11af D1.05 contains text from approved comment resolutions that clarify the constrained maximum transmit power description and to use units of 0.5 dBm.

**Proposed Resolution:**

Accept changes to P802.11af draft based on discussion and editing instructions in 11-11/1102r1:

**8.4.2.160 Channel Power Management Announcement element**

***TGaf Editor: Change the first paragraph of 8.4.2.160, as shown:***

The Channel Power Management Announcement element is used by a GDC enabling STA when the BSS or IBSS is changing a new channel or a new channel in a new operating class, or when the power limit (constrained maximum transmit power) is changed in the operating channel. The announcement element includes the operating class and the channel number and the constrained maximum transmit power. The element is present only when a channel power management announcement is ~~pending~~ active and may be present in Beacon frames and Probe Response frames. The format of the Channel Power Management Announcement element is shown in Figure 8-401bq (Channel Power Management Announcement element format).

***Submission Note: This editorial instruction contains proposed resolutions for comments 39, 105, 276 and 278.***

***TGaf Editor: Change the third paragraph of 8.4.2.160, as shown:***

~~The Channel Power Management Mode field indicates whether the Channel Power Management Announce­ment element contains the Channel Power Switch Count field.~~ The Channel Power Management Mode indi­cates any restrictions on transmission until a channel switch or a power ~~switch~~ change. A~~n AP~~  GDC enabling STA in a BSS ~~or a STA~~ in an IBSS sets the Channel Power Management Mode field on transmission of a frame containing the element as specified in Table 8-183u (Channel Power Management Mode values).

***Submission Note: This editorial instruction contains proposed resolutions for comments 330, 184, 40, 487, 488, 743, 963, 280, 388, 489, 407 and 408.***

***TGaf Editor: Remove the second and the third column of the Table 8-183u – Channel Power Management Mode values, as shown:***

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| **Channel power management mode value** | **~~Channel power switch count fields~~** | **~~Constrained maximum transmit power field~~** | **Stop transmission until actual channel switch?** | **Description** |
| 0 | ~~Yes~~ | ~~Yes~~ | No | The Channel Power Management Announcement element is used to announce channel switch(es) with the transmission power limit(s) in new channel(s).If more than one triplet comprised of Operating Class, Channel Number and Constrained Maxi­mum Transmit Power, with same operating class appear in the Channel Power Management Announcement element, then the first triplet rep­resents the targeted primary channel after the channel switch, the second triplet represents the targeted secondary channel after the channel switch, and etc. |
| 1 | ~~Yes~~ | ~~Yes~~ | Yes | The Channel Power Management Announce­ment element is used to announce channel switch(es) with the transmission power limit(s) in new channel(s).If more than one triplet comprised of Operating Class, Channel Number and Constrained Maxi­mum Transmit Power, with same operating class appear in the Channel Power Management Announcement element, then the first triplet rep­resents the targeted primary channel after the channel switch, the second triplet represents the targeted secondary channel after the channel switch, and etc. |

***Submission Note: This editorial instruction contains proposed resolutions for comments 330, 184, 40, and 488.***

***TGaf Editor: Change the fourth paragraph of 8.4.2.160, as shown:***

The Channel Power Switch Count field, ~~if present,~~ is either a value of ~~0~~ zero, or indicates the number of the target beacon transmission times (TBTTs) until the STA sending the Channel Power Management Announcement element switches to the new channel. A value of one indicates that the switch occurs immediately before the next TBTT. A value of 0 indicates that the channel switch occurs anytime after the frame containing the ele­ment is ~~transmitted~~ received. ~~When changing power limit without a channel switch~~ When the element is transmitted to signal a change in the power limit without a simultaneous channel switch, this value is equal to ~~0~~ zero.

***Submission Note: This editorial instruction contains proposed resolutions for comments 281, 282, 283, 284, and 285.***

***TGaf Editor: Change the seventh paragraph of 8.4.2.160, as shown:***

The Constrained Maximum Transmit Power field, ~~if present,~~ indicates the maximum power, in units of 0.5 dBm, allowed to be transmitted on the specified channel, after the channel power management announce­ment takes effect.

***Submission Note: This editorial instruction contains proposed resolutions for comments 150, 1072 and 1228.***