`IEEE P802.11  
Wireless LANs

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| LB187 - Comment Resolution | | | | |
| Date: May 9, 2012 | | | | |
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Abstract

This document provides resolution for the following CIDs:

4542, 4545,4053,4016,4457,4990,4464,4459,4460, 5025, 4167

The comments are based on D2.0.

Edits for the proposed resolutions are based on D2.0.

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| **CID** | **Clause Number** | **Page** | **Line** | **Comment** | **Proposed Changes** |
| 4542 | 9.31.5 | 128.61 | 61 | What does "has the value true for dot11VHTSUBeamformerActivated." mean? Is it just that the value of this variable is true? | Replace "that has the value true for dot11VHTSUBeamformerActivated." with "whose attribute dot11VHTSUBeamformerActivated is true.", same for the Beamformee statement on lines 63 and 64, and also for the similar statements on page 129. |

**Discussion:**

Revised

**Proposed Response:**

Revise with the proposed text changes.

**Proposed Resolution Text:**

[128.61- 63] When **dot11VHTSUBeamformerActivated is equal to true,** an STA ~~that has the value true for dot11VHTSUBeamformerActivated~~ shall set the SU Beamformer Capable field to 1 in transmitted VHT Capabilities elements. ~~A STA that has the value true for dot11VHTSUBeamformeeActivated~~ When **dot11VHTSUBeamformeeActivated is equal to true, an STA** shall set the SU Beamformee Capable field to 1 in transmitted VHT Capabilities elements.

[129.1- 3] ~~A STA that has the value true for dot11VHTMUBeamformerActivated~~ ~~dot11VHTSUBeamformeeActivated~~ When **dot11VHTSUBeamformerActivated is is equal to true, an STA** shall set the MU Beamformer Capable field to 1 in transmitted VHT Capabilities elements. ~~A STA that has the value true for~~ ~~dot11VHTMUBeamformeeActivated~~ When **dot11VHTSUBeamformee Activated is is equal to true, an STA** shall set the MU Beamformee Capable field to 1 in transmitted VHT Capabilities elements.

[129.9 - 12] ~~A STA~~ ~~that has the value true for dot11VHTMUBeamformerActivated~~ When **dot11VHTSUBeamformerActivated is equal to true, an STA** shall set the value of dot11VHTSUBeamformerActivated to true.

When ~~A STA that has the value true for~~ dot11VHTMUBeamformeeActivated **is equal to true, an STA** shall set the value of dot11VHTSUBeamformeeActivated to true.

……

[129.25- 28] ~~A STA that does not have the value true for dot11VHTSUBeamformerActivated~~ When **dot11VHTSUBeamformerActivated is equal to false, an STA** shall not act in the role of a beamformer. ~~A STA that does not have the value true for~~ When **dot11VHTSUBeamformeeActivated is equal to false, an STA** shall not act in the role of a beamformee.

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| **CID** | **Clause Number** | **Page** | **Line** | **Comment** | **Proposed Changes** |
| 4545 | 9.31.5 | 131.08 | 8 | What does "has the value true for dot11VHTSUBeamformeeActivated." mean? Is it just that the value of this variable is true? | Replace "unless it has the value true for dot11VHTSUBeamformeeActivated." with "unless its attribute dot11VHTSUBeamformeeActivated is true." |

**Discussion:**

Revised

**Proposed Response:**

Revise with the proposed text changes.

**Proposed Resolution Text:**

A STA shall ignore received NDPA, VHT NDP, and Beamforming Report Poll frames ~~unless it has the value true for dot11VHTSUBeamformeeActivated~~. ~~unless~~ ~~its~~ ~~attribute~~ **when** dot11VHTSUBeamformeeActivated is equal to false.

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| **CID** | **Clause Number** | **Page** | **Line** | **Comment** | **Proposed Changes** |
| 4053 | 9.3.2.7.1 | 93.54 | 4 | Dual CTS Protection is an HT feature that is intended to extend range, not increase throughput.  It has not proven to be a useful feature of .11n (based on its lack of support in the market). It makes even less sense in the context of .11ac.  However, there is no statement as to whether it is supportable in .11ac, and certainly no attempt to make it work. This is best handled by disallowing the use of Dual CTS Protection in a VHT BSS. | At 9.3.2.7.1 add the following at the beginning:  "Dual CTS is a mechanism that might be enabled by an HT AP that is not a VHT AP in an HT BSS. A VHT AP shall not transmit an HT Operation Element with the Dual CTS Protection field equal to 1." |

**Discussion:**

Revised.

**Proposed Response:**

Revised

**Proposed Resolution Text:**

*Add the following sentense in 9.3.2.7.1*

A VHT AP shall not transmit an HT Operation Element with the Dual CTS Protection field equal to 1

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| **CID** | **Clause Number** | **Page** | **Line** | **Comment** | **Proposed Changes** |
| 4016 | 6.3.3.3.2 | 10.35 | 35 | "The STA that is creating the BSS shall be able to receive and transmit at each of the MCS values listed in the set."  Clause 6 (widely ignored) is not a good place to bury normative requirements. | Move text to Clause 10 somewhere.  Ditto at 10.44. Ditto at 11.18. |

**Discussion:**

Agree

**Proposed Response:**

Revise the text accordingly.

**Proposed Resolution Text:**

[10.35]

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| VHTBasicMCSSet | Set of integers | As defined for the VHT Basic MCS Setfield in 8.4.2.161 (VHT Operation element) | The MCS values for each number of spatial streams that must be supported by all VHTSTAs that join this BSS. ~~The STA that is creating the BSS shall be able to receive and transmit at each of the MCS values listed in the set.~~ | Adopt |

[10.44]

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| VHTOperationalMCSSet | Set of integers | As defined for the VHT Basic MCS Set field in 8.4.2.161 (VHT Operation element) | The MCS values for each number of spatial streams that the peer STA desires to use for communication within the BSS.  ~~The STA shall be able to receive at each of the data rates listed in the set~~. This values are a superset of those contained in the VHTBSSBasicMCSSet parameter. | Do not adopt |

[11.18]

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| VHTOperationalMCSSett | Set of integers | As defined for the VHT Basic MCS Set field in 8.4.2.161 (VHT Operation element) | The MCS values for each number of spatial streams that the peer STA desires to use for communication within the BSS. ~~The STA shall be able to receive at each of the data rates listed in the set.~~  This values are a superset of those contained in the VHTBSSBasicMCSSet parameter. |

*Instruction to the editor: Insert the following text in to section 10.38.1, Basic VHT BSS Functionality*

The STA that is creating the BSS shall be able to receive and transmit at each of the MCS values listed in the VHTBSSBasicMCSSet and VHTOperationalMCSSet.

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| **CID** | **Clause Number** | **Page** | **Line** | **Comment** | **Proposed Changes** |
| 4457 | 10.22.6.4.3 | 139.35 | 35 | Channel selection should also take into account channel usage procedures as defined in 10.23.14 in the baseline | Add a reference to these additional hints |

**Discussion:**

Revised

**Proposed Response:**

Add the reference.

**Proposed Resolution Text:**

If a TDLS peer STA chooses to start a wideband direct link, it shall follow the primary channel selection rules as defined in 10.38.2 (Channel selection methods for a VHT BSS) and 10.23.14 (Channel usage procedures).

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| **CID** | **Clause Number** | **Page** | **Line** | **Comment** | **Proposed Changes** |
| 4990 | 10.38.3 | 143.04 | 4 | Clause 10.38.3 Scanning requirements for VHT STA starts "An OBSS scan operation is a passive or active scan of a set of channels that are potentially affected by VHT BSS operation." In radar bands, it is extremely likely that active scan is prohibited. In radar bands, it is becoming very likely that initial Channel Availability Check will include adjacent channels. It is entirely appropriate for 10.38.3 VHT BSS operation to begin with meeting regulatory requirements, then discuss OBSS scans. | Include a statement that in shared bands, unlicensed devices may have to meet regulatory initial Channel Availability Check requirements. You should explicitly say [REVmb 10.1.4.1 General] "Active scanning is prohibited in some frequency bands and regulatory domains." |

**Discussion:**

Revised

**Proposed Response:**

Add the reference

**Proposed Resolution Text:**

*Instruction to the editor: add the reference at the end of first sentence.*

[143.04]

An OBSS scan operation is a passive or active scan of a set of channels that are potentially affected by VHT BSS operation. **(See 10.1.4.1**)

Each channel in the set may be scanned more than once during a single OBSS scan operation.

OBSS scans are performed by STAs that start a VHT BSS.

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| **CID** | **Clause Number** | **Page** | **Line** | **Comment** | **Proposed Changes** |
| 4464 | 10.38.2 | 142.65 | 65 | The baseline usage of "channel set" differs than the usage here | Replace simply by "channel" which, without modifiers, traditionally signifies the whole 20/40/80/160/80+80 MHz |

**Discussion:**

Accepted

**Proposed Response:**

Modify the text according to the comment

**Proposed Resolution Text:**

[142.65]

NOTE—An AP operating a VHT BSS with a 40 MHz, 80 MHz, 160 MHz or 80+80 MHz operating channel width, on detecting an OBSS whose primary channel is the AP's secondary 20 MHz channel, can switch to 20 MHz BSS operation and/or can move to a different channel ~~set~~.

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| **CID** | **Clause Number** | **Page** | **Line** | **Comment** | **Proposed Changes** |
| 4459 | 10.38.1 | 139.27 | 27 | ch width cap ... 80 or 80+80 or 160 MHz | "ch width cap ... up to 80, 160 or 80+80 MHz" or "max ch width cap ... 80, 160 or 80+80 MHz" |

**Discussion:**

Agree

**Proposed Response:**

Modify the text according to the comment

**Proposed Resolution Text:**

TDLS peer STAs may transmit up to 40 MHz, 80 MHz, 160 MHz or 80+80 MHz PPDUs on a 40 MHz, 80 MHz, 160 MHz or 80+80 MHz direct link, respectively. A TDLS peer STA shall not transmit a 20 MHz PPDU in the non-primary channel of its 80 MHz, 160 MHz or 80+80 MHz direct link.

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| **CID** | **Clause Number** | **Page** | **Line** | **Comment** | **Proposed Changes** |
| 4460 | 10.38.1 | 140.56 | 56 | "not transmit a X MHz PPDU" is too broad - e.g. VHT probe requests may be sent on any 20 MHz channel | "not transmit a X MHz PPDU within its BSS". Repeat for P140L56/L64, P141L2/L9. ALso, it might be possible to compress all these paras |

**Discussion:**

The commentors is correct in pointing out that A VHT STA may send probe request on any 20MHz channel when performing active scan. But the text in the specification already makes it clear that the limitation is for the BSS only.

“A VHT STA that is a member of a VHT BSS shall not transmit a 20 MHz VHT PPDU on a channel other than the primary 20 MHz channel **of the BSS**, except for a 20 MHz VHT PPDU transmission on an offchannel TDLS direct link.”

**Proposed Response:**

Reject.

The commentors is correct in pointing out that A VHT STA may send probe request on any 20MHz channel when performing active scan. But the text in the specification already makes it clear that the limitation is for the BSS only.

**Proposed Resolution Text:**

N/A.

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| **CID** | **Clause Number** | **Page** | **Line** | **Comment** | **Proposed Changes** |
| 5025 | 10.38.1 | 140.01 | 1 | The order of things is not clear here. A STA can decleare its capabilities in a Probe Request. However, it may only receive the VHT Operation element in the probe response. How does it know the VHTBSSBasicMCSSet at this point? Does it change its capability after receving this info? How does this requirement affect TDLS peers exchanging capability? | Define the order in which things are done. Clarify wrt TDLS. Also, VHTBSSBasicMCSSet seems to be a substitute for the VHT BSS Basic MCS Set field in the VHT Operation element. Correct this throughout. |

**Discussion:**

[Quote from Adrian’s e-mail]

“A STA inserts whatever capabilities it likes in probe requests, and can vary them if it likes. Once an association is established, the capabilities should be constant.  We really shouldn’t need to care too much about VHT basic mcs sets prior to association,  because we’ll be using management frames sent using low rates because link adaptation won’t have started.”

The VHTBSSBasicMCSSet is a parameter of various SAP primitives while the VHT BSS Basic MCS Set is the name of a field. This is not an error.

**Proposed Response:**

Reject

The VHTBSSBasicMCSSet is a parameter of various SAP primitives while the VHT BSS Basic MCS Set is the name of a field. This is not an error.

The order is not an issue prior to the association because the management frames were sent by using low MCS and the link adaptataion has not started.

**Proposed Resolution Text:**

N/A.

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| **CID** | **Clause Number** | **Page** | **Line** | **Comment** | **Proposed Changes** |
| 4167 | 9.7.6.4 | 96.50 | 50 | In multiple places it's written "HT Capabilities element most recently received" or "VHT Capabilities element most recently received", but in multiple other places "most recently received" is ignored. Better to do the same in all. Ditto: P96L50, ... | As in comment. |

**Discussion:**

The comment brings forth a fundmental question.

Should the capability of an STA be allowed to change once associated wth a BSS?

The group agrees that an STA shall not update its capability without re-association. As a result, the words “most recently received” or “transmitted” preceeding the capabilities element shall be deleted.

**Proposed Response:**

Revised

**Proposed Resolution Text:**

*Instrcution to the editor:*

Searching for “most recently” in D 2.0 yields 26 instances

Deleting all the “most recently received” or “most recently transmitted” except the following.

P 115.26

P 130.64

P 137.12

P 141.16

P 142.22

P 144.64

P 263.28