IEEE P802.11  
Wireless LANs

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | U-SIG Comment Resolution Part 1 | | | | | | Date: 2021-02-27 | | | | | | Author(s): | | | | | | Name | Affiliation | Address | Phone | email | | Sameer Vermani | Qualcomm |  |  | svverman@qti.qualcomm.com | | Alice Chen | Qualcomm |  |  | alicel@qti.qualcomm.com | | Youhan Kim | Qualcomm |  |  |  | | Bin Tian | Qualcomm |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |

Abstract

This submission proposes resolutions for the following comments from the CC34 on P802.11be D0.3:

NOTE – Set the Track Changes Viewing Option in the MS Word to “All Markup” to clearly see the proposed text edits.

**Revision History:**

R0: Initial version. Resolve CID 1349, 1350, 1351, 1353, 1354, 1355, 1356, 1360, 1561, 1612, 1949, 1969, 2175, 2256, 2704, 2705, 2724, 2791, 3086, 3172, 3173, 3286.

# CID 1349, 1350, 3172, 3286

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 1349 | 36.3.11.7.2 | 229.15 | After EHT and future amendments are rolled into 802.11, and evolve in 802.11mxxx, then the notion of “multiple amendments” disappears | Better to write “multiple IEEE 802.11 PHY clauses” and/or a MIB variable for multiple releases. Ditto P229L18, P230L14, P236L16, P237L9, P239L12; also P229L23 should be “starting with EHT”. | Accepted |
| 1350 | 36.3.11.7.2 | 229.17 | After EHT and future amendments are rolled into 802.11, the meaning of “future” becomes very unclear | Change “future IEEE 802.11 generations” to “IEEE PHY clauses that are defined for 2.4, 5 and 6 GHz spectrum from clause 36 onwards” | Accepted |
| 3172 | 36.3.11.7.2 | 229.19 | " PHY version identifier field shall be one of the version independent fields in the U-SIG." This has been done, so this sentence is no longer needed. | Delete " PHY version identifier field shall be one of the version independent fields in the U-SIG." | Revised.  Agree but can’t remove this sentence. We need to introduce the usage of the PHY version identifier field in a next sentence. Logically, the reader of the spec needs to know that this field is one of the version independent fields. Change “shall be” to “is”. |
| 3286 | 36.3.11.7.2 | 229.19 | PHY version identifier field should be PHY Version Identifier field to be consistent | (484+242) to (3x996+484) should be 484+242-tone MRU to 3x996+484-tone MRU | Revised.  The proposed change doesn’t match the comment. Suggesnted change in the comment is accepted. Ditto P229L30. |

***Instructions to the editor:***

**Please make the changes to P229L13-L23 as shown below:**

1. The U-SIG field is designed to bring forward compatibility to the EHT preamble via the introduction of
2. version independent fields. These are fields that will be consistent in location and interpretation across
3. multiple IEEE 802.11 PHY clauses. The intent of the version independent content is to achieve better
4. coexistence among IEEE 802.11 PHY clauses that are defined for 2.4, 5 and 6 GHz spectrum from clause 36 onwards. In addition, the U-SIG can have some version

17

1. dependent fields that are fields specific to an IEEE 802.11 PHY clause . The U-SIG includes version
2. independent bits followed by version dependent bits. PHY Version Identifier field is one of the version
3. independent fields in the U-SIG. The purpose of the PHY Version Indentifier is to simplify autodetection for
4. IEEE PHY clauses that are defined for 2.4, 5 and 6 GHz spectrum from clause 36 onwards, i.e., the value of this field is used to identify the exact PHY version starting
5. with EHT .

23

***Instructions to the editor:***

**Please make the changes to P230L12-L15 (in Table 36-19) as shown below:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Two parts of U-SIG** | **Bit** | **Field** | **Number of bits** | **Description** |
| U-SIG-1 | B0–B2 | PHY Version Identifier | 3 | Differentiate between different PHY clauses . Set to 0 for EHT. Values 1–7 are Validate. |

***Instructions to the editor:***

**Please make the changes to P231L29-L34 (in Table 36-19) as shown below:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Two parts of U-SIG** | **Bit** | **Field** | **Number of bits** | **Description** |
| U-SIG-2 | B2 | Validate | 1 | Validate and set to 1. Maybe used for an expanded set of PPDU types or compressed modes in IEEE PHY clauses that are defined for 2.4, 5 and 6 GHz spectrum from clause 36 onwards. . |

***Instructions to the editor:***

**Please make the changes to P232L51-L55 (in Table 36-19) as shown below:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Two parts of U-SIG** | **Bit** | **Field** | **Number of bits** | **Description** |
| U U-SIG-2 | B8 | Validate | 1 | Validate and set to 1. Maybe used for an expanded set of puncturing modes in IEEE PHY clauses that are defined for 2.4, 5 and 6 GHz spectrum from clause 36 onwards. . |

***Instructions to the editor:***

**Please make the changes to P236L15-L18 (in Table 36-22) as shown below:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Two parts of U-SIG** | **Bit** | **Field** | **Number of bits** | **Description** |
| U-SIG-1 | B0–B2 | Version Identifier | 3 | Differentiate between different PHY |
| clauses. Set to 0 for EHT. |
|  |  |  |  | Values 1–7 are Validate. |

***Instructions to the editor:***

**Please make the changes to P237L7-L11 (in Table 36-22) as shown below:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Two parts of U-SIG** | **Bit** | **Field** | **Number of bits** | **Description** |
| U-SIG-2 | B2 | Validate | 1 | Validate and set to 1. Maybe used for an expanded set of PPDU types or compressed modes in IEEE PHY clauses that are defined for 2.4, 5 and 6 GHz spectrum from clause 36 onwards. |

***Instructions to the editor:***

**Please make the changes to P239L11-L17 (in Table 36-23) as shown below:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Two parts of U-SIG** | **Bit** | **Field** | **Number of bits** | **Description** |
| U-SIG-1 | B0–B2 | Version Identifier | 3 | Differentiate between different PHY |
| clauses. |
|  |  |  |  | NOTE—Expected to take a value |
|  |  |  |  | other than 0 as EHT does not define |
|  |  |  |  | an ER PPDU. |

# CID 1561, 1949, 2724, 3086, 3173

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 3173 | 36.3.11.7.2 | 229.26 | "Release 1" is not a valid term for IEEE standard. | Instead of the term "Release 1", define a MIB variable. For example, define a MIB variable dot11OnlyEHTBaseLineFeaturesImplemented. And state that an EHT STA shall set dot11OnlyEHTBaseLineFeaturesImplemented to true. (Later when 11be Release 2 comes along, that sentence would be updated to reflect that "Release 1" STAs set dot11OnlyEHTBaseLineFeaturesImplemented to true, and "Release 2" STA set dot11OnlyEHTBaseLineFeaturesImplemented to false.)  And throughout the draft, change places talking about "EHT Release 1" (STA) to something like "EHT STA which has dot11OnlyEHTBaseLineFeaturesImplemented set to true". | Accepted.  Note to editor: Same resolution for CID 1561, 1949, 2724, and 3086.  *Tgbe Editor: Please make changes for CID 3173 as shown in the following document*  [*https://mentor.ieee.org/802.11/dcn/21/11-21-0325-01-00be-u-sig-comment-resolution-part-1.docx*](https://mentor.ieee.org/802.11/dcn/21/11-21-0325-01-00be-u-sig-comment-resolution-part-1.docx) |
| 1561 | 36.3.11.7.2 | 229.26 | define the meaning of EHT Release 1 | as in comment. | Accepted |
| 1949 | 36.3.11.7.2 | 229.31 | Remove descriptions about R1 or R2 | As in comment | Accepted |
| 2724 | 36.3.11.7.2 | 229.25 | Remove the mention of "Release 1" from this section | Change to "For forward compatibility, EHT defines an ER preamble while not defining an ER PPDU. This enables an EHT STA to decode and interpret the version independent content in the U-SIG of an ER PPDU that may be introduced in amendments." | Revised.  Agree to the comment. Resolution to CID 3173 addresses this. |
| 3086 | 36.3.11.7.2 | 229.25 | There is no definition of Release 1 in D0.3. | Remove the text related to Release 1. | Accepted |

**Discussion on CID 1561, 1949, 2724, 3086, 3173**

There is a way to call out Release 1 devices through a MIB variable as the commentor suggests in CID 3173. Once that is done, there is no ambiguity. We need the following:

* One MIB variable – e.g. dot11OnlyEHTBaseLineFeaturesImplemented
* And the standard saying
  + In D1.0 and 2.0
    - “An EHT STA shall set dot11OnlyEHTBaseLineFeaturesImplemented to true.” (beginning of clause 35)
  + In D3.0, above sentence is changed to
    - “An EHT STA with any of dot11EHTULOFDMARUChange, dot11EHTInterleavedRU, … (MIB for other R2 features) set to true shall set dot11OnlyEHTBaseLineFeaturesImplemented to false.  Otherwise, EHT STA shall set dot11OnlyEHTBaseLineFeaturesImplemented to true.”

In other words, the above MIB variable being true shall be used to indicate a Release 1 device, whereas if the device impelements any of the Release 2 features, the MIB variable shall be set to false to indicate a Release 2 capable device. Note that we have chosen to not define a capability bit that needs to go along with this MIB variable, as that is not essential in this case. There is expected to be an R2 capabilities element introduced in the future, the transmission of which will be tied to the MIB variable being set to false.

***Instructions to the editor: Please add the following text in red to the beginning of clause 35***

An EHT STA shall set dot11OnlyEHTBaseLineFeaturesImplemented to true.

***Instructions to the editor: Please add the following text to Annex C3.1***

**ASN.1 encoding of the MAC and PHY MIB**

* **MIB Detail**

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

-- \* Major sections

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

-- Station ManagemenT (SMT) Attributes

-- DEFINED AS "The SMT object class provides the necessary support

-- at the station to manage the processes in the station such that

-- the station may work cooperatively as a part of an IEEE 802.11

-- network."

***Add the following at the end of the comment list following the dot11smt definition:***

dot11smt OBJECT IDENTIFIER ::= { ieee802dot11 1 }

-- dot11EHTStationConfigTable ::= { dot11smt <ANA> }

***Add the following at the end of the Dot11StationConfigEntry:***

Dot11StationConfigEntry ::= SEQUENCE

{

…

dot11EHTOptionImplemented TruthValue,

dot11OnlyEHTBaseLineFeaturesImplemented TruthValue

}

***Insert the following after the last element in the Dot11StationConfig TABLE:***

dot11EHTOptionImplemented OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This is a capability variable.

Its value is determined by device capabilities.

This attribute indicates whether the entity is EHT Capable."

::= { dot11StationConfigEntry <ANA> }

dot11OnlyEHTBaseLineFeaturesImplemented OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This is a capability variable.

Its value is determined by device capabilities.

This attribute, when true, indicates that the EHT station has not implemented any optional EHT features which cannot be indicated in the EHT Capabilities element."

::= { dot11StationConfigEntry <ANA> }

NOTE – Optional EHT features may be indicated in an element other than the EHT Capabilities element.

# CID 1351, 1612, 2256, 2791

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 2256 | 36.3.11.7.2 | | 229.25 | Not sure if it is really useful to define a U-SIG with extended range in mind. If their is a need, I would guess that HE format can fill it. | Remove the ER mention in EHT | Rejected.  We cannot remove the ER-preamble-related material. That is needed for forward compatibility with an ER PPDU if it gets defined in the future, per Motion 137, #SP292. |
| 1351 | 36.3.11.7.2 | | 229.26 | Due to the entencent defined in the 802.11 operation manual “EHT Release 1” will never and can never be subject to a letter ballot. | Just make the undefined ER-preamble-related material as TBD | Revised.  Agree with the commentor that we cannot have reference to “EHT release 1”. Resolution to CID 3173 addresses this. However, we cannot remove the ER-preamble-related material. That is needed for forward compatibility with an ER PPDU if it gets defined in the future, per Motion 137, #SP292. |
| 1612 | 36.3.11.7.2 | | 229.28 | Clarify how four symbols of U-SIG in an ER preamble are comprised. Add a sentence “U-SIG consists of U-SIG-1, repeated U-SIG-1, U-SIG-2 and repeated U-SIG-2”. | See the comment. | Rejected.  This is an introduction of the subclause without getting into too much details. More details of how four symbols of U-SIG in an ER preamble are comprised are in subclause 36.3.11.7.4. |
| 2791 | 36.3.11.7.2 | | 229.26 | "This enables an EHT Release 1 STA to decode and interpret the version independent content in the U-SIG of an ER PPDU". If so, this should be a requirement. Not clear if this is captured anywhere. | Add requirement that "EHT Release 1 STA shall be able to decode and interpret the version independent content in the U-SIG of an ER PPDU" | Revised.  Accept with the comment in principle. Should not use wording of “Release 1”. Changed it to "An EHT STA with dot11OnlyEHTBaseLineFeaturesImplemented set to true shall be able to decode and interpret the version independent content in the U-SIG of an ER PPDU." |

***Instructions to the editor:***

**Please make the changes to P229L25-L32 as shown below:**

1. The size of the U-SIG for EHT MU PPDU and EHT TB PPDU is two symbols. For forward compatibility,
2. EHT defines an ER preamble while not defining an ER PPDU. An EHT
3. STA with dot11OnlyEHTBaseLineFeaturesImplemented set to true shall be able to decode and interpret the version independent content in the U-SIG of an ER PPDU that may be
4. introduced in IEEE PHY clauses that are defined for 2.4, 5 and 6 GHz spectrum from clause 36 onwards . The size of U-SIG for an ER preamble is four symbols.

29

30

#### 31Editor’s Note: Need a definition of “EHT Release 1”.

32

# CID 2175

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 2175 | 36.3.11.7.2 | 229.34 | It is better to replace “PHY preamble” or “EHT PHY preamble” by “EHT preamble” since the latter has been clearly defined. | As suggested in the comment | Accepted |

# CID 1353, 1354, 1355, 1356, 1360, 1969, 2704, 2705

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 1353 | 36.3.11.7.2 | 229.36 | There are no “Validate bits in the preamble”; only fields with name “Validate” that might be 1b in length | Try “Validate fields ... for those fields”. Change all instances of “Validate bits” to “Validate fields” | Accepted |
| 1354 | 36.3.11.7.2 | 229.36 | “default values” is not forwards compatible to R2. | Defined a MIB variable for R1 devices, then indicate what value these should be set to if that MIB variable is true. Review all instances of “default” and “nondefault” accordingly. Also P231L30-34 | Accepted:  Resolution to CID 3173 addresses the MIB variable definition. |
| 1355 | 36.3.11.7.2 | 229.39 | There are no “Disregard bits”; only fields with name “Disregard” that might be 1b in length | Change “”Disregard bits ... bits/states” to “Disregard fields ... fields/values”. Change all instances of “Disregard bits” to “Disregard fields” | Accepted. |
| 1356 | 36.3.11.7.2 | 229.36 | “default values” is not forwards compatible to R2. | Define a MIB variable for R1 devices, then indicate what value these should be set to if that MIB variable is true | Accepted.  Resolution to CID 3173 addresses the MIB variable definition. |
| 1360 | 36.3.11.7.2 | 229.34 | For clarity re forwards compatibility, indicate that: a) reserved fields and values might become unreserved for STAs supporting PHY clauses after caluse 36 and b) Disregard fields and values might become Validate fields and values for STAs supporting PHY clauses after clause 36. | For clarity re forwards compatibility, indicate that: a) reserved fields and values might become unreserved for STAs supporting PHY clauses after caluse 36 and b) Disregard fields and values might become Validate fields and values for STAs supporting PHY clauses after clause 36. | Rejected.  a) It is natural that some reserved fields/values later may become unreserved for STAs supporting PHY clauses after clause 36. That’s what the word “reserved” means in spec writing.  b) The current Validate/Disregard definitions mandate R1 devices behavior. If in the future, when a field/value is Disregard for R1 devices but Validate for R2 devices or devices in future amendments, it would need to be redefined and could no longer called “Disregard”. However, no such changes to the specification need to happen at this point of time. This needs to be done in future amendments. |
| 1969 | 36.3.11.7.2 | 229.33 | The entence is confusing: “Reserved bits are divided in the PHY preamble or any reserved/unused states of the fields in the PHY preamble into two categories:” | Change the entence as: “Reserved bits in the PHY preamble or any reserved/unused states of the fields in the PHY preamble are divided into two categories:” | Accepted |
| 2704 | 36.3.11.7.2 | 229.35 | The following sentence, it is not clear what “Validate state” is, and it doesn’t say what a receiver will do if the Validate bits in the preamble are set to the default values. Also, the second conditions after “or” appears cover the first condition before “or”: “If an EHT device encounters a PPDU where any of the Validate bits in the preamble are not set to the default values for those bits specified in this subclause, or field values of any field in the EHT PHY preamble are set to a Validate state as defined in this subclause, it shall defer for the duration of the PPDU, pass the information in the version independent fields to MAC, and terminate the reception of the PPDU.”  Similar comment applies to the sentence for “Disregard” | Change this sentence to: “If field values of any field in the EHT PHY preamble are set as Validate as defined in this subclause, it shall defer for the duration of the PPDU, pass the information in the version independent fields to MAC, and terminate the reception of the PPDU.” | Revised.  Agree with the commentor that the text needs improvement which we propose in this resolution. But the two conditions separated by “or” are different. One is referring to a “Validate” field in the PHY preamble and other is referring to a “Validate” (invalid in R1) state of a normal field (e.g., PHY indentifier, BW etc). |
| 2705 | 36.3.11.7.2 | 229.35 | Validate and Disregard are defined to control the behavior of the Release1 receivers, which may not support all Release 2 features. The TGbe has not decided if they will be kept as Validate or Disregard in Release 2. Therefore, a note is needed to indicate possible change in the future. This note may be removed after all features are included in the spec draft. | Add a note after this paragraph (L33-45):  NOTE: The Disregard bits currently specified in Table 36-19 (U-SIG field of an EHT MU PPDU) may be changed to Validate bits in future release, and vise versa. They may also be redefined depending on the bit values of those fields.  This note can also put right after Table 36-19. | Rejected.  The current Validate/Disregard definitions mandate R1 devices behavior. If in the future, when a field/value is Disregard for R1 devices but Validate for R2 devices or devices in future amendments, it would need to be redefined and could no longer called “Disregard”. However, no such changes to the specification need to happen at this point of time. This needs to be done in future amendments. |

***Instructions to the editor:***

**Please make the changes to P229L33-L46 as shown below:**

1. Reserved fields in the EHT preamble or reserved states of the fields in the PHY
2. preamble are divided into two categories: Validate and Disregard. Values of both Validate and Disregard fields in the EHT Preamble are specified in this sub-clause. An EHT STA with dot11OnlyEHTBaseLineFeaturesImplemented set to true shall set the Disregard fields and Validate fields to the values as specified in this subclause. An EHT STA with dot11OnlyEHTBaseLineFeaturesImplemented set to false may set Validate fields or Disregard fields to different values from the ones specified in this subclause. Validate field values serve to indicate whether to continue reception of a PPDU at an EHT STA with dot11OnlyEHTBaseLineFeaturesImplemented set to true. Disregard field values have no bearing on whether the reception of a PPDU is continued ot not at an EHT STA with dot11OnlyEHTBaseLineFeaturesImplemented set to true. Similarly, any field of the EHT preamble being set to a Validate state can indicate that the PPDU reception can be terminated at an EHT STA with dot11OnlyEHTBaseLineFeaturesImplemented set to true and any field being set to a Disregard state has no bearing on the PPDU reception at such a STA. If an EHT STA with dot11OnlyEHTBaseLineFeaturesImplemented set to true encounters a PPDU where any of

35

1. the Validate fields in the preamble are not set to the values for those fields specified in this subclause, or
2. field values of any field in the EHT preamble are set to a Validate state as defined in this subclause, it
3. shall defer for the duration of the PPDU, pass the information in the version independent fields to MAC, and
4. terminate the reception of the PPDU. On the other hand, if an EHT STA with dot11OnlyEHTBaseLineFeaturesImplemented set to true sees any of the Disregard fields set to a value different than that specified in this sub-clause,
5. , or field values of any field in the EHT preamble as being set to a Disregard state as defined in this

41

1. subclause, it can continue reception of the PPDU. . For further details on receive behavior when encountered with Validate and
2. Disregard fields/states, please refer to [36.3.21 (EHT receive procedure)](#bookmark282).

46