IEEE P802.11
Wireless LANs

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| Resolution for CID 7001 |
| Date: 2024-04-23 |
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Abstract

This submission proposes resolution for the following CID submitted to Recirc. SA ballot for P802.11REVme D5.0 (**1 CID**):

* 7001

Revisions:

* rev0: initial version
* rev1: updated based on feedback from Brian and Thomas

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| **CID** | **Commenter** | **PP.LL** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 7001 | Tomoko Adachi |  | 11.21.15 | The Channel Usage Respose frame can include a Transmit Power Envelope element (9.6.13.25). This element is an optional field but it needs to be used when channel usage procedure targeting especially 6 GHz in order for a STA to meet regulatory requirements therein. However, in 11.21.15, there is no description of a Transmit Power Envelope element. | Change the second parent item under the paragraph starting with "Upon receipt of a Channel Usage element in the Probe Response or Channel Usage Response frame, the receiving STA may use the following:" in 11.21.15 from "The Power Constraint element, if present, ..." to "The Power Constraint element or the Transmit Power Envelope element, if present, …". Change "The Transmit Power Envelope element field is defined in 9.4.2.160 (Transmit Power Envelope element)." in 9.6.13.25 to "The Transmit Power Envelope Element field includes zero or one Transmit Power Envelope elements described in 9.4.2.160 (Transmit Power Envelope element). The use of the Transmit Power Envelope element included in the Transmit Power Envelope Element field is described in 11.21.15 (Channel usage procedures)." Change "Transmit Power Envelope element (optional)" in Figure 9-1293 to "Transmit Power Envelope Element (optional)". | Revised. See the instructions to the TGm editor in doc. 11-24/0732r1. |

***TGm editor: The baseline for this document is P802.11REVme D5.0.***

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

**Discussion**

There is no description of how the Transmit Power Envelope element is used when it’s carried in the Channel Usage Response frame. The proper place to describe the use is 11.21.15 Channel usage procedures.

The followings were pointed out during the TGme April ad-hoc:

* The Transmit Power Envelope element in the Channel Usage Response frame is the same with the one used by the AP itself.
* In the US, especially for SP, there can be 2-5 Transmit Power Envelope elements according to the kind of AP and a mix of non-AP STAs.
* So, there is a case where a non-AP STA needs to use different max transmit power from the Transmit Power Envelope element received through the Channel Usage Response frame. The max transmit power should be already known at the non-AP STA that follows the regulation.

The changes should be workable to such complicated scenarios.

According to further discussion with Brian and Thomas, the followings became obvious:

* The Channel Usage Request and Response frames are only allowed to be exchanged with an associated AP, so assisting a C2C operation by these frames are out of order. This is because
	+ 11.21.15 says “A non-AP STA that supports (#3311)channel usage and is not associated to an AP prior to using a channel-usage-aidable BSS(#6071)(#3349) or an off channel TDLS direct link may transmit a Probe Request frame including both Supported Operating Classes and Channel Usage elements. A non-AP STA supporting (#3311)channel usage may send a Channel Usage Request frame at any time after association to the AP that supports the use of (#3311)channel usage to request the (#3311)channel usage information for supported operating classes. …”.
	+ The Channel Usage Request and Response frames are WNM Action frames, not Public Action frames.
* The Channel Usage mechanism is not even sufficient to assist, say, the SP non-AP STAs operating in off-channel TDLS while associated to an AP. This is because, for example there are problems such as
	+ The spec only allows a single Transmit Power Envelope element at max. See Figure 9-1293, where it has “Transmit Power Envelope element (optional)” expressed as singular form, while “Channel Usage Elements” expressed as plural form.
	
	+ Even if multiple Transmit Power Envelope elements were to be allowed, there is no rule how to associate the channels in the Channel Usage elements with the Transmit Power Envelope elements.

It was also informed that these frames were intended to only report local information.

So, the purpose of this CR doc is to clarify the handling of the Transmit Power Envelope element following the current policy.

##### 11.21.15 Channel usage procedures

***TGm editor: change the following two paragraphs starting from pp.ll 2784.46 as follows:***

The AP may send an unsolicited group addressed or individually addressed Channel Usage Response frame to the STAs that have requested (#3311)channel usage information if the corresponding (#3311)channel usage information needs to be updated. The Country element shall be included in the unsolicited and/or group addressed Channel Usage Response frame. The AP may include the Power Constraint information and EDCA Parameter in the Channel Usage Response frame. The values of the fields in the Power Constraint and EDCA Parameter Set elements included in the Channel Usage Response frame shall be the same values of the fields in the Power Constraint and EDCA Parameter Set elements that are transmitted by the AP. If a Transmit Power Envelope element is included in the Channel Usage Response frame, the AP sets the Maximum Transmit Power Interpretation field to a value indicating a local power constraint (i.e., 0 or 1) and chooses a single set of values for the Maximum Transmit Power fields for the channel(s) specified in the Channel Usage elements.(#7001)

Upon receipt of a Channel Usage element in the Probe Response or Channel Usage Response frame, the receiving STA may use the following:

* The channel usage information as part of channel selection processing
	+ (#6075)when starting a (#3349)channel-usage-aidable BSS(#6071) or an off-channel TDLS direct link, or
	+ (#6075)when switching the channel of an existing channel-usage-aidable BSS(#6071) or off-channel TDLS direct link
* The Power Constraint element or the Transmit Power Envelope element(#7001), if present, as part of determining its maximum transmit power for transmissions for the (#3349)channel-usage-aidable BSS(#6071) or an off-channel TDLS direct link
* The EDCA Parameter Set element, if present, as part of determining its EDCA parameters for transmissions for the channel-usage-aidable BSS(#3349)(#6071) or an off-channel TDLS direct link
* The QMF Policy element, if present and dot11QMFActivated is true, as part of determining its classification of Management frames for transmissions for the channel-usage-aidable BSS(#6071)(#3349) or an off-channel TDLS direct link

##### 9.6.13.25 Channel Usage Response frame format

***TGm editor: change Figure 9-1293 as follows:***

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Category | WNM Action | Dialog Token | Channel Usage Elements | Country String  | Power Constraint Element (optional) | EDCA Parameter Set Element (optional) |  Transmit Power Envelope Element (optional)(#7001) |  TWT Elements(optional)(#1024) |  Timeout Interval Element (optional)(#1024) |
| Octets: | 1 | 1 | 1 | variable |  3 | 0 or 3 | 0 or 20 | variable | variable | 0 or 7 |

**Figure 9-1293—Channel Usage Response frame Action field format**

***TGm editor: change the following paragraph starting from pp.ll 1751.46 as follows:***

The Transmit Power Envelope Element field includes zero or one Transmit Power Envelope element described in 9.4.2.160 (Transmit Power Envelope element). The use of the Transmit Power Envelope element included in the Transmit Power Envelope Element field is described in 11.21.15 (Channel usage procedures).(#7001)