IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Resolution for CIDs related to FILS Discovery frame | | | | |
| Date: January 17, 2021 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Abhishek Patil | Qualcomm Inc |  |  | appatil@qti.qualcomm.com |
| Naveen Kakani |  |  |  |
| Youhan Kim |  |  |  |  |
| Thomas Derham | Broadcom |  |  |  |

Abstract

This submission proposes resolution for comments received in LB258 (REVme D1.0) for FILS Discovery frame format.

***TGm editor: The baseline for this document is REVme D1.0.***

**Revisions:**

* Rev 0: Initial version of the document.
* Rev 1: Updated based on offline feedback
  + Resolution for CID 1011 is deferred
* Rev 2: Updated resolution for CID 1011 based on offline discussion with Thomas and Youhan
* Rev 3: Updated based on further offline discussions
* Rev 4: Updated the text in the resolution column to be consistent with the (recent) text changes
* Rev 5: Minor updates based on additional feedback
* Rev 6: Further updates 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 TGm Draft. This introduction is not part of the adopted material.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Clause** | **Page** | **Line** | **Comment** | **Proposed Change** | **Resolution** |
| 1011 | Abhishek Patil | 9.6.7.36 | 1906 | 18 | The current text doesn't provide complete details on the role of the Operating Class subfield. Per Annex E, the operating class provides information on channel start frequency and channel separation. In addition, the primary channel may not explicitly signaled (see next paragraph). | Replace the paragraph on line 18 as: "The Operating Class subfield specifies the operating class of the transmitting AP's BSS (see 9.4.1.36 (Operating Class))." and add the following two NOTEs after the paragraph starting line 22: "NOTE 1 - If the PPDU is sent in non-HT PPDU format, the primary channel is the channel where the PPDU is received." and "NOTE 2 - The value carried in the Operation Class subfield along with the primary channel provides information related to the transmitting AP's BSS channel start frequency and channel separation (also see Annex E)." | **Revised**  Agree with the comment. The cited paragraph is updated to provide details on how operating class and primary channel fields (when present) identify the operating BW of the BSS, location of the primary channel and the location of the BSS BW. A clarification NOTE was added after the following paragraph to provide guidance at the receiver side. Additional changes were made in clause 11 to remove a duplicate sentence and clarify that the Operating Class field is optionally present.  **TGm editor, please implement changes as shown in** [**this**](https://mentor.ieee.org/802.11/dcn/22/11-22-0115-02-000m-lb258-resolution-for-cids-related-to-fd-frame.docx) **document tagged as 1011** |
| 1012 | Abhishek Patil | 9.6.7.36 | 1906 | 34 | The paragraph starting line 34 is a duplicate of paragraph starting line 22. | Delete the paragraph starting line 34 | **Accepted**  NOTE: Redline version of the changes proposed by the commenter is shown in <https://mentor.ieee.org/802.11/dcn/22/11-22-0115-01-000m-lb258-resolution-for-cids-related-to-fd-frame.docx> (tagged with 1012) to help the editor implement the changes. |
| 1010 | Abhishek Patil | 9.6.7.36 | 1901 | 26 | Description of Roaming Consortium element is missing on pg 1908. | Add description for Roaming Consortium element. | **Revised**  Agree with the comment. The description for Roaming Consortium element is added as suggested by the comment.  **TGm editor, please implement changes as shown in** <https://mentor.ieee.org/802.11/dcn/22/11-22-0115-01-000m-lb258-resolution-for-cids-related-to-fd-frame.docx> **tagged as 1010** |

* FILS Discovery frame format

***TGm editor: Please update the following paragraph this subclause as shown below:***

[1011]

The Operating Class and Primary Channel subfields are present if the FILS Discovery frame is transmitted as a non-HT duplicate PPDU. When present, the fields indicate the following:

* If the Operating Class subfield value is other than 128
  + Operating bandwidth of the BSS (which equals to the channel spacing of the operating class)
  + Frequency location of the BSS operating bandwidth
  + Frequency location of the primary channel
* If the Operating Class subfield value is 128
  + Operating bandwidth of the BSS is either 80 MHz or 80+80 MHz
  + Frequency location of the primary 80 MHz channel
  + Frequency location of the primary channel

NOTE 1 – If a received FILS Discovery frame does not include the Primary Channel subfield, the primary channel is assumed to be the channel on which the PPDU was received.

NOTE 2 – A STA that receives a FILS Discovery frame containing an Operating Class subfield set to 128 can determine the operating bandwidth of the BSS by receiving a Beacon or a Probe Response frame on the primary channel indicated in the FILS Discovery frame.

NOTE 3 – An AP does not set the Operating Class subfield of a FILS Discovery frame to 130

The AP Configuration Sequence Number (AP-CSN) subfield format is defined in 9.4.2.181 (AP Configuration Sequence Number (AP-CSN) element).

The Access Network Options (ANO) subfield format is defined in Figure 9-546 (Access Network Options field format) (in 9.4.2.91 (Interworking element)).

[1012]

***TGm editor: Please add the following paragraph this subclause as shown below:***

The FILS Indication element is defined in 9.4.2.182 (FILS Indication element).

[1010]The Roaming Consortium element is defined in 9.4.2.95 (Roaming Consortium element).

The TIM element is defined in 9.4.2.5 (TIM element) and is included for operation as defined in 26.14.3 (Opportunistic power save).

* **FILS Discovery frame transmission**[1011]

***TGm editor: Please update the following subclause as shown below:***

A FILS AP supporting FILS discovery may generate and transmit FILS Discovery frames. The FILS Discovery frame shall be transmitted at a mandatory PHY rate, and should be transmitted at a basic rate, but shall not be transmitted in a DSSS or HR/DSSS PPDU. The Address 1 field of the FILS Discovery frame shall be set to the broadcast address.

An AP may transmit a FILS Discovery frame as a non-HT duplicate PPDU. When a FILS Discovery frame is transmitted as a non-HT duplicate PPDU, its operating class and primary channel shall be indicated by its Operating Class and Primary Channel fields, respectively.

If an AP transmits a FILS Discovery frame as a non-HT duplicate PPDU in an 80+80 MHz channel bandwidth, the Channel Center Frequency Segment 1 field shall be present in the FILS Discovery frame and shall be set to the channel center frequency of the frequency segment 1 for an 80+80 MHz VHT or HE operating channel.

A FILS AP should transmit FILS Discovery frame(s) in every beacon interval. The interval between the transmission of a Beacon frame and a subsequent FILS Discovery frame shall be no less than the interval indicated in dot11FILSFDFrameBeaconMinimumInterval. The transmission interval between subsequent FILS Discovery frames by an AP in a beacon interval shall be no less than the interval indicated in dot11FILSFDFrameBeaconMinimumInterval. If dot11FILSFDFrameBeaconMaximumInteval is not equal to 0, and if a Beacon frame, broadcast Probe Response frame, or FILS Discovery frame has not been transmitted by an AP for a period that is equal to dot11FILSFDFrameBeaconMaximumInterval, that AP shall queue for transmission a FILS Discovery frame, broadcast Probe Response frame, or a Beacon frame unless the next TBTT is within a duration indicated by the value of dot11FILSFDFrameBeaconMinimumInterval.

An AP may use the FILS Minimum Rate subfield in the FILS Discovery frame to indicate the minimum rate to be used by the AP and FILS STAs in subsequent transmissions between the AP and FILS STAs.

An AP may include its RSN information in the FD RSN Information subfield of the FILS Discovery frame as described in 12.11.2.2 (Discovery of a FILS AP).

For the APs in a multiple BSSID set, only the AP corresponding to the transmitted BSSID may transmit a FILS Discovery frame; other APs corresponding to nontransmitted BSSIDs shall not transmit a FILS Discovery frame. If dot11MultiBSSIDImplemented is true, then the following applies to the fields in the FILS Discovery frame:

* The SSID or Short SSID field shall be set to the SSID or short SSID, respectively, of the transmitted BSSID.
* The FILS Capability field shall be present, and the Multiple BSSIDs Presence Indicator subfield shall be set to 1.

A 6 GHz AP that is sending FILS Discovery frames shall include at least one Transmit Power Envelope element, where the Maximum Transmit Power Category subfield is set to 0 (Default), including a regulatory client transmit power limit for at least 20 MHz bandwidth (for EIRP) or at least the AP’s primary 20 MHz channel (for EIRP PSD).

NOTE 1—The AP is not required to include power constraints for bandwidths greater than 20 MHz in FILS Discovery frames, even if they are supported by the BSS. Therefore, when a Transmit Power Envelope element in a FILS Discovery frame indicates EIRP PSD limits, the value of *N* (see Table 9-317 (Meaning of Maximum Transmit Power Count subfield if Maximum Transmit Power Interpretation subfield is 1 or 3)) can take any valid value equal to or less than the BSS bandwidth, in megahertz, divided by 20.

NOTE 2—A Transmit Power Envelope element sent in a FILS Discovery frame by a 6 GHz AP can be used by a STA to determine a transmit power limit for 20 MHz PPDUs corresponding to the 6 GHz AP prior to having received a Beacon or Probe Response frame from that AP. A STA might, for example, determine a transmit power limit based on this information when sending a Probe Request frame with 20 MHz PPDU bandwidth during active scanning on the 6 GHz AP’s channel.