IEEE P802.11
Wireless LANs

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| CR for Out of band discovery |
| Date: 2019-03-13 |
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Abstract

This document provides CR for CIDs: 22527, 22528, 22529, 22530, 22531, 22532, 22533

1. **Introduction**

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. The introduction and the explanation of the proposed changes are 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** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 22527 | Yongho Seok | 454.37 | 26.17.2.4 | "An AP responds to a probe request by following the rules defined in 11.1.4.3.4 (Criteria for sending a response)."This is a redundant with the following in the baseline."A STA that responds to a Probe Request frame according to 11.1.4.3.4 (Criteria for sending a response(11ai)) shall transmit a Probe Response frame or a Beacon frame(11ai) to the STA that transmittedthe Probe Request frame." | Remove the cited sentence. | Reject – this was added by a previous commenter for clarification. This is indeed redundant, reason why the sentence does not include a shall statement, but just a reference to the baseline subclause describing these behaviors. |
| 22528 | Yongho Seok | 455.27 | 26.17.2.4 | "NOTE 3--If the Same SSID subfield is set to 0 in the BSS Parameters of a reported 6 GHz AP, a non-AP STA might:"Is this to figure out the SSID? Then, please change as the following:"NOTE 3--If in the BSS Parameters of a reported 6 GHz AP the Short SSID field is not present and the Same SSID subfield is set to 0, a non-AP STA might to figure out the SSID of the reported 6 GHz AP:" | As in the comment. | Revised – agree with the commenter. Apply the changes marked as #22528 in this document. |
| 22529 | Yongho Seok | 455.46 | 26.17.2.4 | "channel and that might be detected by a STA receiving this frame have dot1120TUProbeResponseOption-"What is this frame? | Please clarify "this frame". | Revised – agree with the commenter. Apply the changes marked as #22529 in this document. |
| 22530 | Yongho Seok | 455.45 | 26.17.2.4 | "if all 6 GHz APs of the same ESS that operate in the corresponding channel and"What is the corresponding channel? | Please clarify "the corresponding channel". | Revised – agree with the comment. Apply the changes marked as #22530 in this document. |
| 22531 | Yongho Seok | 455.57 | 26.17.2.4 | "... if the reported AP operates in the 6 GHz band and is part of an ESS where each AP in the ESS that is operating in the same band as the reported AP and that might be detected by a STA receiving this frame (irrespective of the operating channel), ... "What is this frame? | Please clarify "this frame". | Revised – agree with the comment. Apply the changes marked as #22531 in this document. |
| 22532 | Yongho Seok | 455.58 | 26.17.2.4 | dot11MemberOfColocated6GHzESSOptionImplemented is not a capability.What is the supported functionality when dot11MemberOfColocated6GHzESSOptionImplemented is true?Also, the spec does not say when dot11MemberOfColocated6GHz SSOption Implemented is set to true or false. | Remove dot11MemberOfColocated6GHzESSOptionImplemented and simplify the sentence. | Revised - Change “dot11MemberOfColocated6GHzESSOptionImplemented” to “dot11MemberOfColocated6GHzESSOptionActivated” in all occurances in the spec. Change the following sentence in the DESCRIPTION part of the dot11MemberOfColocated6GHzESSOptionImplemented MIB in page 737 line 60 in 11ax D5.1: "This is a capability variable. Its value is determined by device capabilities.” to the following sentence: “This is a control variable.” |
| 22533 | Yongho Seok | 455.46 | 26.17.2.4 | Is dot1120TUProbeResponseOptionImplemented the capability variable or the control variable?Also, this is the recommended suffixes of the MIB variables."Implemented" - for a static capability"Activated" - when it can be switched on and off | Change to the control variable and rename to to dot1120TUProbeResponseOptionActivated. | Revised - Change “dot1120TUProbeResponseOptionImplemented” to “dot1120TUProbeResponseOptionActivated” in all occurances in the spec. Change the following sentence in the DESCRIPTION part of the dot1120TUProbeResponseOptionImplemented MIB in page 737 line 46 in 11ax D5.1: "This is a capability variable. Its value is determined by device capabilities.” to the following sentence: “This is a control variable.” |

1. **Proposed changes**

***TGax editor: Modify the following subclause 26.2.7 EDCA operation using MU EDCA parameters as follows (#22528, #22529, #22530, #22531):***

* Out of band discovery of a 6 GHz BSS

An AP that operates in the 2.4 GHz or 5 GHz band and that is in the same co-located AP set as one or more 6 GHz APs shall include in Beacon and Probe Response frames that it transmits a Reduced Neighbor Report element with the Co-Located AP subfield in the BSS Parameters subfield in the TBTT Information field set to 1 to provide at least the operating channels and operating classes of those 6 GHz APs.

NOTE—The Reduced Neighbor Report element might contain information on 6 GHz APs that are not in the same co-located AP set as the transmitting AP. In this case the Co-Located AP subfield is set to 0.

An AP responds to a probe request by following the rules defined in 11.1.4.3.4 (Criteria for sending a response).

If neither of the following conditions is met:

* the AP transmits an individually addressed Probe Response frame to a STA that has signaled that it does not support operating in the 6 GHz band (see 9.4.2.53 (Supported Operating Classes element))
* the AP operating in the 6 GHz band does not intend to be discovered by STAs

then the following applies:

* If an AP operating in the 2.4 GHz or 5 GHz band is in the same co-located AP set as one or more 6 GHz APs and has the same SSID as those 6 GHz APs, then the Beacon and Probe Response frames transmitted by the AP or by the transmitted BSSID of the same Multiple BSSID set as the AP shall include, for each of these 6 GHz APs, a TBTT Information field in a Reduced Neighbor Report element with the BSSID field set to the BSSID of the 6 GHz AP, and with either the Short SSID field set to the short SSID of the 6 GHz AP or the Same SSID subfield in the BSS Parameters subfield set to 1
* If an AP operating in the 2.4 GHz or 5 GHz band is in the same co-located AP set as a 6 GHz AP and has a different SSID, and no other AP in the same co-located AP set and operating in the 2.4 GHz or 5 GHz band is indicating the 6 GHz AP in a Reduced Neighbor Report element of the Beacon and Probe Response frames they transmit, then Beacon and Probe Response frames transmitted by the AP (or by the transmitted BSSID of the same Multiple BSSID set as the AP) shall include a TBTT Information field in a Reduced Neighbor Report element with the BSSID field and the Short SSID field set to the BSSID and short SSID of the 6 GHz AP, respectively.

If the AP reported in the TBTT Information field in the Reduced Neighbor Report element is a 6 GHz AP, the reporting AP shall include the BSS Parameters subfield in the TBTT Information field and shall follow the rules in 11.50 (Reduced neighbor report) to set the Multiple BSSID subfield, the Transmitted BSSID subfield, the Co-Located AP subfield(#22440) and the OCT Recommended subfield.

A STA receiving a frame containing a Reduced Neighbor Report element describing a reported AP operating at 6 GHz with the OCT Recommended subfield set to 1 in the BSS Parameters subfield shall follow the rules in 11.50 (Reduced neighbor report) to perform active scanning, authentication and/or association with the reported AP.

An AP that operates in the 2.4 GHz or 5 GHz band and that is in the same co-located AP set as one or more 6 GHz APs shall include the Advertisement Protocol element in Beacon and Probe Response frames that it transmits and shall support responding with a Neighbor Report ANQP element (9.4.5.19 Neighbor Report ANQP element) carrying one or more Neighbor Report elements (see 9.4.2.36 (Neighbor Report element)) that include at least the SSID information of all the 6 GHz APs in the same co-located AP set, except the 6 GHz APs that do not(#22230) intend to be discovered.

NOTE 1—The Neighbor Report ANQP-element can also carry Neighbor Report elements containing information on 6 GHz APs that are not in the same co-located AP set.

NOTE 2—It is recommended that the AP responds with a GAS comeback delay of zero.

NOTE 3—If the Same SSID subfield is set to 0 in the BSS Parameters of a reported 6 GHz AP, a non-AP STA that does not know the short SSID of the reported 6 GHz AP and that wants to discover the SSID of the reported 6 GHz AP (#22528) might:

* Use the OCT procedure described in 11.32.5 (On-channel Tunneling (OCT) operation) to send a Probe Request frame to the reported AP through over-the-air transmissions with the reporting AP, if the OCT Recommended subfield is 1 in the Neighbor AP Information field describing the reported AP.
* Use the ANQP procedure described in 11.23.3.3 (ANQP Procedure) to send an ANQP request with a Query ID corresponding to Neighbor Report to the reporting AP to retrieve the SSID of the 6 GHz APs, including the reported AP.
* Send a Probe Request frame to the reported AP including the BSSID of the reported AP.
* Send a Probe Request frame to the reported AP including the short SSID of the reported AP.
* Perform passive scanning in the operating channel of the reported AP.

An AP may set the 20 TU Probe Response Active subfield to 1 for a reported AP (#22530) in a Reduced Neighbor Report element or Neighbor Report element in a frame (#22529) it transmits if all 6 GHz APs of the same ESS as the reported AP (#22530) that operate in the same (#22530) channel as the reported AP (#22530) and that might be detected by a STA receiving this frame have dot1120TUProbeResponseOptionImplemented equal to true and so are transmitting unsolicited Probe Response frames every 20 TUs (see 26.17.2.3.2 (AP behavior for fast passive scanning)).

NOTE—An AP might be detected by a STA if the STA and the AP are on the same channel and in range.

An AP may set the Member Of ESS With 2.4/5 GHz Co-Located AP subfield to 1 in a Reduced Neighbor Report element in a frame it transmits (#22531), if the reported AP operates in the 6 GHz band and is part of an ESS where each AP in the ESS that is operating in the same band as the reported AP and that might be detected by a STA receiving this frame (irrespective of the operating channel), has dot11MemberOfColocated6GHzESSOptionImplemented equal to true and also has a corresponding AP operating in the 2.4 GHz or 5 GHz band that is in the same co-located AP set as that AP.

NOTE—This subfield indicates that the reported AP is part of an ESS that has no 6 GHz-only APs that might be detected by a STA receiving this frame. This means that all APs operating in the 6 GHz band that are part of that ESS that might be detected by a STA receiving this frame can be discovered in the 2.4 GHz and/or 5 GHz bands.