IEEE P802.11
Wireless LANs

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| Proposed resolution for REVme LB258 comments |
| Date: 2022-03-07 |
| Author: |
| Name | Affiliation | Address | Phone | Email |
| Edward Au | Huawei Technologies | Ottawa, Ontario, Canada |  | edward.ks.au@gmail.com  |

##### This submission present proposed resolutions for the following 10 CIDs:

##### 1132, 1288, 1586, 1547, 1027, 1296, 1369, 2051, 1454, 1455.

##### The proposed changes are based on REVme/D1.0.

##### Revision history:

##### R0 – initial version

##### R1 – updated based on the comments received during the February 14th teleconference call.

##### R2 – updated based on the comments received during the February 28th teleconference call.

##### R2 – updated the resolution of CID 1586 and added the resolution of CIDs 1454 and 1455.

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| CID | Clause | Page | Line | Comment | Proposed Change |
| 1132 | 30.2.2 | 4882 | 58 | "This parameter is a measure by the PHY of the..." This is should be "measurement" | replace "measure" with "measurement" |

***Discussion:***

NOTE – this CID is moved from offline review (22/0175r0) based on a comment I received offline from Mark Rison.

At 4882.58 in D1.0:



As per Mark’s offline comment, he commented that “measure” is fine. If we change it here you need to change it in the other 14 locations too.

Option 1:

Reject the comment, i.e., to keep using “measure” as-is.

Option 2:

Revised, replace “measure” with “measurement” at 4882.58 and the following additional 20 locations: 3417.62, 3418.14, 3439.38, 3468.28, 3473.58, 3474.18, 3508.12, 3536.42, 3616.5, 3642.11, 3653.12, 3695.40, 3825.11, 3877.49, 4012.57, 4042.18, 4064.56, 4296.22, 4296.33, and 4548.24 in D1.0.

***Proposed resolution:***

Revised.

Replace “measure” with “measurement” at 4882.58 and the following additional 20 locations: 3417.62, 3418.14, 3439.38, 3468.28, 3473.58, 3474.18, 3508.12, 3536.42, 3616.5, 3642.11, 3653.12, 3695.40, 3825.11, 3877.49, 4012.57, 4042.18, 4064.56, 4296.22, 4296.33, and 4548.24 in D1.0.

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| CID | Clause | Page | Line | Comment | Proposed Change |
| 1288 | C.3 | 5653 | 51 | "OCTET-STRING" following on dot11EDMGPolarizationCapability should be "OCTET STRING". | Please replace "-" with a space. |

***Discussion:***

NOTE – this CID is moved from offline review (22/0175r0) based on a comment I received offline from Mark Rison.

At 5653.51 in D1.0:



As per Mark’s offline comment, he commented there are also 4x "octet-string", which is beyond the scope of this CID.

***Proposed resolution:***

Revised.

At 5653.51 in D1.0, replace “OCTET-STRING” with “OCTET STRING”.

At 3117.43, 3255.6, 3258.2, and 3258.63 in D1.0, replace “octet-string” with “octet string”.

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| CID | Clause | Page | Line | Comment | Proposed Change |
| 1586 | C.3 | 5251 | 61 | DEFVAL is used to specify the default | Delete "The default is time-based, once per day." |

***Discussion:***

NOTE – this CID is moved from offline review (22/0175r0) based on a comment I received offline from Mark Rison.

At 5251.61 in D1.0:



As per Mark’s offline comment, he asked “How about other "the default"s (e.g. 5538.58)”, which is beyond the scope of this CID. At 5538.58, there exists a default statement in the DESCRIPTION:



Option 1 (3/15):

Accept the comment that deletes "The default is time-based, once per day."

Option 2:

Assign to a volunteer who identities all of the remaining MIBs that have a default statement in the DESCRPTION that can be removed.

Option 3 (5/15):

Rejected.

No answer (7/15).

***Proposed resolution: (Run as a separate motion)***

Rejected.

The sentence “The default is time-based, once per day” does not have any technical error.

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| CID | Clause | Page | Line | Comment | Proposed Change |
| 1547 | 11.20.1 | 2865 | 45 | "Note that " should be "NOTE---" | Change "Note that the TDLS Discovery Responseframe is not a TDLS frame but a Public Action frame." to "NOTE---The TDLS Discovery Responseframe is not a TDLS frame but a Public Action frame." |

***Discussion:***

NOTE – this CID is moved from offline review (22/0175r0) based on a comment I received offline from Mark Rison.

At 2865.45 in D1.0:



As per Mark’s offline comment, he asked “How about other "Note that"s?”, which is beyond the scope of this CID.

As referrted to Clause 18 of the 2021 IEEE SA Standards Style Manual,

* “Note that” is normative and is translated to mean “pay special attention to.” “Note that” is usually part of a paragraph while “NOTE—” is set apart as its own paragraph.

Option 1 (4/18):

Revise the comment to make the NOTE as a separate paragraph, with a note to Editors to enumerate the note at 2864.52 in D1.0 as NOTE 1, and change NOTE to NOTE 2 for the commenter’s proposed change.

Option 2:

Assign to a volunteer who identities all of the remaining 167 “Note that”/ “note that” that can be converted to NOTE.

Option 3 (8/18):

Rejected. The sentence is technically correct and also it is consistent with the 2021 IEEE SA Standards Style Manual.

No answer: 6/18

***Proposed resolution:***

Rejected.

The sentence is technically correct and also it is consistent with the 2021 IEEE SA Standards Style Manual.

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| CID | Clause | Page | Line | Comment | Proposed Change |
| 1027 | 27.3.20.4 | 4472 | 53 | Text states: the power of the interfering signal is raised. This implies the power level is increased. | changed "raised" to "increased" change "power" to "power level" |

***Discussion:***

NOTE – this CID is moved from offline review (22/0175r0) based on a comment I received offline from Mark Rison.

At 4472.53 in D1.0:



As per Mark’s offline comment, he commented “also add "the" before "interfering". But there are a number of "power"s nearby -- why don't these need to become "power level"s too? What is the difference between a power and power level?”

***Proposed resolution:***

Revised.

Nonadjacent channel rejection for ***W*** MHz channels (where ***W*** is 20, 40, 80, or 160) shall be measured by setting the desired signal’s strength 3 dB above the rate-dependent sensitivity specified in Table 27-51 (Receiver minimum input level sensitivity(11ax)) and increasing the power of the interfering signal of ***W*** MHz bandwidth until a 10% PER occurs for a PSDU length of 2048 octets for BPSK modulation with DCM or 4096 octets for all other modulations. The difference in power between the signals in the interfering channel and the desired channel is the corresponding nonadjacent channel rejection. The nonadjacent channel rejection shall be met with any nonadjacent channels located at least 2×***W*** MHz away from the center frequency of the desired signal.

Nonadjacent channel rejection for 80+80 MHz channels shall be measured by setting the desired signal’s strength 3 dB above the rate-dependent sensitivity specified in Table 27-51 (Receiver minimum input level sensitivity(11ax)). Then, an interfering signal of 80 MHz bandwidth is introduced, where the center frequency of the interfering signal is placed at least 160 MHz away from the center frequency of the frequency segment lower in the frequency of the desired signal. The center frequency of the interfering signal shall also be at least 160 MHz away from the center frequency of the frequency segment higher in frequency of the desired signal. The power of the interfering signal is increased until 10% PER is caused for a PSDU length of 2048 octets for BPSK modulation with DCM or 4096 octets for all other modulations. Let *ΔP1* be the difference in power between the interfering and desired signals. Next, the interfering signal of 80 MHz bandwidth is moved to the frequency where the center frequency of the interfering signal is at least 160 MHz away from the center frequency of the frequency segment higher in frequency of the desired signal. The center frequency of the interfering signal shall also be at least 160 MHz away from the center frequency of the frequency segment lower in frequency of the desired signal. The power of the interfering signal is increased until 10% PER is caused for a PSDU length of 2048 octets for BPSK modulation with DCM or 4096 octets for all other modulations. Let Δ*P2*be the difference in power between the interfering and desired signals. The smaller value between Δ*P1*and Δ*P2*is the corresponding nonadjacent channel rejection.

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| CID | Clause | Page | Line | Comment | Proposed Change |
| 1296 | Z |  |  | Throughout Annex Z, SS is interpreted as "spatial stream". In subclause 3.4, however, SS is abbreviated for "station service". | Consider either providing a new abbreviation for "station service" or creating an abbreviation for "spatial stream" that is not conflict with that of the "station service". |

***Discussion:***

It is not limited to Annex Z but also many PHY clauses. In total, there are over 300 instances of “SS” in D1.0. A number of them are duplicated because of their appearances in the table of contents.

At 203.41 in D1.0:



This abbreviation of SS for station service is used about 20 times in clause 4, and all of them are not related to spatial stream.

For the abbreviation of SS in clauses 9, 10, 19, 26, 27, 28, and Annex Z, majority (if not all!) of them are related to spatial stream.

Option 1:

Replace “SS” with “station service” in clause 4.

In clause 3.4, change the definition of abbreviation of SS from “station service” with “spatial stream”.

Change “station service (SS)” with “station service” twice in D1.0.

Option 2:

Consider a new abbreviation of station service and use it to replace all instances of “SS” in clause 4.

***Proposed resolution:***

Revised.

At 203.41 in subclause 3.2 of D1.0, change “station service (SS)” with “station service”.

At 262.5 in subclause 3.4 of D1.0, change the definition of abbreviation of SS from “station service” with “spatial stream”.

At 311.22 in subclause 4.4.1 of D1.0, change “the station service (SS)” with “the station service).

Replace “SS” with “station service” at the following locations in D1.0: 311.51 (twice), 311.57, 311.59 (twice), 311.60, 311.63, 313.54, and 313.55.

Replace “SS” with “Station service” at the following locations in D1.0: 311.54, 313.16, 313.21, 313.26, 329.56, 330.11, 330.16, 330.22, and 330.49.

Replace “an SS” with “a station service” at the following locations in D1.0: 319.44, 320.45, and 321.25.

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| CID | Clause | Page | Line | Comment | Proposed Change |
| 1369 | 15.2.2 | 3416 | 17 | In 15.2.2 (TXVECTOR parameters) and 15.2.3 (RXVECTOR parameters), why do we have all these subclauses? Everywhere else where there is a list of parameters, the following paragraphs just flow, describing them. Same thing in 17.2. | Remove the subclause headers for 15.2.2.x, 15.2.3.x, and 15.2.4.x. Remove the subclause headers for 17.2.2.x, 17.2.3.x, and 17.2.4.x.In 15.2.2.6, replace the first sentence with "The allowed values for the TIME\_OF\_DEPARTURE\_REQUESTED parameter are false or true." in 15.2.2.7, start the sentence with "The TX\_ANTENNA parameter selects ..." In 15.2.3.2, start the sentence with "The LENGTH paramter is the PSDU length..." In 15.2.3.3, start the first setence with "The RSSI parameter is a measure...".In 17.2.2.6, replace the first sentence with "The allowed values for the TIME\_OF\_DEPARTURE\_REQUESTED parameter are false or true." |
| 2051 | 15 |  |  | Move 15.2.3.6 PHY-RXEND.indication parameter RCPI and 17.2.3.6 PHY-RXEND.indication parameter RCPI to be under 15.4.6 PHY receiver specifications and 17.3.10 PHY receiver specifications as for more recent PHYs, since not part of TXVECTOR | As it says in the comment |

***Discussion:***

Agree in principle.

***Proposed resolution:***

Revised.

* TXVECTOR parameters

The parameters in Table 15-1 (TXVECTOR parameters) are defined as part of the TXVECTOR parameter list in the PHY‑TXSTART.request primitive.

The LENGTH parameter provided in the TXVECTOR is in octets and is converted to microseconds for inclusion in the PHY LENGTH field.

The DATARATE parameter describes the bit rate at which the PHY shall transmit the PSDU. Its value takes any of the rates defined in Table 15-1 (TXVECTOR parameters).

The SERVICE parameter shall be null.

The allowed values for the TXPWR\_LEVEL\_INDEX parameter are in the range 1 to 8. This parameter is used to indicate which of the available TxPowerLevel attributes defined in the MIB shall be used for the current transmission.

The allowed values for the TIME\_OF\_DEPARTURE\_REQUESTED parameter are false or true. A parameter value of true indicates that the MAC sublayer is requesting that the PHY entity provides measurement of when the first (#14)PPDU energy is sent by the transmitting port and reporting within the PHY-TXSTART.confirm primitive. A parameter value of false indicates that the MAC sublayer is requesting that the PHY entity not provide time of departure measurement nor reporting in the PHY-TXSTART.confirm primitive.

The TX\_ANTENNA parameter selects the antenna used by the PHY for transmission (when diversity is disabled), in the range 1 to 255.

* RXVECTOR parameters

The parameters listed in Table 15-2 (RXVECTOR parameters) are defined as part of the RXVECTOR parameter list in the PHY‑RXSTART.indication primitive.

The LENGTH parameter is the (#14)PSDU length in octets (calculated from the LENGTH field in microseconds).

This RSSI parameter is a measure by the PHY of the energy observed at the antenna connector used to receive the current PPDU. RSSI shall be measured during the reception of the PHY preamble. RSSI is intended to be used in a relative manner, and it shall be a monotonically increasing function of the received power.

SIGNAL shall represent the data rate at which the current PPDU was received.

The SERVICE parameter shall be null.

SQ provides to the MAC entity the signal quality of the DSSS PHY PN code correlation. The SQ shall be sampled when the DSSS PHY achieves code lock and shall be held until the next code lock acquisition.

The SQ may be used in conjunction with RSSI as part of a CCA scheme.

RX\_ANTENNA reports the antenna used by the PHY for reception of the most recent PPDU.

* TXSTATUS parameters

The parameters listed in Table 15-3 (TXSTATUS parameters) are defined as part of the TXSTATUS parameter list in the PHY‑TXSTART.confirm primitive.

The allowed values for the TIME\_OF\_DEPARTURE parameter are integers in the range 0 to 232 – 1. This parameter is used to indicate when the first (#14)PPDU energy is sent by the transmitting port in units equal to 1/TIME\_OF\_DEPARTURE\_ClockRate. TIME\_OF\_DEPARTURE may be included in the transmitted frame in order for recipients on multiple channels to determine the time differences of air propagation times between transmitter and recipients and hence to compute the location of the transmitter.

TIME\_OF\_DEPARTURE\_ClockRate indicates the clock rate used for TIME\_OF\_DEPARTURE.

* PHY receiver specifications
* Introduction

(…)

* Receiver minimum input level sensitivity

(…)

* Receiver maximum input level

 (…)

* Receiver adjacent channel rejection

(…)

* CCA

(…)

* Received channel power indicator (RCPI) measurement

The RCPI is a measure of the received RF power in the selected channel for a received frame. This parameter shall be a measure by the PHY of the received RF power in the channel measured over the entire received (#14)PPDU or by other equivalent means that meet the specified accuracy.

The allowed values for the RCPI are in the range 0 to 255, as defined in 9.4.2.37 (RCPI element).

RCPI shall equal the received RF power within an accuracy of ± 5 dB (95% confidence interval) within the specified dynamic range of the receiver. The received RF power shall be determined assuming a receiver noise equivalent bandwidth equal to the channel bandwidth multiplied by 1.1.

* DSSS PHY TXTIME calculation

(…)

* TXVECTOR parameters

The parameters in Table 17-1 (TXVECTOR parameters) are defined as part of the TXVECTOR parameter list in the  PHY‑TXSTART.request primitive.

The allowed values for the LENGTH parameter are in the range 1 to 4095. This parameter is used to indicate the number of octets in the (#14)PSDU which the MAC is currently requesting the PHY to transmit. This value is used by the PHY to determine the number of octet transfers that will occur between the MAC and the PHY after receiving a request to start the transmission.

The DATARATE parameter describes the bit rate at which the PHY shall transmit the PSDU. Its value takes any of the rates defined in Table 17-1 (TXVECTOR parameters). Data rates of 6, 12, and 24 Mb/s shall be supported for 20 MHz channel spacing, data rates of 3, 6, and 12 Mb/s shall be supported for 10 MHz channel spacing, and data rates of 1.5, 3, and 6 Mb/s shall be supported for 5 MHz channel spacing; other rates may also be supported.

The SERVICE parameter shall be null.

The allowed values for the TXPWR\_LEVEL\_INDEX parameter are in the range 1 to 8. This parameter is used to indicate which of the available TxPowerLevel attributes defined in the MIB shall be used for the current transmission.

The allowed values for the TIME\_OF\_DEPARTURE\_REQUESTED parameter are false or true. A parameter value of true indicates that the MAC sublayer is requesting that the PHY entity provides measurement of when the first (#14)PPDU energy is sent by the transmitting port and reporting within the PHY-TXSTART.confirm primitive. A parameter value of false indicates that the MAC sublayer is requesting that the PHY entity not provide time of departure measurement nor reporting in the PHY-TXSTART.confirm primitive.

If present, the allowed values for CH\_BANDWIDTH\_IN\_NON\_HT are CBW20, CBW40, CBW80, CBW160, and CBW80+80. If present, this parameter is used to modify the first 7 bits of the scrambling sequence to indicate the bandwidth of the non-HT duplicate PPDU.

(…)

If present, the allowed values for DYN\_BANDWIDTH\_IN\_NON\_HT are Static and Dynamic. If present, this parameter is used to modify the first 7 bits of the scrambling sequence to indicate if the transmitter is capable of Static or Dynamic bandwidth operation. If DYN\_BANDWIDTH\_IN\_NON\_HT is present, then CH\_BANDWIDTH\_IN\_NON\_HT is also present.

(…)

If present, SCRAMBLER\_INITIAL\_VALUE is an integer in the range 1–127 and is used as the first 7 bits of the scrambling sequence (the first 7 bits transmitted in the SERVICE field after scrambling).

* RXVECTOR parameters

The parameters listed in Table 17-2 (RXVECTOR parameters) are defined as part of the RXVECTOR parameter list in the PHY‑RXSTART.indication primitive.

The allowed values for the LENGTH parameter are in the range 1–4095. This parameter is used to indicate the value contained in the LENGTH field which the PHY has received in the PHY header. The MAC and PHY use this value to determine the number of octet transfers that will occur between the two sublayers during the transfer of the received PSDU.

The allowed values for the RSSI parameter are in the range 0 to 255. This parameter is a measure by the PHY of the energy observed at the antenna connector used to receive the current PPDU. RSSI shall be measured during the reception of the PHY preamble. RSSI is intended to be used in a relative manner, and it shall be a monotonically increasing function of the received power.

DATARATE shall represent the data rate at which the current PPDU was received. The allowed values of the DATARATE are 6, 9, 12, 18, 24, 36, 48, or 54 Mb/s for 20 MHz channel spacing; 3, 4.5, 6, 9, 12, 18, 24, or 27 Mb/s for 10 MHz channel spacing; and 1.5, 2.25, 3, 4.5, 6, 9, 12, or 13.5 Mb/s for 5 MHz channel spacing.

The SERVICE parameter shall be null.

If present, the allowed values for CH\_BANDWIDTH\_IN\_NON\_HT are CBW20, CBW40, CBW80, CBW160, and CBW80+80. If present and valid, this parameter indicates the bandwidth of the non-HT duplicate PP-DU. This parameter is used by the MAC only when valid (see 10.3.2.9 (CTS and DMG CTS procedure) and 10.6.6.6 (Channel Width selection for Control frames)).

(…)

If present, the allowed values for DYN\_BANDWIDTH\_IN\_NON\_HT are Static and Dynamic. If present and valid, this parameter indicates whether the transmitter is capable of Static or Dynamic bandwidth operation. This parameter is used by the MAC only when valid (see 10.3.2.9 (CTS and DMG CTS procedure) and 10.6.6.6 (Channel Width selection for Control frames)). If DYN\_BANDWIDTH\_IN\_NON\_HT is present, then CH\_BANDWIDTH\_IN\_NON\_HT is also present.

(…)

SCRAMBLER\_INITIAL\_VALUE is present in an HE STA, and is the integer representation of the first 7 bits of the scrambling sequence (the first 7 bits received in the SERVICE field prior to descrambling), with the first bit of the scrambling sequence being the LSB of SCRAMBLER\_INITIAL\_VALUE.

(…)

* TXSTATUS parameters

The parameters listed in Table 17-3 (TXSTATUS parameters) are defined as part of the TXSTATUS parameter list in the PHY‑TXSTART.confirm primitive.

The allowed values for the TIME\_OF\_DEPARTURE parameter are integers in the range 0 to 232– 1. This parameter is used to indicate when the first (#14)PPDU energy is sent by the transmitting port in units equal to 1/TIME\_OF\_DEPARTURE\_ClockRate. TIME\_OF\_DEPARTURE may be included in the transmitted frame in order for recipients on multiple channels to determine the time differences of air propagation times between transmitter and recipients and hence to compute the location of the transmitter.

TIME\_OF\_DEPARTURE\_ClockRate indicates the clock rate used for TIME\_OF\_DEPARTURE.

* PHY receiver specifications
* Introduction

(…)

* Receiver minimum input level sensitivity(#256)

(…)

* Adjacent channel rejection

(…)

* Nonadjacent channel rejection

(…)

* Receiver maximum input level

(…)

* CCA requirements

(…)

* Received channel power indicator (RCPI) measurement

(#14)The RCPI is a measure of the received RF power in the selected channel for a received PPDU. This parameter shall be a measure by the PHY of the received RF power in the channel measured over the entire received PPDU or by other equivalent means that meet the specified accuracy.

The allowed values for the RCPI are in the range 0 to 255, as defined in 9.4.2.37 (RCPI element).

RCPI shall equal the received RF power within an accuracy of ± 5 dB (95% confidence interval) within the specified dynamic range of the receiver. The received RF power shall be determined assuming a receiver noise equivalent bandwidth equal to the channel bandwidth multiplied by 1.1.

**Update the cross references in the following locations (D1.1):**

At 3524.63, replace 17.2.3.3 with 17.2.3.

At 3544.22 and 3544.24, replace 17.2.2.9 with 17.2.2.

At 3544.23 and 3544.27, replace 17.2.3.9 with 17.2.3.

At 4978.22, 4978.32, and 4978.57, replace 15.2.3.4 with 15.2.3.

At 4986.42, replace 15.2.3.4 with 15.2.3.

At 4988.33, replace 17.2.2.2 with 17.2.2.

At 4988.37, 4988.43, 4988.48, 4988.54, 4988.59, 4989.6, 4989.13, 4989.18, and 4989.24, replace 17.2.2.3 with 17.2.2.

At 4989.29, replace 17.2.2.4 with 17.2.2.

At 4989.34, replace 17.2.2.5 with 17.2.2.

At 4989.40, replace 17.2.3.2 with 17.2.3.

At 4989.45, replace 17.2.3.3 with 17.2.3.

At 4989.56, 4990.14, 4990.28, 4990.42, 4990.55, 4991.14, 4991.28, 4991.41, 4991.55, 4992.14, 4992.28, 4992.42, 4992.55, 4993.14, 4993.28, 4993.41, 4993.55, 4994.14, delete “, 17.2.3.4”.

At 5041.40, relace 17.2.3.6 with 17.3.10.7

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| CID | Clause | Page | Line | Comment | Proposed Change |
| 1454 | 12.7.10.1 | 3241 |  | Figure 12-52--Authenticator state machines, part 1 is not searchable | Make it searchable |
| 1455 | 12.7.10.1 | 3240 |  | Figure 12-54--Authenticator state machines, part 3 is not searchable | Make it searchable |

***Discussion:***

None

***Proposed resolution:***

Revised.

The commenter provides the Editors an updated visio figure. The Editors integrate the updated figure to the draft standard and the commenter confirms that the figure is now searchable in the document.