IEEE P802.11
Wireless LANs

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| LB 190 Comments Resolutions for Sub-Clause 9.19 |
| Date: 2012-11-13 |
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This document provides resolutions for comments in sub-clause 9.19 of draft spec D4.0 (LB190). All CIDs are for MAC ad hoc.

* 7098, 7357, 7358, 7220, 7289, 7290

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 7098 | 149.48 | 9.19.2.3 | The text here mentions that an EDCAF can only perform either data transmission or invoking backoff procedure due to an internal collision. For the secondary AC in MU-MIMO transmission, its EDCAF can transmit data and invoke backoff procedure at the same time when internal collison happens. So this case does not meet the requirement. | Please add a note to clarify for this case. | Revised.See Doc 11-12/1370r0 for resolution. |

**The text:**

On specific slot boundaries as determined on the primary channel, each EDCAF shall make a determination to perform one and only one of the following functions:

— Initiate the transmission of a frame exchange sequence for that access function.

— Decrement the backoff timer for that access function.

— Invoke the backoff procedure due to an internal collision.

— Do nothing for that access function.

***Editorial Instrution*:**

Add the following note at the end of this paragraph.

Note−as the only exception to the above rules, in the case of an internal collision, a secondary AC is allowed to initiate the transmission during a TXOP obtained by the primary AC and, at the same time, invoke the backoff procedure.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 7357 | 149.62 | 9.19.2.3a | "In addition, each A-MPDU shallcontain frames from the same TC (identified by the TID) as defined in 8.6.3 (A-MPDU contents)" is simply not true. 8.6.3 only requires this of Data MPDUs sent under an HT-immediate BA agreement; it is not required e.g. for Data MPDUs sent under an HT-delayed BA agreement, or indeed non-Data MPDUs. | Delete the sentence | Accepted. |

**Discussion**:

The commenter is right. The related text from 8.6.3 is copied here.

**8.6.3 A-MPDU contents**

An A-MPDU is a sequence of MPDUs carried in a single PPDU with the TXVECTOR/RXVECTOR

AGGREGATION parameter set to 1.

All the MPDUs within an A-MPDU are addressed to the same RA. All QoS data frames within an A-MPDU that have a TID for which an HT-immediate Block Ack agreement exists have the same value for the Ack Policy subfield of the QoS Control field.

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| 7358 | 150.04 | 9.19.2.3a | "When sharing, the TXOP duration is bounded by the TXOP limit of the primary AC." -- is this an exception to the exception that the TXOP Limit may be violated by VHT BF? | Change to "The TXOP Limit which applies is the TXOP Limit of the primary AC." | Revised.See Doc 11-12/1370r0 for resolution. |

**Discussion**:

The proposed change clarifies the intent and provides a safer way of saying it; we don’t need to worry about exceptions.

***Editorial Instrution*:**

Change the sentence at P150L04 as below.

When sharing, the TXOP Limit which applies is the TXOP Limit of the primary AC.

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| 7220 | 153.53 | 9.19.2.5 | I think the intent of the added text in the paragraph on P153L53 is clear, but it should be worded differently. A secondary AC does not invoke the backoff procedure with the same CW, but rather it continues the backoff procedure where it left off before its piggybacked TXOP. Also, a secondary AC should be excluded from conditions b) and c). | One way to achieve this is to add ", and the AC was a primary AC" at items b) and c) at P153L24 and P153L30, respectively, and to delete the insertions in the paragraph between P153L53-P153L58. In addition a note might be added to elaborate on items b) and c): "NOTE--If condition b) or c) occurs for a secondary AC, the backoff for the associated EDCAF continues without change to the backoff counter or to the value of CW[AC].". | Accepted. |

**Discussion**:

The “proposed change” provides a clearer description without changing the intent of the original text.

**Proposed Resolution:**

The backoff procedure shall be invoked for an EDCAF when any of the following events occurs:

1. A frame with that AC is requested to be transmitted, the medium is busy on the primary channel as indicated by either physical or virtual CS, and the backoff timer has a value of 0 for that AC.
2. The ~~final~~ transmission of the MPDU in the final PPDU transmitted by the TXOP holder ~~initiated~~ during the TXOP for that AC was successful as defined in this subclause and the TXNAV timer has expired, and the AC was a primary AC.
3. The ~~transmission of~~ expected immediate response to the initial frame of a TXOP of that AC ~~fails~~ is not received, and the AC was a primary AC.
4. The transmission attempt collides internally with another EDCAF of an AC that has higher priority, that is, two or more EDCAFs in the same STA are granted a TXOP at the same time.
5. The transmission attempt of a STA coordinated by an MM-SME collides internally with another STA coordinated by the same MM-SME (see 10.33 (MMAL cluster operation)), which is indicated to the first MAC entity with a PHY-TxBusy.indication (BUSY) as response to the PHYTXSTART.request.

NOTE—For the purpose of this subclause, reception of a valid immediate response to any of the MPDUs in this PPDU determines that transmission of all MPDUs in the PPDU was successful.

In addition, the backoff procedure may be invoked for an EDCAF when the transmission of the MPDUs in a non-initial ~~frame~~ PPDU by the TXOP holder fails.

NOTE—A STA can perform a PIFS recovery as described in 9.19.2.4 (Multiple frame transmission in an EDCA TXOP) or perform a backoff as described in the previous paragraph as a response to transmission failure within a TXOP. How it chooses between these two is implementation dependent.

A STA that performs a backoff within its existing TXOP shall not extend the TXNAV timer value.

NOTE—In other words, the backoff is a continuation of the TXOP, not the start of a new TXOP.

If the backoff procedure is invoked for reason a) above, the value of CW[AC] shall be left unchanged. If the backoff procedure is invoked because of reason b) above, the value of CW[AC] shall be reset to CWmin[AC].

NOTE—If condition b) or c) occurs for a secondary AC, the backoff for the associated EDCAF continues without change to the backoff counter or to the value of CW[AC].

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| 7289Matt | 154.32 | 9.19.2.5 | Please clarify "Under certain conditions" | Please elaborate on what conditions, or add reference to text that describes these conditions | Rejected |

The referred text:

All backoff slots occur following an AIFS[AC] period during which the medium is determined to be idle on the primary channel for the duration of the AIFS[AC] period, or following an EIFS – DIFS + AIFS[AC] period during which the medium is determined to be idle on the primary channel for the duration of the EIFS – DIFS + AIFS[AC] period, as appropriate (see 9.3.2.3 (IFS)), except as defined in 9.19.2.3 (Obtaining an EDCA TXOP), which allows the medium to be busy during the initial aSIFSTime of this period **under certain conditions**.

Reasons for rejection,

1. This is from the original 802.11 spec, not introduced by 11ac.
2. It is clear that the conditions are defined in 9.19.2.3 by reading the text. This refers to slot boundaries c)-2) and d), on page 876 of 802.11-2012.

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| 7290Matt | 156.40 | 9.19.3.2.4 | Please check it is more consistency to change "includes the element primary" to "includes {primary}" | As in comment. | Revised. |

**Discussion:**

The channel-list elements are listed in Table 7-5. Available elements include primary, secondary, secondary40 and secondary80. Different expressions of channel-list elements are found in the spec.

P156L37-40 (this comment)

The beginning of reception of an expected response is detected by the occurrence of PHYCCA.indication (

BUSY, channel-list) primitive at the STA that is expecting the response where the channel-list parameter is absent, or, if present, includes the element primary.

P308L20-21

The channel-list parameter is present and includes the element “primary” when the operating channel width is 40 MHz, 80 MHz, 160 MHz or 80+80 MHz.

P303L27-29

The PHY shall issue a PHY-CCA.indication(BUSY, {primary}) if one of the conditions listed in Table 22-27 (Conditions for CCA BUSY on the primary 20 MHz) is met in an otherwise idle 20 MHz, 40 MHz, 80 MHz, 160 MHz or 80+80 MHz operating channel width.

**Editorial Instrution:**