IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CC36 Resolution for CIDs related to FILS Discovery | | | | |
| Date: February 17, 2022 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Gaurang Naik | Qualcomm Inc. |  |  | gnaik@qti.qualcomm.com |
| Abhishek Patil | Qualcomm Inc. |  |  | appatil@qti.qualcomm.com |
| Alfred Asterjadhi | Qualcomm Inc. |  |  | aasterja@qti.qualcomm.com |
| George Cherian | Qualcomm Inc. |  |  | gcherian@qti.qualcomm.com |
| Duncan Ho | Qualcomm Inc. |  |  | dho@qti.qualcomm.com |
| Yanjun Sun | Qualcomm Inc. |  |  | yanjuns@qti.qualcomm.com |
| Abdel Karim Ajami | Qualcomm Inc. |  |  | aajami@qti.qualcomm.com |

Abstract

This submission proposes resolutions for following 4 CIDs received for TGbe CC36:

4025, 7893, 6011, 5336

**Revisions:**

* Rev 0: Initial version of the document.

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

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

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

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Section** | **Pg.Ln** | **Comment** | **Proposed Change** | **Resolution** |
| 4025 | Abhishek Patil | 9.6.7.36 | 155.01 | In order to aid fast discovery of other APs of the AP MLD, RNR IE, when present in a FILS Discovery frame transmitted by an AP affiliated with an AP MLD, must include the other AP(s) affiliated with the reporting AP's AP MLD and operating on other links. | As in comment | **Revised**  Agree with the commenter. The conditions for the inclusion of the RNR element in the FILS Discovery frame are updated. When the AP transmitting a FILS Discovery frame is affiliated with an AP MLD, the updated rules allow the AP to carry an RNR element with a TBTT Information field corresponding to other AP(s) affiliated with the same AP MLD. The corresponding non-AP MLD behavior is also added.  **TGbe editor: please implement the changes shown in document 11-22/0355r0 tagged as #4025.** |
| 7893 | Yongho Seok | 9.6.7.36 | 155.01 | The FILS Discovery frame should provide the MLO related information. | As in the comment. | **Revised**  Agree with the commenter. The conditions for the inclusion of the RNR element in the FILS Discovery frame are updated. When the AP transmitting a FILS Discovery frame is affiliated with an AP MLD, the updated rules allow the AP to carry an RNR element with a TBTT Information field corresponding to other AP(s) affiliated with the same AP MLD. The corresponding non-AP MLD behavior is also added.  **TGbe editor: please implement the changes shown in document 11-22/0355r0 tagged as #4025.** |
| 6011 | Liwen Chu | 9.4.2.177 | 126.13 | FILS capabille should be MLD level feature. | As in comment | **Rejected**  FILS Discovery provides rules for enhancing the connectivity (for example, reducing the number of probes sent to the AP) at the link level. Therefore, FILS capability should be link-level and not MLD level. |
| 5336 | Jarkko Kneckt | 9.6.7.36 | 155.45 | The FILS Minimum Rate should indicate the rate that is used to transmit the FILS frame. There is no point on signaling the minimum rate, because information is not accurate. The FILS frame transmission parameters should follow the Beacon frame transmission parameters and the transmission parameters should be signaled in the details. | Please allow AP MLD to signal the exact FILS Discovery frame transmission parameters. Change the rate to be the exact rate that is signaled in the FILS Discovery frame. The other transmission parameters of the FILS Discovery frame should be taken from the signaled Beacon transmission parameters. | **Rejected**  The FILS Minimum Rate subfield indicates the minimum rate at which the FILS Disovery frame is transmitted by the AP and the minimum rate of subsequent frame exchanges between the AP and the FILS STA. If the meaning of the subfield is revised, legacy FILS STAs will be unaware of the true minimum rate and may cause interoperability issues. |

***TGbe editor: Please note Baseline is 11be D1.4 and REVme D1.0***

**9.6.7.36 FILS Discovery frame format**

***TGbe editor: Please update Table 9-427 as shown below***

**Table 9-427 – FILS Discovery frame format**

|  |  |  |
| --- | --- | --- |
| **Order** | **Information** | **Notes** |
| 4 | Reduced Neighbor Report element | One or more Reduced Neighbor Report elements are optionally present if dot11FILSActivated or dot11ColocatedRNRImplemented or dot11MultiLinkActivated (#4025) is true; otherwise, they are not present. |

**35.3.4 Discovery of an AP MLD**

**35.3.4.1 AP behavior**

***TGbe editor: Please revise the following paragraphs as shown below***

If an AP is affiliated with an AP MLD and does not correspond to a nontransmitted BSSID, then the Beacon and Probe Response frames transmitted by the AP shall include a TBTT Information field in a Reduced Neighbor Report element with the Neighbor AP TBTT Offset subfield, the BSSID subfield, the Short-SSID subfield, the BSS Parameters subfield, the 20 MHz PSD subfield, and the MLD Parameters subfield, for each of the other APs affiliated with the same AP MLD. A FILS Discovery frame transmitted by the AP may include a Reduced Neighbor Report element with the same information (#4025).

If an AP (AP 1) is affiliated with an AP MLD (AP MLD 1) and corresponds to a nontransmitted BSSID, then the Beacon and Probe Response frames transmitted by the AP (AP 2) corresponding to the transmitted BSSID of the same multiple BSSID set as the AP (AP 1) shall include a TBTT Information field in a Reduced Neighbor Report element with the Neighbor AP TBTT Offset subfield, the BSSID subfield, the Short-SSID subfield, the BSS Parameters subfield, the 20 MHz PSD subfield, and the MLD Parameters subfield, for each of the other APs affiliated with the same AP MLD (AP MLD 1). A FILS Discovery frame transmitted by the AP (AP 2) may include a Reduced Neighbor Report element with the same information (#4025).

If all the following conditions are true:

* a reporting AP is affiliated with an AP MLD (AP MLD 1) and is in the same co-located AP set as APs affiliated with another AP MLD (AP MLD 2)
* the other AP MLD (AP MLD 2) has no affiliated APs operating on the same channel as the reporting AP
* one AP affiliated with the other AP MLD (AP MLD 2) is in the same multiple BSSID set as an AP affiliated with the AP MLD (AP MLD 1) of the reporting AP

then each AP of the other AP MLD (AP MLD 2) shall be reported in a TBTT Information field with the Neighbor AP TBTT Offset subfield, the BSSID subfield, the Short-BSSID subfield, the BSS Parameters subfield, the 20 MHz PSD subfield, and the MLD Parameters subfield in the Reduced Neighbor Report element that is included in the Beacon frames and broadcast Probe Response frames transmitted by the reporting AP and may be reported in a FILS Discovery frame that includes a Reduced Neighbor Report element transmitted by the reporting AP (#4025), unless the APs of the other AP MLD (AP MLD 2) are already reported in Beacon frames and broadcast Probe Response frames transmitted by an AP in the same co-located AP set as the reporting AP and operating on the same channel as the reporting AP.

**35.3.4.3 Non-AP MLD behavior**

***TGbe editor: Please add the following paragraph as shown below***

…

A non-AP MLD shall be able to discover an AP as an AP affiliated with an AP MLD when a STA affiliated with the non-AP MLD receives a FILS Discovery frame transmitted by the AP and the frame carries a Reduced Neighbor Report element that includes the MLD Parameters subfield in the TBTT Information field corresponding to the reported AP and the MLD ID subfield in the MLD Parameters field is equal to zero (see 9.4.2.170.2 (Neighbor AP Information field) and 35.3.4.1 (AP behavior)) (#4025).