IEEE P802.11
Wireless LANs

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| REVmc LB 202 Assorted CIDs |
| **Date:** November 20, 2014 |
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**Abstract**

This document contains proposed resolutions for assorted REVmc comments received on letter ballot 202.

History:

R0: initial revision

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| **CID** | Clause | Page | Line | Comment | Proposed Change |
| **3321** | 10.23.1 | 1691 | 63 | Given "The channel on which the AP operates is referred to as the base channel. If the AP operates in a 40 MHz channel, then the base channel refers to the primary channel.", "Features that are supported by the BSS shall follow the BSS rules when they are used on a TDLS direct link on the base channel. The channel width of the TDLS direct link on the base channel shall not exceed the channel width of the BSS to which the TDLS peer STAs are associated." is confusing because the width of the base channel is necessarily 20 MHz | Change "TDLS direct link on the base channel" to something like "TDLS direct link whose primary channel is the base channel" (twice) |

**Proposed resolution**

Revised. Editor to make changes as shown in 11-14-xxxx-00-000m-revmc-lb202-assorted-cids.docx.

**10.23.1 General**

Features, excluding PCO, that are not supported by the BSS but that are supported by both TDLS peer STAs may be used on a TDLS direct link between those STAs. An example is the use of an HT MCS on a TDLS direct link between HT STAs when these STAs are associated with a non-HT BSS. Features that are supported by the BSS shall follow the BSS rules when they are used on a TDLS direct link on the base channel. The channel width of a TDLS direct link with a primary channel equal to the base channel shall not exceed the channel width of the BSS to which the TDLS peer STAs are associated, except when the TDLS Wider Bandwidth subfield in the Extended Capabilities element of the TDLS Setup Request frame or the TDLS Setup Response frame is 1 for both TDLS peer STAs.

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| **CID** | Clause | Page | Line | Comment | Proposed Change |
| **3457** | 10.2.2.17 | 1552 | 60 | What is the value of the "Overridden" status code in the TIM Broadcast Response element? | Add a NOTE to say this is treated exactly the same as Accept by the recipient |
| **3458** | 10.2.2.17 | 1552 | 60 | If the "Overridden" status code is used in the TIM Broadcast Response element, how does the receiver know whether a valid timestamp is present in TIM frames? | Add a new status code (cf. 0 and 1 for Accept and Accept, valid timestamp present) |

**Proposed resolution**

Revised. Editor to make changes as shown in 11-14-xxxx-00-000m-revmc-lb202-assorted-cids.docx.

**8.4.2.83 TIM Broadcast Response element**

**Table 8-210—Status field values**

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| **Field value** | **Description** |
| 0 | Accept |
| 1 | Accept, valid timestamp present in TIM frames |
| 2 | Denied |
| 3 | Overridden |
| 4 | Overridden, valid timestamp present in TIM frames |
| 5 - 255 | Reserved |

When the Status field is 0, 1, 3, or 4, the TIM Broadcast Interval field, TIM Broadcast Offset field, High Rate TIM Rate field, and Low Rate TIM Rate field are included in the TIM Broadcast Response element.

**8.6.15.2 TIM frame format**

The Timestamp field is defined in 8.4.1.10 (Timestamp field). The field contains a valid TSF timestamp when the TIM Broadcast Response frame contained a Status field indicating “Accept, valid timestamp present in TIM frames” or "Overridden, valid timestamp present in TIM frames". The field is reserved otherwise.

**10.2.2.17 TIM Broadcast**

A non-AP STA may activate the TIM Broadcast service by including a TIM Broadcast Request element in a TIM Broadcast Request frame, Association Request frame or Reassociation Request frame that is transmitted to the AP, which specifies the requested interval between TIM frame transmissions (the TIM Broadcast Interval). On receipt of a properly formatted TIM Broadcast Request element in a TIM Broadcast Request frame, Association Request frame or Reassociation Request frame, the AP shall include a TIM Broadcast Response element in the corresponding TIM Broadcast Response frame, Association Response frame or Reassociation Response frame, when dot11TIMBroadcastActivated is true. When the requested TIM Broadcast Interval is acceptable, the AP shall include a TIM Broadcast Response element specifying the requested TIM Broadcast Interval and a Status field indicating “Accept” when no valid TSF timestamp is present in the TIM frames, or “Accept, valid timestamp present in TIM frames” when a valid TSF timestamp is present in the TIM frames. When the AP overrides the requested TIM Broadcast Interval, it shall include a TIM Broadcast Response element specifying a different TIM Broadcast Interval and a Status field indicating “Overridden” when no valid TSF timestamp is present in the TIM frames, or “Overridden, valid timestamp present in TIM frames” when a valid TSF timestamp is present in the TIM frames, and include in the TIM Broadcast Response element the smallest TIM Broadcast Interval that is currently active. Otherwise, the AP shall include a TIM Broadcast Response element with a Status field indicating “Denied.” The Status field in a TIM Broadcast Response element that is included in an Association Response frame or Reassociation Response frame has implications only for the TIM Broadcast negotiation.

NOTE—The STA might ignore the TIM Broadcast Interval in the TIM Broadcast Response element if the Status field indicates "Accept" or "Accept, valid timestamp present in TIM frames", because the TIM Broadcast Interval is the requested one.

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| **CID** | Clause | Page | Line | Comment | Proposed Change |
| **3776** | 8.4.2.28 | 826 | 40 | A 2ms TXOP limit is too short for a 1500 Byte packet at 6 Mbps, which causes it to be fragmented. A better limit is probably in the order of 2.5 ms. There is probably no need to craft a very exact number because any optional part in the IP header or the TCP header or the MAC header will result in a different duration of the PPDU. | Change the TXOP limits for BK and BE to 2.5 ms. |

**Proposed resolution**

Revised. Modify Table 8-144 (Default EDCA Parameter Set element parameter values if dot11OCBActivated is false) as shown in 11-14-xxxx-00-000m-revmc-lb202-assorted-cids.docx, changing the TXOP limit for AC\_BK and AC\_BE to 2.528 ms, from 2.080 ms.

**Table 8-144—Default EDCA Parameter Set element parameter values if dot11OCBActivated is false**

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| **AC** | **CWmin** | **CWmax** | **AIFSN** | **TXOP limit** |
| **For PHYs defined in Clause 16 (DSSS PHY specification for the 2.4 GHz band designated for ISM applications) and Clause 17 (High Rate direct sequence spread spectrum (HR/ DSSS) PHY specification)** | **For PHYs defined in Clause 18 (Orthogonal frequency division multiplexing (OFDM) PHY****Clause 19 (Extended Rate PHY (ERP) specification), and Clause 20 (High****Throughput (HT) PHY specification)** | **Other****PHYs** |
| AC\_BK | aCWmin | aCWmax | 7 | 3.264 ms | 2.528 ms | 0 |
| AC\_BE | aCWmin | aCWmax | 3 | 3.264 ms | 2.528 ms | 0 |
| AC\_VI | (aCWmin+1)/2 – 1 | aCWmin | 2 | 6.016 ms | 4.096 ms | 0 |
| AC\_VO | (aCWmin+1)/4 – 1 | (aCWmin+1)/2 – 1 | 2 | 3.264 ms | 2.080 ms | 0 |

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| **CID** | Clause | Page | Line | Comment | Proposed Change |
| **3777** | 8.4.2.28 | 826 | 40 | Non-0 TXOP limits for BK and BE will cause 11b transmissions to become fragmented, but it is unknown how devices in the field will react to this. Formally the implementations are supposed to adhere, but it is unknown whether this will be true in practice. Input from the WFA could be useful here. In order to reduce any risk at creating APs that are not backwards compatible (i.e. APs that advertise TXOP limits that cause issues at legacy devices), the non-0 TXOP limits could be advertised in a new TXOP limit element that supersedes the EDCA Parameter Set element with respect to the TXOP limits, provided this is deemed necessary based on the information from the WFA. | Define a new TXOP limit element that supersedes the TXOP limits in the EDCA Parameter Set element.  |

**Proposed resolution**

Rejected. The identified issue is not likely to occur in practice.

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| **CID** | Clause | Page | Line | Comment | Proposed Change |
| **3778** | 8.4.2.28 | 826 | 40 | Techniques that rely on the freshness of sounding information, such as downlink MU MIMO, will benefit from TXOPs that are longer than 2 ms. Although the values in this table apply only to STAs and an AP can set its own TXOP limits, these values may still be used to set a default value for the AP also. Therefore, in order to allow for longer TXOPs, it should be allowed to exceed the TXOP limit in exchange for a larger CW. | Allow exceeding the TXOP limit in exchange for a larger CW. |

**Proposed resolution**

Rejected. This comment requires a technical submission.

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| **CID** | Clause | Page | Line | Comment | Proposed Change |
| **3779** | 9.3.7 | 1261 | 21 | EIFS can be avoided at devices that do not implement dynamic EIFS (yet) by requiring that a TXOP is always terminated with a transmission of an ACK at the lowest rate within the PHY. | Require that the TXOP holder terminates a TXOP with an ACK at the lowest rate within the PHY (i.e. at 6 Mbps for 11ac). |

**Proposed resolution**

Rejected. This comment requires a technical submission.

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| **CID** | Clause | Page | Line | Comment | Proposed Change |
| **3152** | 9.26.2 | 1368 | 58 | "If one or more NonERP STAs are associated in the BSS, the Use\_Protection bit shall be set to 1 in transmitted ERP elements." Combined with the paragraph later in the same section (next page, lines 6-11), this seems to require use of protection mechanisms whenever there is even one NonERP STA associated in a BSS. This seems drastic. NonERP STAs may be very low duty cycle devices (IoT devices, security alarms, doorbells, etc.) Use of protection mechanisms for all transmissions in the BSS will cause a significant reduction in throughput and significantly increase time-on-air (and hence reduce battery life) for other STAs associated in the BSS. This may not even be necessary for acceptable operation of the associated NonERP STA(s). In any case the necessity or otherwise should be a matter for the AP to manage. The text should be changed so that non-AP STA use of protection mechanisms depends only on the AP, and the AP may or may not choose to require use of protection mechanisms. | On P1368 LL58-59, change "shall" to "may". On P1369 LL6-8 (first sentence of paragraph), change to "A non-AP ERP STA shall invoke the use of a protection mechanism after reception of the Use\_Protection bit with a value of 1 in an MMPDU from the AP." In the same paragraph (P1369 LL6-11), delete the last sentence and add in its place "An AP may change the Use\_Protection bit to 0. A non-AP ERP STA may disable protection mechanism use after reception of the Use\_Protection bit with a value of 0 in an MMPDU from the AP." On P1368 L27, change "ERP STA" to "non-AP ERP STA". |

**Discussion**

ERP protection may indeed not be needed when the NonERP STA is close to the AP, because deferral can be based on energy detection of the NonERP transmissions.

But, when the NonERP STA is not close to the AP, protection will be needed to make the NonERP transmissions visible. This issue may in fact also apply to remote ERP STAs.

Therefore, an option is to change the identified "shall" to "should", and add a recommendation that the Use\_Protection bit is set to 1 when remote STAs are suspected. However, this recommendation is kind of hard to quantify, so it is unknown how it will affect practical implementations.

**Proposed resolution**