IEEE P802.11
Wireless LANs

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| Sub-Clause 9.19 Comments Resolutions (Part 2) |
| Date: 2012-04-05 |
| Author(s): |
| Name | Affiliation | Address | Phone | Email |
| Chunhui (Allan) Zhu | Samsung Electronics | 75 W. Plumeria Dr, San Jose, CA, USA | +1-408-544-2751 | c.zhu@samsung.com |
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This document provides resolutions for comments in sub-clause 9.19 of draft spec D2.0. This is the second part of a total 4 presentations for this sub-clause. All CIDs are for the MAC ad hoc.

* Sub-clause 9.19.2.3: 4162, 4163, 4665
* Sub-clause 9.19.2.4: 4539, 4667, 4618, 4407, 4165

**Sub-clause 9.19.2.3: 4162**

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 4162Ahmadreza Hedayat | 114.13 | 9.19.2.3 | The defenition of "idele medium" and "busy medium" are given in the first paragraph of this subclause and there is no need to repeat them here again. | Remove lines 13-14. | **Accepted** |

**Discussion:**

As the commenter pointed out, the first paragraph of this sub-clause clearly says the following,

When a STA and the BSS of which the STA is a member both support multiple channel widths, an EDCA

TXOP is obtained based solely on activity of the primary channel. "Idle medium" in this subclause means

"idle primary channel". Likewise "busy medium" means "busy primary channel".

**Proposed Resolution:**

Remove duplicated text.

TGac Editor, please remove text between P114L13 and P114P14.

**Sub-clause 9.19.2.3: 4163**

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 4163Ahmadreza Hedayat | 114.19 | 9.19.2.3 | This bullet needs to be clarified as currently the language is vague. Also "... using the same antenna as was used during the reception of a frame with a correct FCS ..." makes things more complicated. If the concern of using the same antenna needs to stated here then it needs to be stated in many other places in the spec. | Remove the concern of using the same anetnna from this bullet. Alternatively, one can add this as a general rule somewhere else. | **Rejected**The latest REVmb draft has fixed this. |

**Discussion:**



The timeline and requirements for determining a slot boundary are listed in the above figure to facilitate the discussion.

The latest REVmb (D12) reads: “Following AIFSN[AC] × aSlotTime – aRxTxTurnaroundTime of idle medium after SIFS (not necessarily idle medium during the SIFS duration) after the last busy medium on the antenna that was the result of a reception of a frame with a correct FCS.”

The only difference between these two, if there is any, is that TGac draft D2.0 emphasizes on “the same antenna” while the REVmb text didn’t say it explicitly. However, the REVmb text kind of says it implicitly. Therefore, there is no need to change the current text.

**Sub-clause 9.19.2.3: 4665**

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| 4665Kaiying | 114.25 | 9.19.2.3 | aSIFSTime was lost in many places, and the same kind of issue has been fixed in Revmb r11. | Fix this issue according to latest Revmb. | **Revised** |

**Discussion:**

Although TGac did not touch these paragraphs, it is better to correct them since we have them in our text. The changes below are based on REVmb D12 (2011-11-03).

**Proposed Resolution:**

Revised as suggested by the commenter.

TGac Editor, please change the spec text (D2.0, P114L25-L48) as below.

b) Following EIFS – DIFS + AIFSN[AC] × aSlotTime + aSIFSTime – aRxTxTurnaroundTime of idle medium after

the last indicated busy medium as determined by the physical CS mechanism that was the result of a

frame reception that has resulted in FCS error, or PHY-RXEND.indication (RXERROR) primitive

where the value of RXERROR is not NoError.

c) When any other EDCAF at this STA transmitted a frame requiring acknowledgment, the earlier of

1) The end of the ACK-Timeout interval timed from the PHY\_TXEND.confirm primitive,

followed by AIFSN[AC] x aSlotTime + aSIFSTime – aRxTxTurnaroundTime of idle medium,

and

2) The end of the first AIFSN[AC] × aSlotTime - aRxTxTurnaroundTime of idle

medium after SIFS (not necessarily medium idle during the SIFS duration, the start of the SIFS

duration implied by the length in the PLCP header of the previous frame) when a PHYRXEND.

indication primitive occurs as specified in 9.3.2.9 (ACK procedure).

d) Following AIFSN[AC] × aSlotTime - aRxTxTurnaroundTime of idle medium after

SIFS (not necessarily medium idle during the SIFS duration) after the last busy medium on the

antenna that was the result of a transmission of a frame for any EDCAF and which did not require an

acknowledgment.

e) Following AIFSN[AC] × aSlotTime + aSIFSTime – aRxTxTurnaroundTime of idle medium after the last

indicated idle medium as indicated by the CS mechanism that is not covered by a) to d).

**Sub-clause 9.19.2.4: 4539, 4667**

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| 4539David Hunter | 115.43 | 9.19.2.4 | Since this is a normative statement, it seems to include a requirement that a VHT NDP frame shall not be transmitted unless it immediately (SIFS) follows an NDP Announcement frame. Is that accurate? If so, this requirement should be stated more clearly. | Specify somewhere that a VHT NDP frame shall not be transmitted unless it immediately (SIFS) follows the transmission of an NDP Announcemment frame. | **Rejected**P129L31 clearly says “A beamformer shall initiate a sounding feedback sequence by sending an NDPA frame followed by a VHT NDP frame after a SIFS.” |
| 4667Kaiying | 115.44 | 9.19.2.4 | A frame exchange may be an NDPA followed by a VHT NDP and followed by a correctly received VHT Compressed Beamforming frame or at least one segment of a VHT Compressed Beamforming frame. | as modified."A frame exchange may be......an NDPA followed by a VHT NDP and followed by a correctly received VHT Compressed Beamforming frame or at least one segment of a VHT Compressed Beamforming frame, or......." | **Accepted** |

**Discussion:**

For CID ID 4667, the commenter’s proposed change makes sense because there are times the VHT Compressed Beamforming frame is fragmented and only the first part of the frame is received. This should still be considered a frame exchange.

**Proposed Resolution:**

TGac Editor, please change the existing text (TGac D2.0, P115L41-L46) as below.

A frame exchange may be a group addressed frame, a frame transmitted with No Ack policy (for which there is no expected acknowledgment), an individually addressed frame followed by a correctly received ACK frame transmitted by a STA (either a non-AP STA or an AP), an NDPA followed by a VHT NDP and followed by a correctly received VHT Compressed Beamforming frame or at least one segment of a VHT Compressed Beamforming frame, or a Beamforming Report Poll frame followed by a correctly received VHT Compressed Beamforming frame or at least one segment of a VHT Compressed Beamforming frame.

**Sub-clause 9.19.2.4: 4618**

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 4618Jing-Rong Hsieh | 116.01 | 9.19.2.4 | To obtain a TXOP, based on current description, it is not clear if the transmission result of initial frame covers the entire MU PPDU including both primary AC and secondary ACs or the primary AC only. | Clarify it. | **Revised** |

**Discussion:**

It is true that in the MU MIMO case the immediate response of the initial frame may not be for the primary AC. However, in this context the response frame must be for the primary AC in order to obtain a TXOP.

**Proposed Resolution:**

TGac Editor, please change the existing text (TGac D2.0, P116L01-L02) as below.

A TXOP is obtained after a STA transmitting an initial frame successfully receives a response frame (in the MU MIMO case, the response frame must be for the primary AC), or the initial frame is a CTS-to-self.

**Sub-clause 9.19.2.4: 4407**

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| 4407Brian | 116.23 | 9.19.2.4 | "same or narrower ... first non-HT dup" Presumaby this rule applies to frames after the first non-HT dup? | Probably have to rearrange, but I expect a notion of "a PDDU sent after the non-HT dup" | **Revised** |

**Proposed Resolution:**

TGac Editor, please change the existing text (TGac D2.0, P116L20-24) as below.

If there is no RTS/CTS exchange in non-HT duplicate format in a TXOP and there is at least one non-HT

duplicate frame exchange in a TXOP, the TXOP holder shall set the CH\_BANDWIDTH parameter in TXVECTOR of a PPDU sent after the first non-HT duplicate frame to be the same or narrower than the CH\_BANDWIDTH parameter in TXVECTOR of the initial frame in the first non-HT duplicate frame exchange in the same TXOP.

**Sub-clause 9.19.2.4: 4165**

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 4165Ahmadreza Hedayat | 116.27 | 9.19.2.4 | This seems to limit the BW of the furure frame exchanges in the TXOP by the min BW of the preceding transmitted PPDUs. However, it seems it needs to be limited by the max of the BW of the preceding transmitted PPDUs. | Fix it so that the max BW of the previously transmitted PPDUs become the limit (which the new PPDU needs to have the same BW or narrower). | **Rejected** |

**Discussion:**

This is not about the minimum or the maximum value, but the CH\_BANDWIDTH of the preceding PPDU; i.e. the PPDU that was transmitted immediately before it. Of course the result of this rule is that the BW can only get smaller. And I believe this is the intent.