IEEE P802.11
Wireless LANs

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| Clause 4.3.10a Comment Resolution |
| Date: 2012-03-06 |
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Abstract

This submission addresses resolutions to CIDs 4013, 4014, 4015, 4270, 4511, 4512, 4638, 4678, 4782, 4924, 4925, 4931, 4932, 4975, 5026, 5055, 5334, and 5401.

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| 4013 | 8.50 | 4.3.10a | "A subset of the VHT features is available for use between two VHT STAs that aremembers of the same IBSS." - which subset | please reference the subclauses that define this subset. |

Proposed Resolution: Revised. Delete the sentence.

This is a general statement that was copied from clause 4.3.10. The subset of features is not referenced in 4.3.10 as applicable to HT stations.

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| 4014 | 8.50 | 4.3.10a | "The VHT features are available to VHT STAs associated with a VHT AP in a BSS."This begs the question of what VHT features are available to VHT STAs associated with a non-VHT AP. | Add description or reference subclauses that define what VHT features are available under this condition. |

Proposed Resolution: Accept. Add, “A VHT STA supports transmission and reception of frames that are compliant with mandatory PHYspecifications as defined in Clause 18 and Clause 20”

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| 4015 | 8.60 | 4.3.10a | "The simultaneous transmission of A-MPDUs in a single MU PPDU increases aggregate throughput"It only increases aggregate throughput under certain conditions. Excessive near-far and padding can reduce aggregate throughput. | Change "increases" to "might increase" |

Proposed Resolution: Accept. Add the word “might” as indicated in the comment.

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| 4270 | 8.39 | 4.3.10a | "BW indication in RTS" is true but suggests any RTS to the uninitiated | in RTS -> in RTS sent within a VHT PPDU |

Proposed resolution: Revised. Change to, “BW indication in RTS carrying a signaling TA”

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| 4511 | 8.40 | 4.3.10a | The 11ac draft contains a number of informative references to the maximum MPDU length of 11,454 octets, but I can't find a normative reference. | Specify somewhere the maximum lengths of MPDUs and A-MPDUs. |

Proposed Resolution: Reject

A normative reference to the maximum MPDU length of 11,545 is available in Cluase 8.2.3 and Clause 9.11.

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| 4512 | 8.65 | 4.3.10a | This line conflicts directly with line 17 above. Line 17 says a VHT STA is an HT STA, but line 65 says it does not support RIFS, which HT STAs can do. | Is a VHT STA that is operating as an HT STA not allowed to support RIFS in its HD transmission / receipt? Or is a VHT STA that currently operating as an HT STA currently not a VHT STA. Specify when a VHT STA stops operating as a VHT STA. |

Proposed resolution: Revise. Add, “A VHT STA is an HT STA, except for the RIFS support.

The commenter is correct. The statement mentioned may be misleading. Untill RIFS is deprecated from IEEE 802.11 spec. there is the need to be more specific.

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| 4638 | 8.13 | 4.3.10a | The text "The IEEE 802.11 VHT STA operates in frequency bands below 6 GHz excluding the 2.4 GHz operation." is unclear whether 802.11y i.e. 3.650-3.7GHz US band is supported or not. Especially when there is only 50Mhz available and TX powers are different. Same question applicable for .11p band on 5.85-5.925GHz | Clarify the applicability of these bands. |

Proposed Resolution: Accept. Replace the statement with, “The IEEE 802.11 VHT STA operates in 5 GHz frequency band and is backward compatible to IEEE 802.11 legacy devices operating in the same band”.

The sentence is copied from the VHT in < 6 GHz PAR. It didn’t seem to cause confusion back then. However it may be better to address any confusion that may arise as indicated by the commentor.

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| 4678 | 8.51 | 4.3.10a | Support for MBSS is missing here. | Add "A subset of the VHT features is available for use between two VHT STAs that aremembers of the same MBSS." after the sentence "A subset of the VHT features is available for use between two VHT STAs that aremembers of the same IBSS." |

Proposed Resolution: Accept. Add the proposed sentence.

The MBSS support was overlooked. There is no problem adding the proposed ststement. It is copied for Clause 4.3.10 for HT Stations. However it may raise additional comments similar to the comment related to IBSS.

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| 4782 | 8.00 | 4.3.10a | Shouldn't optional support for requesting BW indication using RTS be included? | Add "Optional support for requesting BW indication using RTS" as a MAC feature |

Proposed Resolution: Revised. Replace xxxx with “optional support for Non-HT channel bandwith and static/dynamic signalling”.

The current text mentions the mandatory response to RTS BW indication, but mention nothing about the capability itself and what triggers the response.

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| 4924 | 8.13 | 4.3.10a | "excluding 2.4 GHz" not clearly defined; which other bands in addition to 5 GHz? E.g. ISM band around 868 MHz in Europe has not sufficient bandwidth for 11ac operation. | Specify more clearly in which bands 11ac can operate (3.5 GHz in US, 5 GHz) and which bands excluded (sub1G, TV Whitespace?,..) |

Resolution: Accept. See the resolution to CID 4638.

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| 4925 | 8.56 | 4.3.10a | it is noted that AP can create 4 A-MPDU for MU operation. Creation of 8 A-MPDU required to support 8 users in MU operation mode? | Check number of A-MPDU required to support 8 users in MU operation mode |

 Proposed Resolution: Reject

Clause 22.1.1 states clearly that an MU transmission supports up to four users.

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| 4931 | 8.50 | 4.3.10a | There is not description about the available features to VHT STAs that are members of the same MBSS. | Add following sentence at the last of this paragraph."A subset of the VHT features is also available for use between VHT STAs that are members of same MBSS." |

Proposed Resolution: Accept. See CID 4678 resolution.

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| 4932 | 8.55 | 4.3.10a | This paragraph states only a VHT AP can support MU-MIMO, but a mesh STA can support MU-MIMO. | Replace the word "AP" to "AP and mesh STA" , and replace the word "VHT BSS" to "VHT BSS and VHT MBSS" in this paragraph (line 55 to 61 of page 8). |

Proposed Resolution: Reject.

MU-MIMO is not supported by a Mesh STA. Table 9-19 shows a MESH STA always set GrpID = 0 and Partial AID = RA.

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| 4975 | 8.55 | 4.3.10a | Need to explicitly indicate that support for MU MIMO is an optional feature and is the downlink direction only. | ad a sentence to indicate downlink MU-MIMO is supported as an optional feature. |

Proposed Resolution: Accept. Change “the use of MU-MIMO” to “the optional use of downlink MU-MIMO”.

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| 5026 | 8.65 | 4.3.10a | "The use of certain HT features, such as RIFS, is not permitted for STAs operating as VHT STAs." This sentence does not include the other features such as L-SIG TXOP protection that are not supported by VHT STA | Mention L-SIG TXOP protection also as one of the features that is not supported by VHT STA |

Proposed Resolution: Reject.

L-SIG TXOP protection is an optional feature in IEEE 802.11n. A VHT STA configured as an HT STA may or may not support L-SIG TXOP protection.

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| 5055 | 8.26 | 4.3.10a | Beamforming sounding and beamforming feedback are separate features | Split the fourth bullet in two bullets:- optional support for VHT transmit beamforming sounding- optional support for VHT compressed beamforming feedback |

Proposed Resolution: Reject

Splitting the fourth bullet as suggested may imply that one feature maybe supported while the other one may not. Sounding and feedback is one related package that is either supported or not supported.

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| 5334 | 8.00 | 4.3.10a | "A VHT STA is an HT STA that, in addition to features supported as an HT STA, supports VHT features identifiedin Clause 8, Clause 9, Clause 10 and Clause 22."Clause 18 should be included here since one of the VHT feature is defined in Clause 18. |  |

Proposed Resolution: Accept. Add clause 18.

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| 5401 | 8.18 | 4.3.10a | Clauses 8, 9, 10, and 22 are referred as VHT features; however, BW signaling, which is one of the VHT feature, is defined Clause 18 and should be referred to. | As in comment. |

Proposed Resolution: Accept. See the resolution for CID 4782.

The IEEE 802.11 VHT STA operates in the 5 GHz frequency band and is backward compatible with IEEE 802.11 legacy devices operating in the same band. A VHT STA supports transmission and reception of frames that are compliant with mandatory PHYspecifications as defined in Clause 18 and Clause 20.

A VHT STA is an HT STA, except for the support for RIFS, that, in addition to features supported as an HT STA, supports VHT features identified in Clause 8, Clause 9, Clause 10, Clause 18, and Clause 22. The main PHY features in a VHT STA that are not present in an HT STA are summarized as follows:

— mandatory support for 40 MHz and 80 MHz channel widths

— mandatory support for VHT format PPDUs

— optional support for 160 MHz and 80+80 MHz channel widths

— optional support for VHT transmit beamforming sounding (providing VHT compressed beamforming feedback)

— optional support for MU PPDUs

* optional support for VHT MCSs 8 and 9

The main MAC features in a VHT STA that are not present in an HT STA are summarized as follows:

— mandatory support for the A-MPDU padding of VHT PPDU

— mandatory support for VHT single MPDU

— Optional support for Non-HT channel bandwith and static/dynamic signalling indication in RTS carrying a signaling TA.

— optional support for MPDUs of up to 11 454 octets

— optional support for A-MPDUs pre-EOF padding of up to 1 048 575 octets

* optional support for VHT link adaptation

These VHT features, among other benefits, increase the maximum throughput achievable between two VHT

STAs over that achievable using HT features alone. A subset of the VHT features is available for use between two VHT STAs that are
members of the same MBSS.

The support for VHT transmit beamforming sounding and MU PPDUs in a VHT AP and more than one VHT STA on a VHT BSS enables the optional use of downlink MU-MIMO. With MU-MIMO, the AP can create up to 4 A-MPDUs each carrying MPDUs destined for an associated MU capable STA and transmit the A-MPDUs simultaneously in separate space time streams such that each recipient STA is able to demodulate the space-time streams carrying its A-MPDU. The simultaneous transmission of A-MPDUs in a single MU PPDU might increase aggregate throughput over that which would be achieved by sending the A-MPDUs in separate SU PPDUs.

The use of certain HT features, such as RIFS, is not permitted for STAs operating as VHT STAs.**References:**