IEEE P802.11  
Wireless LANs

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| Resolution for CIDs related to Multiple BSSID | | | | |
| Date: November 10, 2019 | | | | |
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Abstract

This submission proposes resolutions for following CIDs received for TGax LB244

22103, 22106, 22006, 22217, 22115, 22122, 22281

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Updated based on offline feedback
* Rev 2:
  + updated the revision number in the instructions to the editor
  + Updated based on discussion when the doc was presented Nov F2F AM1 (11/12)
  + CID 22122 is deferred
* Rev 3:
  + Resolution for CID 22115 is updated based on offline discussion with Liwen (commenter)
  + Provide resolution for CID 22122 based on offline discussion with Liwen (commenter)
* Rev 4: Further updates to resolution for CID 22115 based on offline feedback

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** | **Pg/Ln** | **Section** | **Comment** | **Proposed Change** | **Resolution** |
| 22103 | Liwen Chu | 213.01 | 9.4.2.258 | Clarify that the count is the number of non-transmitted BSSIDs | Change the paragraph to "The BSSID Count field carries the total number of active nontransmitted BSSIDs defined by the multiple BSSID set" | **Rejected**  The existing text doesn’t require further clarification. The field indicates the total number of active BSSIDs in the set (which includes transmitted BSSID). This is consistent with the definition of Max BSSID Indicator field in Multiple BSSID element. |
| 22106 | Liwen Chu | 266.42 | 10.23.2.4 | This adds unnecessary restriction to the frame exchange with Multiple BSSIDs support. | Change to text to "During an EDCA TXOP, the Address 2 field excluding the Individual/Group bit of all Control frames carried in a PPDU that is not an HE MU PPDU sent by an HE STA that is a TXOP holder shall be set to the same address value unless when Multiple BSSID is supported, the TA may be the transmitted BSSID or non-transmitted BSSIDs announced by the transmitted BSSID in its Multiple BSSID element" | **Rejected**  Having the TA value consistent during the TXOP would help OBSS STAs (which may not support Control frames to Multi-BSS, and/or may not know about our BSS’s different BSSIDs) to track the TXOP holder. Further the rules need to be consistent across all Control frames (see 26.4.1 which suggests that the TA field of MBA is set to TxBSSID when the TA is obtained by TxBSSID). |
| 22006 | Albert Petrick | 285.25 | 11.1.3.8.1 | Add definition for EMA AP in clause 3.0. It's defined as 6 GHz AP the supports extended capabilities discovery, and enhanced multi-BSSID functions. It should be called an HE EMA AP. | As commented | **Rejected**  Definition of EMA AP existings in clause 3 (see P42L59). Further, an HE AP operating in 2.4 / 5 GHz can also operate as EMA AP as described in 11.1.3.8.1 |
| 22217 | Mark RISON | 285.26 | 11.1.3.8.1 | "When an AP that does not operate in the 6 GHz band, has dot11MultiBSSIDImplemented equal to true and advertises a partial list of nontransmitted BSSID profiles intends a non-AP STA to discover the complete list of nontransmitted BSSID profiles, where a com- plete list of nontransmitted BSSID profile comprises only BSSIDs that are discoverable, the AP shall oper- ate as an EMA AP." is changing existing behaviour (non-HE APs) | Add "HE " before "the first "AP" in the cited text | **Revised**  Updated the text in 11.1.3.8.1 to clarify HE AP. Further since HE APs operate on 2.4, 5, or 6 GHz, updated the text to replace “does not operate on 6 GHz” with “operating on 2.4 or 5 GHz”.  TGax editor, please make changes as shown on doc 11-19/1905r3 tagged as 22217 |
| 22115 | Liwen Chu | 287.46 | 11.1.3.8.3 | The RNR for non-transmitted BSSID profiles which are not in Probe Response is not completetely defined. | Change the RNR definition per the comment. | **Revised**  802.11ax D5.0 enables an AP to advertise information about nonTxBSSIDs via the RNR element.  Added a normative text to clause 11.50 as requested by the commenter.  Clarified note in 26.17.2.3.2 to provide expected behavior on the receiver side. Furthermore, since the Rx side can’t differentiate between 6 GHz-only AP or co-located 6 GHz AP, the note was updated to cover the case where the information for a nonTxBSSID can be found in RNR transmitted by a co-located lower band AP.  Further in clause 11.1.3.8.3, both Beacon and Probe Response frames can advertise nonTxBSSIDs that are not included in the Multiple BSSID element via the RNR element. Clarified the text to say “Beacon **and** Probe Response frames”.  TGax editor, please make changes as shown on doc 11-19/1905r4 tagged as 22115 |
| 22122 | Liwen Chu | 301.48 | 11.5 | Co-Located AP subfield in the same BSS Parameters subfield may have different values for BSSIDs in the same BSS Parameters subfield. | Change the paragraph per the comment | **Revised**  Per the current spec, an AP that transmits an RNR element advertised each BSSID (in a multiple BSSID set) separately. Therefore, when an AP advertises a co-located 6 GHz AP, the Co-Located AP subfield is set to 1.  The paragraph is modified to fix an error with respect to reference to the BSS Parameters field. It exists only for the reported AP not the reporting AP.  TGax editor, please make changes as shown on doc 11-19/1905r4 tagged as 22122 |
| 22281 | Mark RISON |  | 11.1.3.8.1 | There are references to BSSIDs that are "discoverable", but there is no explanation of what this means | At the end of the first para add "A BSSID is discoverable if the AP includes information on it in beacons it transmits (though not necessarily every beacon)." | **Revised**  Added a note to clarify the meaning of discoverable BSSID  TGax editor, please make changes as shown on doc 11-19/1905r3 tagged as 22281 |

* General

***TGax Editor: Please make changes to this subclause as shown below:***

Change the 1st paragraph as follows:

A STA that supports the Multiple BSSID capability has dot11MultiBSSIDImplemented equal to true and shall set to 1 the Multiple BSSID field of the Extended Capabilities elements that it transmits. Support for the Multiple BSSID capability is mandatory for a FILS STA and non-AP HE STA. An AP that supports enhancements related to the discovery and advertisement of a nontransmitted BSSID shall set the Enhanced Multi-BSSID Advertisement Support bit in the Extended Capabilities element to 1 and is referred to as an EMA AP. A 6 GHz AP with dot11MultiBSSIDImplemented equal to true and advertising a partial list of nontransmitted BSSID profiles shall operate as an EMA AP. [22217]When an HE AP operating in 2.4 GHz or 5 GHz band that has dot11MultiBSSIDImplemented equal to true and advertises a partial list of nontransmitted BSSID profiles intends a non-AP STA to discover the complete list of nontransmitted BSSID profiles, where a complete list of nontransmitted BSSID profile comprises only BSSIDs that are discoverable, the AP shall operate as an EMA AP.

NOTE – A BSSID is discoverable if the AP includes information of that BSSID in its Beacon and Probe Response frames (though not necessarily every frame).[22281]

* Reduced neighbor report

***TGax Editor: Please make changes to the following paragraphs in this subclause as shown below:***

If an AP reported in a TBTT Information field in a Reduced Neighbor Report element is not part of a multiple BSSID set, then the BSS Parameters subfield, if included, shall have the Multiple BSSID subfield set to 0. If an AP reported in a TBTT Information field in a Reduced Neighbor Report element is a transmitted BSSID, then the BSS Parameters subfield, if included, shall have the Multiple BSSID subfield set to 1 and the Transmitted BSSID subfield set to 1. If an AP reported in a TBTT Information field in a Reduced Neighbor Report element is a nontransmitted BSSID, then the BSS Parameters subfield, if included, shall have the Multiple BSSID subfield set to 1 and the Transmitted BSSID subfield set to 0.

[22115]An HE AP with dot11MultiBSSIDImplemented set to true may advertise one or more nontransmitted BSSIDs in the multiple BSSID set by including Reduced Neighbor Report element in its Beacon or Probe Response or FILS Discovery frames with BSS Parameters subfield of TBTT Information field containing the Co-Located subfield set to 1, the Multiple BSSID subfield set to 1 and the Transmitted BSSID subfield set to 0 and the Operating Class and Channel Number fields of Neighbor AP Information field set to the operating class and channel number respectively of the transmitting AP (i.e., the transmitted BSSID).

[22122]A reporting AP should set the OCT Recommended subfield to 1 in the BSS Parameters subfield of a TBTT Information field in a Reduced Neighbor Report element if both the reporting AP and the reported AP have dot11OCTOptionImplemented equal to true and the Co-Located AP subfield is 1 in the BSS Parameters subfield corresponding to the reported AP. A reporting AP may set the OCT Recommended subfield to 1 in the BSS Parameters subfield of a TBTT Information field in a Reduced Neighbor Report element if both the reporting AP and the reported AP have the same SSID and have dot11OCTOptionImplemented equal to true and the Co-Located AP subfield is 0 in the BSS Parameters subfield corresponding to the reported AP. If the OCT Recommended subfield is 1 and the Co-Located AP subfield is 1 in the Neighbor AP Information field describing a reported HE AP in the Reduced Neighbor Report element, then a non-AP STA that has dot11OCTOptionImplemented equal to true should use the OCT procedure described in 11.32.5 (On-channel Tunneling (OCT) operation) to perform active scanning, authentication and/or association with the reported AP through over-the-air transmissions with the AP that sent the Reduced Neighbor Report element. If the OCT Recommended subfield is 1 and the Co-Located AP subfield is 0 in the Neighbor AP Information field describing a reported HE AP in the Reduced Neighbor Report element, then a non-AP STA that has dot11OCTOptionImplemented equal to true may use the OCT procedure described in 11.32.5 (On-channel Tunneling (OCT) operation) to perform active scanning, authentication and/or association with the reported AP through over-the-air transmissions with the AP that sent the Reduced Neighbor Report element.

* Discovery of a nontransmitted BSSID profile

***TGax Editor: Please make changes to the following paragraph in this subclause as shown below:***

[22115]An EMA AP operating in the 2.4 GHz or 5 GHz band should include in Beacon and Probe Response frames a Reduced Neighbor Report element carrying information about nontransmitted BSSIDs that are not advertised in the Multiple BSSID element carried in that frame (see 11.50). The EMA AP does this to aid the fast discovery of all nontransmitted BSSIDs in the multiple BSSID set that are discoverable.

* AP behavior for fast passive scanning

***TGax Editor: Please make changes to the following paragraphs in this subclause as shown below:***

[22115]If a 6 GHz-only EMA AP transmits a FILS Discovery frame, it shall include a Reduced Neighbor Report element in the FILS Discovery frame carrying information of all nontransmitted BSSIDs in the multiple BSSID set that are discoverable (see 11.50).

NOTE—A FILS Discovery frame received from a 6 GHz AP with the Multiple BSSIDs Presence Indicator subfield set to 1 and not carrying a Reduced Neighbor Report element implies that the AP’s Beacon frame at the advertised TBTT carries a complete list of nontransmitted BSSID profiles or the information of the nontransmitted BSSID(s) is advertised in 2.4 or 5 GHz by a co-located AP.

If a 6 GHz-only EMA AP transmits a Beacon or broadcast Probe Response frame carrying partial list of nontransmitted BSSID profiles, it shall include a Reduced Neighbor Report element in that frame carrying information of all nontransmitted BSSIDs in the multiple BSSID set that are discoverable and not carried in that frame (see 11.50).