###  **IEEE P802.11Wireless LANs**

|  |
| --- |
| AFC fixes |
| Date: 2023-06-16 |
| Author(s): |
| Name | Affiliation | Address | Phone | Email |
| Brian Hart | Cisco Systems |  |  | brianh@cisco.com |
| Jerome Henry | Cisco Systems |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**Abstract**

CIDs 4012, 4015, 4016, 4017, 4018, 4019, 4020, 4021, 4022

**Revisions:**

* Rev 0: Initial version of the document.
* Rev 1: Updated CIDs now they are known; moved capabilities from Extended Capabilities to HE MAC Capabilities, and upgraded from 1 bit to 4 bits.
* Rev 2: Added VLP
* Rev 3: Fixed CID#
* Rev 4: Fixed TPE in both places
* Rev 5: Account for discussion at 11me (defer CIDs without regulatory certainty, VLP for devices, use Ext Cap not HE MAC Cap, add CID 401); add an extra control mechanism; add another option for IAP<->SPAP.
* Rev 6: Fine tuning after further discussions: “none of the above” changed to “7 AP role not relevant”; added work related to subordinate devices (Reg Info = 3).

# Most Urgent

**Discussion**

***TGme editor: Please note Baseline is 11me D3.0. Word track changes:***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 4019 | It is not completely clear if the Regulatory Info subfield expresses *capability* or *operation*. At the same time, the AP’s operational mode is much more important than its capability and this field is carried in the HE \*Operations\* element. | 5529 | E.2.7 | 49 | Try "The Regulatory Info subfield in the Control field of the 6 GHz Operation Information field of the HE Operation element \*expresses the current operational mode of the AP (rather than its capability)\* and is interpreted ...". If AP capability is also of interest, it can be added as a new field in the HE Capabilities element | Revised. See changes in 23/734<motionedRev> under #4019 which substantially align with the commenter’s proposed resolution. |
| 4020 | In regulatory domains without IAPs, SPAPs and VLPs, the guidance is " Some values defined in Table E-12 (Regulatory Info subfield encoding(#600)) might not be valid in all regulatory domains. If a certain Regulatory Info subfield encoding value is not valid in a regulatory domain, then the value is not used when operating in that regulatory domain.(#600)", but this leaves it undefined what value an AP should use if no value in Table E-12 is applicable. | 5529 | E.2.7 | 43 | Allocate a value for this situation: i.e, in Table E-12, define 7 as "None of the above". | Revised. See changes in 23/734<motionedRev> under #4020 which substantially align with the commenter’s proposed resolution. |
| 4022 | Text at P2479L53 and L2480L4 refer to obtaining the units from the TPE in the "most recently received Beacon or Probe Response frame". But, from P696L7, there can be more than one TPE in the Beacon. Which is meant? | 2790 | 11.7.4 | 58 | Define a rule to identify the units if there is more than one TPE element present in the Beacon/Probe Response. If no useful rule can be defined, upgrade/define a new Power Capability element to include units akin to | Revised. See changes in 23/734<motionedRev> under #4022 which substantially align with the commenter’s proposed resolution. |

***Discussion re 4022***

10.22.4 (Operation with the Transmit Power Envelope element) defines reasonable ordering requirements that probably shouldn’t be changed.

|  |
| --- |
| A STA that sends two or more Transmit Power Envelope elements in a frame shall order the elements by increasing values of their(11ax) Maximum Transmit Power Interpretation subfields. (11ax)A STA that is operating in the 6 GHz band that sends two or more Transmit Power Envelope elements in a frame with the same value in the Maximum Transmit Power Interpretation subfield shall order the elements by increasing values of their Maximum Transmit Power Category subfields.NOTE 2—The Maximum Transmit Power Category subfield is reserved, except in the 6 GHz band.(11ax)If a STA that is extended spectrum management capable finds an unknown value in the(11ax) Maximum Transmit Power Interpretation subfield in a Transmit Power Envelope element, then the STA shall ignore that and subsequent Transmit Power Envelope elements.NOTE 3—If a STA receives two Transmit Power Envelope elements, each with a known value in the(11ax) Maximum Transmit Power Interpretation subfield(11ax), then the expected possibilities are as follows:a) The STA complies with either element (shared spectrum),b) The STA complies with both elements (tightened regulations), orc) The STA complies with the second element (changed regulations). |

The Maximum Transmit Power Interpretation subfield is:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table 9-316—Maximum Transmit Power Interpretation subfield encoding(11ax)

|  |  |
| --- | --- |
| Value | Interpretation of the Maximum Transmit Power field |
| 0 | Local EIRP |
| 1 | Local EIRP PSD (power spectral density) |
| 2 | Regulatory client EIRP |
| 3 | Regulatory client EIRP PSD |
| 4–7 | Reserved |
| NOTE—This table is expected to be updated only if regulatory domains mandate the use of transmit power control with limits that cannot be converted into one of the currently defined interpretations. |

 |

We currently have the choice between EIRP and EIRP PSD (local vs regulatory doesn’t affect the units). A simple fix for 4022 would be to use the first such element. The pathology would be if the AP really wanted the client’s EIRP PSD but had to transmit Local EIRP. This does not seem to be a grave concern.

***TGme editor: make the following changes under the indicated CIDs***

E.2.7 6 GHz band(11ax)(#600)

As regards the units of the Minimum Transmit Power Capability and Maximum Transmit Power Capability fields within the Power Capability element sent in a STA’s (Re)Association Request frame to an AP, if all of the following apply:

* The STA is extended spectrum management capable.
* The STA has dot11SpectrumManagementRequired or dot11RadioMeasurementActivated equal to true.
* A Beacon or Probe Response frame has been received from the AP by the STA.
* The Beacon or Probe Response frame includes one or more Transmit Power Envelope elements.

Then

The units shall be interpreted according to the Local Maximum Transmit Power Unit Interpretation subfield in the Transmit Power Information field in the (#4022)first or only Transmit Power Envelope element (see 9.4.2.160 (Transmit Power Envelope element)) sent in the most recently received Beacon or Probe Response frame (#4022)from the AP.

If the Beacon or Probe Response frame most recently received from a neighbor mesh STA by a mesh STA that is extended spectrum management capable and that has dot11SpectrumManagementRequired or dot11RadioMeasurementActivated equal to true includes one or more Transmit Power Envelope elements, then the units of the Minimum Transmit Power Capability and Maximum Transmit Power Capability fields within the Power Capability element sent in the Mesh Peering Open frame to the neighbor mesh STA shall be interpreted according to the Local Maximum Transmit Power Unit Interpretation subfield in the Transmit Power Information field in the (#4022)first or only Transmit Power Envelope element (see 9.4.2.160 (Transmit Power Envelope element)) sent in the most recently received Beacon or Probe Response frame (#4022)from the AP. Otherwise, the units of the Minimum Transmit Power Capability and Maximum Transmit Power Capability fields within the Power Capability element sent in the mesh STA’s Mesh Peering Open frame to the neighbor mesh STA shall be interpreted as EIRP.

E.2.7 6 GHz band(11ax)(#600)

(#600)When operating in the 6 GHz band, Table E-4 (Global operating classes) is used for the operating classes, so the third octet of the dot11CountryString is 4. For example, when operating in the 6 GHz band in the United States, the Country String field in the Country element is set to (in hexadecimal) 0x55, 0x53, 0x04.

NOTE 1—The first two octets indicate the United States. The third octet indicates that Table E-4 (Global operating classes) is in use (see Annex C).

The Regulatory Info subfield in the Control field of the 6 GHz Operation Information field of the HE Operation element (#4019)expresses the current operational mode of the AP and is interpreted as shown in Table E-12 (Regulatory Info subfield encoding(#600)) when operating in the 6 GHz band. Each regulatory domain might have additional regulations for each Regulatory Info subfield value. Operation in such regulatory domains is subject to the additional regulations. Some values defined in Table E-12 (Regulatory Info subfield encoding(#600)) might not be valid in all regulatory domains. If a certain Regulatory Info subfield encoding value is not valid in a regulatory domain, then the value is not used when operating in that regulatory domain.(#600)

Table E-12—Regulatory Info subfield encoding(#600)

|  |  |
| --- | --- |
| Value | Description |
| 0 | Indoor AP An AP whose operation does not require control from an external system such as an Automated Frequency Coordination (AFC) system but that is subject to additional regulatory requirements intended to prohibit outdoor operation. |
| 1 | Standard power AP An AP whose operation requires control from an external system such as an AFC system. |
| 2 | Very low power AP An AP whose operation does not require control from an external system such as an AFC system, is not subject to additional regulatory requirements intended to prohibit outdoor operation, and is restricted to very low transmit power. |
| 3 | Indoor enabled AP An AP whose operation relies on being able to successfully receive an enabling signal (as defined by the regulatory rules) from an indoor AP or an indoor standard power AP. |
| 4 | Indoor standard power AP An AP whose operation requires control from an external system such as an AFC system and that is subject to additional regulatory requirements intended to prohibit outdoor operation. |
| 5–6 | Reserved |
| (#4020)7 | 7 AP role not relevantAn AP whose operating mode does not affect the regulated behavior of associated or enabled devices. NOTE – For instance, the transmission of Transmit Power Envelope elements by the AP might suffice. |

# Long Overdue

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 4016 | 1) There is a regulatory condition for "operating under the control of ..." but this is not met if the controllee is not known to the controller, nor is it met if a std for the regulated spectrum somehow prevents the controller from exercising any control over the controllee. 2) Meanwhile, if an AP is operating as a SPAP, 802.11 requires the AP to advertise the max value it hears from the AFC in the TPE with Maximum Transmit Power Category = Default and Unit interpretation = Regulatory Client EIRP PSD. 3) This signaling has no regulatory purpose and could be misconstrued by a controllee as some kind of controller behavior by the AP.  | 5530 | E.2.7 | 64 | Delete P5530L64-P5531L2. | Revised. The commenter is concerned that controller’s hands are tied by the standard such that it cannot function as a controller. See changes in 23/734<motionedRev> under this CID which substantially address this concern (but in a different part of the text). |
| 4012 | In LB258, TGme expressed some sympathy for the problem highlighted by CID2323, but not the solutions\* CID2323 (author: Thomas Derham) in LB258 commented on the Regulatory Info subfield and suggested some changes\* In 11-22-0350 (author: Andrew Myles), I proposed an alternative solution to that suggested by Derham in CID2323\* Both proposed changes (by Derham & Myles) were rejected by TGme in their response to CID2323\* TGme's response seemed to accept that while the premise of Derham's comment in CID2323 is false, the problem highlighted by CID2323 is real\* It therefore seems to be accepted that a change of some sort is required, but the question is what change?In LB270, Myles provided a response in CID3033 to the questions in TGme's response to CID2323\* In rejecting the changes proposed in 11-22-0350 (author: Andrew Myles), TGme seemed to display some sympathy for the reasoning & suggested proposal for further generalisation, albeit with questions\* The author responded in CID3033 in LB270 to the questions posed in TGme's response to CID2323, noting that: - An ANA assignment is indeed required, as suggested by TGme. Myles agreed that this can be achieved by separate motion in the future - The need for a formal definition of C2C can be avoided. Myles proposed some new text to achieve this goal - TGme is correct that the text probably should not contain "shall" or "shall not", as any enforcement is a regulatory issue. Myles proposed new text that avoided "shall" and "shall not" - This signalling from the AP to the client is required so that the client can know about the APs choices\* In the response to Myles' comment in CID3033 in LB270, TGme was ambiguous about next steps\* It appears, assuming that the need for change is accepted and generalisation is a good direction, that TGme wants Myles to provide a full and explicit set of changes\* 11-23-0729 (slide 5) specifies the proposed change in detail, which is to replace Table E-12 on pp 5529-30 of 802.11me D3.0 - This proposal provides mechanisms to allow an indoor AP or indoor standard power AP to signal whether it consents to being used to enable another AP - This allows flexibility for administrators to have management control over whether other APs are enabled by their infrastructure | 5529 | E.2.7 | 49 | Specified in detail in 11-23-0729 | Revised. See changes in 23/734<motionedRev> under this CID which substantially address this concern (but in a different manner). |
| 4021 | Part 15 refers to "under the control of an indoor/SP AP" which maps well to association (with VHT/HE/EHT Operaiotn element, TPE, EDCA parameters, etc). As well, for certain use cases (e.g. collaboration + XR) we might have a wireless segment with an infrastructure AP talking to laptop/smartphone that in turn performs rendering for an HMD/glasses. Here the latter link is P2P. It is desirable for the P2P traffic if the AP has available a protocol by which it can provide the requisite control of the P2P link | 5529 | E.2.7 | 49 | Define one or more of the following as the mechanisms by which an AP controls unassociated/P2P traffic in 6 GHz: a) DLS, b) Channel Usage Requst/Response frame, c) some new protocol. | Revised. See changes in 23/734<motionedRev> under #4012 which substantially align with the commenter’s proposed resolutionTGme editor: no changes beyond those defined for #4012. |

Discussion.

**Agree with commenters. The regulations call for client devices to be operating under the control of the IAP or SPAP, so it is impermissible for 802.11 to foreclose on a control protocol.**

Changes:

Table 9-190—Extended Capabilities field

|  |  |  |
| --- | --- | --- |
| Bit | Information | Note |
| (#4016)<ANA> | Subordinate Device Info | For a non-AP STA:Set to 1 to solicit enablement as a subordinate device (see Annex E.2.7).Set to 0 otherwise.For an AP:Set to 1 to indicate subordinate device enablement (see Annex E.2.7).Set to 0 otherwise. |

E.2.7 6 GHz band(11ax)(#600)

Table E-12—Regulatory Info subfield encoding(#600)

|  |  |
| --- | --- |
| Value | Description |
| 3 | Indoor enabled AP An AP whose operation relies on being able to successfully receive an enabling signal (as defined by the regulatory rules) from an indoor AP or an indoor standard power AP.(#4012)NOTE – A subordinate device (see Table E-13 (Maximum Transmit Power Category subfield encoding) may contain an indoor enabled AP. |

…

***TGme editor: Please insert the following para immediately before the pre-existing paragraph below as shown***

(#4012)Unless disabled by local policy, as an enabling signal for all non-AP STAs that solicit enablement as subordinate devices, an AP shall set the Subordinate Device Info field in the Extended Capabilities field to 1 in Beacon, Probe Response and (Re)Association frames; otherwise, as an enabling signal for individual non-AP STAs that solicit enablement as subordinate devices, the AP shall set the Subordinate Device Info field in the Extended Capabilities field to 1 in the (Re)Association frames for the individual non-AP STAs, and shall set the field to 0 in Beacon and Probe Response frames. A non-AP STA that receives a Subordinate Device Info field in the Extended Capabilities field equal to 0 in the (Re)Association frame is not enabled as a subordinate device.(#600)When operating in the 6 GHz band in a regulatory domain in which a subordinate device (see Table E-13 (Maximum Transmit Power Category subfield encoding(#600))) is supported, (#4012)unless no subordinate devices are enabled, an AP that is an indoor AP or indoor standard power AP per regulatory rules shall also send the following Transmit Power Envelope element in Beacon and Probe Response frames:

* Maximum Transmit Power Category subfield = Subordinate device; Unit interpretation = Regulatory client EIRP PSD

A regulatory client EIRP PSD value advertised by an AP that is a standard power AP or indoor standard power AP shall be set to (#4016)no higher than the highest value that meets the authorized client transmit power limits for the corresponding category obtained from the external system required by the regulatory rules, such as an AFC system, and any other client PSD regulatory rules for the corresponding 20 MHz channel.(#600)

# Reject since there is presently insufficient FCC clarity

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 4015 | 1) Depending on circumstances, APs might get more power as an Indoor AP (IAP) or as a SP AP (SPAP). Therefore, APs are motivated to be FCC-certified as both SPAPs and IAPs. 2) Although arguably Part 15.407 as written does not prohibit an AP being both at the same time, this was never anticipated and the consistent message from FCC Labs (OET) has been that this is disallowed. Instead FCC Labs expect a SPAP to IAP mode switch (and vice versa) to require an AP reboot or (perhaps) at least the BSS to be brought down and up again. 3) For the AP, if it has to choose between SPAP xor IAP mode, maximizing power is secondary to maximizing client connectivity. 4) Although there is no such thing in Part 15.407 as an indoor client or a SP client, only a client operating under the control of an indoor/SP AP, still some clients in the field can only operate under the control of an indoor access point. 5) Then, in order for an AP to make the IAP/SPAP choice that maximizes client connectivity, it is important for the AP to know each client’s 6 GHz and TX power capabilities and really to know them before before assoc (e.g., else a SPAP never knows if it should be operating as an IAP). | 5529 | E.2.7 | 49 | 1) Add client capability signalling: can the client operate under the control of either of an IAP or SPAP? This can positively indicate that the client is a "modern" client. (The absence of such signaling indicates that the client probably can only operate under the control of an IAP.) Include such signaling in probe req and (re)assoc req, A single bit in the Extended Capabilities element is a reasonable choice. 2) For 6 GHz, require the client to indicate its transmit power support. This could be the Power Capability element, but this has not been refreshed in a long time - so providing a power per bandwidth, and the option of reporting conducted and/or EIRP for the whole bandwidth and/or per MHz (i.e. akin to TPE) may be required. | Rejected. There is presently insufficient regulatory clarity as to whether an AP can be simultaneously an indoor AP and SP AP. If that is allowed, this signaling is not needed.Potential change text is provided in 23/734 under this CID that might be worthy of consideration if it is subsequently learnt that an AP cannot be simultaneously an indoor AP and SP AP. |

9.4.2.25 Extended Capabilities element

***CID4015, Option A***

Table 9-190—Extended Capabilities field

|  |  |  |
| --- | --- | --- |
| Bit | Information | Note |
| (#4015)<ANA> | Connectivity with Indoor AP | Set to 1 by a non-AP STA to indicate support for operating under the control of an Indoor AP (see Annex E.2.7); otherwise, set to 0.  |
| (#4015)<ANA+1> | Connectivity with SP AP | Set to 1 by a non-AP STA to indicate support for at least one of: operating under the control of an SP AP and operating as a fixed client device (see Annex E.2.7); otherwise, set to 0. |

E.2.7 6 GHz band(11ax)(#600)

***TGme editor: please add the following material in section E2.7 immediately before the para beginning “The Maximum Transmit Power Category subfield in the Transmit Power Information field of the Transmit”***

A Fixed client device is a non-AP that operates only on channels provided by an AFC with additional requirements specified by the regulatory domain in which the non-AP STA is operating.

***CID4015, Option B***

Table 9-190—Extended Capabilities field

|  |  |  |
| --- | --- | --- |
| Bit | Information | Note |
| (#4015)ANA-ANA+4 | 6 GHz Regulatory Capabilities Information | See Annex E.2.7.  |

***TGme editor: please add the following material in section E2.7 immediately before the para beginning “The Maximum Transmit Power Category subfield in the Transmit Power Information field of the Transmit”***

(#4015)The 6 GHz Regulatory Capabilities Information field in the Extended Capabilities element is interpreted as shown in Table E-xx (6 GHz Regulatory Capabilities Information field format) when operating in the 6 GHz band. Each regulatory domain might have additional regulations for each subfield of the 6 GHz Regulatory Capabilities Information field. Capability signaling in such regulatory domains is subject to being capable of supporting the additional regulations. Some fields defined in Figure E-xx (6 GHz Regulatory Capabilities Information field format) might not be valid in all regulatory domains. If a certain field is not valid in a regulatory domain or band, then the value is set to 0 when operating in that regulatory domain or band.

(#4015)Figure E-xx 6 GHz Regulatory Capabilities Information field format

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | B0 | B1 | B2 | B3 | B4 |
|  | Indoor capable | SP capable | VLP capable | Subordinate capable | Fixed client capable |
| Bits | 1 | 1 | 1 | 1 | 1 |

(#4015)The subfields of the 6 GHz Regulatory Capabilities Information field are defined in Table E-yy (Subfields of the 6 GHz Regulatory Capabilities Information field)

(#4015)Table E-yy-Subfields of the 6 GHz Regulatory Capabilities Information field

|  |  |  |
| --- | --- | --- |
| Subfield | Definition | Encoding |
| Indoor Capable | An AP that is capable of operating as an Indoor AP or a non-AP STA that is capable of operating under the control of an indoor AP.An indoor AP is defined in Table E-12 (Regulatory Info subfield encoding). | Set to 1 if valid and supported.Set to 0 otherwise. |
| Standard Power capable | An AP that is capable of operating as a Standard Power AP or a non-AP STA that is capable of operating under the control of a Standard Power AP. A Standard Power AP is defined in Table E-12 (Regulatory Info subfield encoding). | Set to 1 if valid and supported.Set to 0 otherwise. |
| Very Low Power capable | A STA that is capable of operating as a Very Low Power device. A Very Low Power device is a STA whose operation does not require control from an externalsystem such as an AFC system, is not subject to additional regulatory requirements intended to prohibit outdoor operation, and is restricted to very low transmit power. | Set to 1 if valid and supported.Set to 0 otherwise. |
| Subordinate capable | A non-AP STA that is capable of operating as a Subordinate Device. A Subordinate Device is defined in Table E-13 (Maximum Transmit Power Category subfield encoding)operates in portions of the 6 GHz). | For a non-AP STA:Set to 1 if valid and supported.Set to 0 otherwise.Otherwise:Reserved. |
| Fixed client device capable | A non-AP STA that is capable of operating as a Fixed client device. A Fixed client device is a non-AP that operates only on channels provided by an AFC with additional requirements specified by the regulatory domain inwhich the non-AP STA is operating. | For a non-AP STA:Set to 1 if valid and supported.Set to 0 otherwise.Otherwise:Reserved. |

***End of Options***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 4018 | 1) Although arguably Part 15.407 as written does not prohibit an AP being both an indoor AP (IAP) and a SP AP (SPAP), at the same time, this was never anticipated and the consistent message from FCC Labs (OET) has been that this is disallowed. Instead FCC Labs expect a SPAP to IAP mode switch (and vice versa) to require an AP reboot or (perhaps) at least the BSS to be brought down and up again. Here an Extended Channel Switch Announcement might be the least disruptive mechanism to switch from IAP to SPAP and vice versa, but suitable regulatory classes are not defined. | 5529 | E.2.7 | 49 | Define regulatory classes for an indoor AP and a SP AP for use by the ECSA. E.g., in the global table, make the existing 6 GHz regulatory classes "No applicable regulation or indoor AP" then introduce new global classes for 6 GHz indicating "6 GHz and SP AP" | Rejected. There is presently insufficient regulatory clarity as to whether an AP can be simultaneously an indoor AP and SP AP and if not, whether the AP can dynamically switch from IAP to SPAP and vice versa. If that is allowed, this signaling is not needed.Potential change text is provided in 23/734 under this CID that might be worthy of consideration if it is subsequently learnt that an AP cannot be simultaneously an indoor AP and SP AP but may dynamically switch from IAP to SPAP and vice versa. |

***Option A***

Import Critical Update Flag from 11be, and make Regulatory Info field change be another source of CUF. (BSS Parameters Change Count is also desirable but is stuck in the MLD Parameters subfield in the RNRe)

***Option B***

Table D-2—Behavior limits

|  |  |
| --- | --- |
| Behavior Limit | Description |
| (#4018)NoRegOrIndoor | No applicable regulation or AP is indicating that it is an Indoor AP (see E.2.7) |
| (#4018)SP | AP is indicating that it is a Standard Power AP (see E.2.7) |

Table E-4—Global operating classes

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Operating class | Nonglobal Operating class(es) (see NOTE 3) | Channel starting frequency (GHz) | Channel spacing (MHz) | Channel set | Channel center frequency index | Behavior limits set |
| 131 |  | 5.950 | 20 | 1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 53, 57, 61, 65, 69, 73, 77, 81, 85, 89, 93, 97, 101, 105, 109, 113, 117, 121, 125, 129, 133, 137, 141, 145, 149, 153, 157, 161, 165, 169, 173, 177, 181, 185, 189, 193, 197, 201, 205, 209, 213, 217, 221, 225, 229, 233 | - | (#4018)NoRegOrIndoor |
| 132 |  | 5.950 | 40 | 3, 11, 19, 27, 35, 43, 51, 59, 67, 75, 83, 91, 99, 107, 115, 123, 131, 139, 147, 155, 163, 171, 179, 187, 195, 203, 211, 219, 227 |  | NoRegOrIndoor |
| 133 |  | 5.950 | 80 | 7, 23, 39, 55, 71, 87, 103, 119, 135, 151, 167, 183, 199, 215 |  | NoRegOrIndoor |
| 134 |  | 5.950 | 160 | 15, 47, 79, 111, 143, 175, 207 |  | NoRegOrIndoor |
| 135 |  | 5.950 | 80 | 7, 23, 39, 55, 71, 87, 103, 119, 135, 151, 167, 183, 199, 215 |  | 80+, NoRegOrIndoor |
| 136 |  | 5.925 | 20 | 2 |  | NoRegOrIndoor |
| (#4018)<ANA> |  | 5.950 | 20 | 1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 53, 57, 61, 65, 69, 73, 77, 81, 85, 89, 93, 97, 101, 105, 109, 113, 117, 121, 125, 129, 133, 137, 141, 145, 149, 153, 157, 161, 165, 169, 173, 177, 181, 185, 189, 193, 197, 201, 205, 209, 213, 217, 221, 225, 229, 233 | - | SP |
| <ANA> |  | 5.950 | 40 | 3, 11, 19, 27, 35, 43, 51, 59, 67, 75, 83, 91, 99, 107, 115, 123, 131, 139, 147, 155, 163, 171, 179, 187, 195, 203, 211, 219, 227 |  | SP |
| <ANA> |  | 5.950 | 80 | 7, 23, 39, 55, 71, 87, 103, 119, 135, 151, 167, 183, 199, 215 |  | SP |
| <ANA> |  | 5.950 | 160 | 15, 47, 79, 111, 143, 175, 207 |  | SP |
| <ANA> |  | 5.950 | 80 | 7, 23, 39, 55, 71, 87, 103, 119, 135, 151, 167, 183, 199, 215 |  | 80+, SP |
| <ANA> |  | 5.925 | 20 | 2 |  | SP |
|  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 4017 | 1) Although arguably Part 15.407 as written does not prohibit an AP being both an indoor AP (IAP) and a SP AP (SPAP), at the same time, this was never anticipated and the consistent message from FCC Labs (OET) has been that this is disallowed. Instead FCC Labs expect a SPAP to IAP mode switch (and vice versa) to require an AP reboot or (perhaps) at least the BSS to be brought down and up again. 2) Then we don't see any regulatory use for values 3 and 4 in Table E-12, and they are misleading in that they imply an option that is not actually available.  | 5530 | E.2.7 | 11 | Delete values 3 and 4. Delete Note 2 at P5530L28. Delete para at P5530L31-35 | Rejected. 1) Value 3 is defined for a subordinate device that is in the same regulated device as the indoor enabled AP. 2) For value 4, there is presently insufficient regulatory clarity as to whether an AP can or cannot simultaneously be an indoor AP and SP AP.Potential change text is provided in 23/734 under this CID that might be worthy of consideration if it is subsequently learnt that an AP a) cannot simultaneously be an indoor AP and SP AP |

***TGme editor: Please apply the change below as shown then merge the “Reserved” rows together.***

Table E-12—Regulatory Info subfield encoding(#600)

|  |  |
| --- | --- |
| Value | Description |
| 4 | (#4017)Reserved |

(#600)In Table E-12 (Regulatory Info subfield encoding(#600)), a WLAN STA is not an external system.

(#4017)