IEEE P802.11
Wireless LANs

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| Comment resolutions for fast passive scanning |
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| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Alfred Asterjadhi | Qualcomm Inc. | 5775 Morehouse Dr, San Diego, CA 92109 | +1-858-658-5302 | aasterja@qti.qualcomm.com |
| Abhishek Patil | Qualcomm Inc. |  |  |  |
| George Cherian | Qualcomm Inc. |  |  |  |

Abstract

This submission proposes resolutions for multiple comments related to TGax D4.0 with the following CIDs (15 CIDs):

* 20077, 20078, 20079, 20349, 20350, 20351, 20373, 21043, 21526, 21527,
* 21528, 21529, 21530, 21554, 21577, 21578

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Changes based on feedback received during the presentation. Removed the changes related to the PSC channel addition for FDs in the DL MU PPDU for 21577, and 21578. CID 20373 remains deferred. Changes are highlighted in green.

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

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

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

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| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 20077 | Abhishek Patil | 431.15 | The rules in this subclause cover AP side actions to enable fast passive scanning while the next sub-clause covers the non-AP STA side actions for fast passive scanning. Update the section titles to be more representative. | As in comment | Revised –Agree in principle with comment. Proposed resolution renames the subclause to “AP behavior for fast passive scanning”. TGax editor to make the changes shown in 11-19/0910r1 under all headings that include CID 20077. |
| 20078 | Abhishek Patil | 431.49 | Incorrect field name | The field name should be Primary Channel Presence Indicator. Also need to cover Channel Center Frequency Segment 1 Presence Indicator is set to 0 | Revised –Agree in principle with comment. Proposed resolution deletes the sentence as we can simply rely on baseline subclause 11.46.2.1 which covers the setting of these fields. TGax editor to make the changes shown in 11-19/0910r1 under all headings that include CID 20078. |
| 20079 | Abhishek Patil | 431.53 | Clause 11.46.2.1 and 11.1.3.8 provides rules that only the transmitted BSSID transmits a FILS Discovery frame or an unsolicited Broadcast Probe Response frame. No need to repeat the rules. Same comment for the 1st sentence on line 22 and 38 on this page | Remove the sentences that repeat the rule and instead add a note with reference to the sections where these rules are described. | Revised –Agree in principle with the comment to remove reduncancies. Proposed resolution removes the sentence related to the setting of the Multiple BSSID Presence Indicator and instead provides a reference to clause 11.46.2.1. As for the rule that forbids the AP to generate FILS Discovery frames for the nontransmitted BSSID there was no such statement in either of these subclauses hence did not remove it. As for the rest of the citations of text related to transmitted BSSID, those are removed and replaced with a reference to 11.1.3.8.TGax editor to make the changes shown in 11-19/0910r1 under all headings that include CID 20079. |
| 20349 | kaiying Lv | 431.22 | Does it mean that an AP operating in the 6 GHz band must support 11ai? | Please clarify it. | Rejected –The comment fails to identify a technical issue and is asking a question. The question is related to the statement requiring the AP transmit a FILS Disocvery frame. Accordingly, it is not required for the AP to support IEEE802.11ai (although the AP is free to do so) but rather generate FILS Discovery frames. |
| 20350 | kaiying Lv | 431.33 | Beacon is always transmitted in 6GHz band. So here it should clarify that when a beacon frame is shceduled within the current period of the FILS Discovery frame. | Change to "if a broadcast Probe Response frame or a Beacon frame is scheduled of transmission within the current transmission period of the FILS Discovery frame" | Revised –Agree in principle with the comment that some more clarification is helpful. Although in this particular case it si not related to the current transmison period but rather to the fact that the frames are interchangeable if their transmission is scheduled at that target transmit time.TGax editor to make the changes shown in 11-19/0910r1 under all headings that include CID 20350. |
| 20351 | kaiying Lv | 431.56 | "An AP that has dot11MultiBSSIDImplemented equal to true and that corresponds to the transmitted BSSID shall set the Multiple BSSID Presence Indicator subfield to 1 in FILS Discovery frames it transmits." it is redundant to say "that corresponds to the transmitted BSSID" because the AP that corresponds to the non-transmitted BSSID shall not transmit FILS Discovery frame. | Please clarify it. | Revised – Agree in principle with the comment. Proposed resolution deletes the sentence and adds a reference to 11.1.3.8 where these rules are actually defined for the case of an AP setting the dot11MultiBSSIDImplemented to true.TGax editor to make the changes shown in 11-19/0910r1 under all headings that include CID 20351. |
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| 21043 | Massinissa Lalam | 431.63 | "NOTE--An AP initiates a BSS with a primary channel that coincides with a PSC in order to assist STAs that are scanning the 6 GHz band to discover the BSS. The AP might subsequently switch its operating channel to a non-PSC (e.g., using a CSA mechanism) if it does not expect additional (not yet associated) STAs will need to discover the BSS."? The note should better reflect the fact that choice of the primary channel in the 6 GHz band in the PSCs is an option, not a mandate. Also on a practival elvel, I don't see how an HE AP can determine that no more STAs will come to do such CSA stuff ... but this is another problem | Remove the note or modify its begining e.g. "NOTE--An AP may initiate a BSS with a PSC in order to assist STAs ..." | Revised –The sentence that precedes the note indicates a recommendation not a requirement for a 6 GHz-only AP to select the primary channel that coincides with a PSC. The note is intended to describe a possible case (not a requirement) where the AP can initiate the BSS in a PSC and then move to a non-PSC. Proposed resolution is to add “might” (note that in a note we cannot use “may”.TGax editor to make the changes shown in 11-19/0910r1 under all headings that include CID 21043. |
| 21526 | Yongho Seok | 431.29 | "The FILS Discovery frames may be included in the broadcast RU of a DL HE MU PPDU provided that the broadcast RU size does not exceed a 242 subcarriers, is located within the primary 20 MHz channel and complies with the rules in 27.3.2.8 (RU restrictions for 20 MHz operation)"Rules in 26.5.1.3 (RU allocation in an HE MU PPDU) shall be also subject. | Change to "... complies with the rules in 26.5.1.3 (RU allocation in an HE MU PPDU) and 27.3.2.8 (RU restrictions for 20 MHz operation)." | Accepted |
| 21527 | Yongho Seok | 431.44 | "The Probe Response frame shall be transmitted at a mandatory PHY rate and may be included in the broadcast RU of a DL HE MU PPDU provided the broadcast RU size does not exceed 242 subcarriers, is located within the primary 20 MHz channel and complies with the rules in 27.3.2.8 (RU restrictions for 20 MHz operation)."Rules in 26.5.1.3 (RU allocation in an HE MU PPDU) shall be also subject. | Change to "... complies with the rules in 26.5.1.3 (RU allocation in an HE MU PPDU) and 27.3.2.8 (RU restrictions for 20 MHz operation)." | Accepted |
| 21528 | Yongho Seok | 431.49 | Wrong field name. Change "Primary Channel Indicator" to "Primary Channel Presence Indicator". | As in comment. | Revised –Agree in principle with the comment. Proposed resolution though is to delete the sentence since these settings are already covered by baseline subclause 11.46.2.1.TGax editor to make the changes shown in 11-19/0910r1 under all headings that include CID 21528. |
| 21529 | Yongho Seok | 431.50 | "An AP operating in the 6 GHz band that transmits a FILS Discovery frame shall set the Primary Channel Indicator subfield in FILS Discovery frame to 0."Can't an AP transmit a FILS Discovery frame in a non-HT duplicate PPDU format? Otherwise, the Primary Channel Indicator subfield in FILS Discovery frame can be set to 1. | As in comment. | Revised –Agree in principle with the comment. Proposed resolution though is to delete the sentence and rely to the reference of baseline subclause 11.46.2.1 which allows generation of FILS Discovery frames in non-HT Duplicate PPDU format.TGax editor to make the changes shown in 11-19/0910r1 under all headings that include CID 21529. |
| 21530 | Yongho Seok | 432.01 | The sentence is not clear.Change to "When a 6 GHz AP received a Probe Request frame with the broadcast destination address, the 6 GHz AP shall responds with the broadcast Probe Response frame." | As in comment. | Revised –Agree in principle with comment. Proposed resolution accounts for the suggested changes, although with some editorial improvements.  TGax editor to make the changes shown in 11-19/0910r1 under all headings that include CID 21530. |
| 21554 | Youhan Kim | 431.28 | A 20MHz operating STA receiving RU242 in >=40MHz HE MU PPDU is optional. Broadcast RUs need to be transmitted using mandatory modes. | Change "RU size does not exceed 242 subcarriers" to "RU size does not exceed 106 subcarriers" at P431L28 and P431L42. | Accepted |
| 21577 | Yusuke Tanaka | 431.28 | FILS Discovery frame need to be transmitted in non primary channel as well as in primary channel. The reason is PSC and primary channel should be set up in different channels to prevent low spectrum utilization (see the comment on P431L60 by the same commenter).FILS Discovery frame include primary channel information, so STAs which receive FILS Discovery frame transmitted in non primary channel can know which channel is primary channel. | Modify sentences in P431L27(26.17.2.3.2) like "At least one of the FILS Discovery frames may be included ...". | Revised – Agree in principle that it is beneficial for the AP to be able to send the FILS Discovery frame in channels other than the primary channel. However, disagree that this is something pertinent to the transmission of multiple FILS Discovery frames within a DL MU PPDU since only one broadcast RU is possible to be included in a DL MU PPDU that is addressed to unassociated STA. Proposed resolution is to allow the AP to send FILS Discovery frames in non-HT duplicate PPDU format by deleting the sentence that currently forbids it, which achieves the same goal. TGax editor to make the changes shown in 11-19/0910r1 under all headings that include CID 21577. |
| 21578 | Yusuke Tanaka | 431.60 | Setting up a primary channel that coincides with a PSC could cause low spectrum utilization due to frequent busy states by transmission from OBSSs which set up a primary channel in the same PSC. Primary 20MHz should be set up in a different channel from PSC in principle, not only in the special case described in the NOTE. In this case, FILS discovery frame should be sent in PSC and primary channel for the purpose that unassociated STA can discover an AP in PSC and disassociated STA can re-associate with an AP through primary channel. | Remove L60-65 and modify sentences in P431L27(26.17.2.3.2) like "At least one of the FILS Discovery frames may be included ...". | Revised –This sentence provides a recommendation for 6 GHz-only APs (and not for other APs such as dual band APs) and is not a requirement. The recommendation is so that the STAs that are scanning to find an AP can do so as fast as possible by scanning PSCs. Also disagree in principle that having primary channels of OBSSs set in different channels is beneficial from a network perspective due to the distributed nature of the access to the WM. Having the primary channels of OBSSs coincide in many cases is beneficial because the hidden node issues are reduced (note that PD and NAV are performed at the primary channel). Proposed resolution for this comment is the same as that for CID 21577 which allows FD frames to be sent in non-HT duplicate PPDU. TGax editor to make the changes shown in 11-19/0910r1 under all headings that include CID 21578. |

**Discussion: *None.***

**TGax Editor: *Replace “preferred scanning channel (PSC)” with “PSC” in P436L07 of IEEE802.11ax D4.1 (#CID 21577)***

**TGax Editor: *Change the subclause title below of this subclause as follows (#CID 20077):***

* AP behavior for fast passive scanning*(#20077)*

(#15122)An AP operating in the 6 GHz band that is not co-located with an AP operating in the 2.4 GHz band or 5 GHz band is referred to as a 6 GHz-only AP.

**TGax Editor: *Change the paragraph below as follows (#CID 21554, 20350, 20351, 21526, 20079):***

An AP operating in the 6 GHz band *(#20079)*shall schedule for transmission FILS Discovery frames as described in 11.46.2.1 (FILS Discovery frame transmission), except that the following apply:

* The FILS Discovery frames may be included in the broadcast RU of a DL HE MU PPDU provided that the broadcast RU size does not exceed a 106 subcarriers*(#21554)*, is located within the primary 20 MHz channel and complies with the rules in 26.5.1.3 (RU allocation in an HE MU PPDU) and*(#21526)* 27.3.2.8 (RU restrictions for 20 MHz operation)
* The transmission of FILS Discovery frames may be omitted if a BSSID, and SSID (or short SSID) indication of the AP is advertised in a Reduced Neighbor Report element in Beacon and Probe Response frames transmitted on a 2.4 GHz or 5 GHz channel by a co-located AP, or if a broadcast Probe Response frame or a Beacon frame is scheduled for transmission at that target transmit time*(#20350)* instead of the FILS Discovery frame, or if the AP is a 6 GHz-only AP that does not intend to be discovered by STAs

The AP, and shall follow the rules in 11.1.3.8 if dot11MultiBSSIDImplemented is true*(#20351, 20079)***TGax Editor: *Change the paragraph below of this subclause as follows (#CID 21554, 20527, 20079):***

An AP operating in the 6 GHz band may send an unsolicited Probe Response frame using the broadcast address, and shall follow the rules in 11.1.3.8 if dot11MultiBSSIDImplemented is true*(#20079)*. The Probe Response frame shall be transmitted at a mandatory PHY rate and may be included in the broadcast RU of a DL HE MU PPDU provided the broadcast RU size does not exceed 106 subcarriers*(#21554)*, is located within the primary 20 MHz channel and complies with the rules in 26.5.1.3 (RU allocation in an HE MU PPDU) and*(#21527)* 27.3.2.8 (RU restrictions for 20 MHz operation).

**TGax Editor: *Change the paragraph below as follows (#CID 20078, 21528, 21577, 25129, 20079, 21578):***

An AP operating in the 6 GHz band that transmits a FILS Discovery frame or broadcast Probe Response frame in an HE SU PPDU, shall set the TXVECTOR parameter CH\_BANDWIDTH to CBW20. An HE AP operating in the 6 GHz band that transmits a FILS Discovery frame carrying an FD Capability field shall set the PHY Index subfield to 4.*(#20078, 21528, 21577, 25129, 20079, 21578)*

**TGax Editor: *Change the paragraph below of this subclause as follows (#CID 20351, 20079):***

An AP that corresponds to a nontransmitted BSSID shall not schedule for transmission FILS Discovery frames or unsolicited broadcast Probe Response frames. .*(#20351, 20079)***TGax Editor: *Change the paragraph below of this subclause as follows (#CID 21043):***

A 6 GHz-only AP should set up the BSS with a primary 20 MHz channel that coincides with a preferred scanning channel (PSC) (see 26.17.2.3.3 (Non-AP STA scanning behavior)).

NOTE—An AP might initiate*(#21043)* a BSS with a primary channel that coincides with a PSC in order to assist STAs that are scanning the 6 GHz band to discover the BSS. The AP might subsequently switch its operating channel to a non-PSC (e.g., using a CSA mechanism) if it does not expect additional (not yet associated) STAs will need to discover the BSS.

**TGax Editor: *Change the paragraph below of this subclause as follows (#CID 21530):***

A 6 GHz AP shall not respond to a Probe Request frame if the frame carries a FILS Request Parameters element and the AP is unable to satisfy the response time constraint specified in the Max Channel Time field in the element (see 11.1.4.3.4 (Criteria for sending a response)). A 6 GHz AP shall respond with the next Beacon frame if the conditions specified in 11.1.4.3.4 (Criteria for sending a response) for beacon response are satisfied. A 6 GHz AP that receives aa Probe Request frame with the Address 1 field equal to the broadcast address, shall respond with a Probe Response frame with the Address 1 field equal to the broadcast address. *(#21530)*