IEEE P802.11
Wireless LANs

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| D0.1 BF comment resolution |
| Date: 2010-07-11 |
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Abstract

This document proposes resoltions to comments on Draft 0.1 of TGad classified as BF commnets.

# BF related Comments

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| 447 | 25 | 4 | TR | The definition of the term "sector" is not clear. Sector is not an antenna configuration but an antenna pattern generated by a antenna configuration. | Redefine it. |

Proposed Resolution: **Counter**

***TGad Editor: Change the definition 3.204 as follows:***

**3.204 sector**: A transmit or receive antenna pattern corresponding to a Sector ID

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| 448 | 64 | 6 | TR | Since either ISS and RSS comprmise TXSS or RXSS, why is the total number of sector field not defined seperately for TX and Rx | Separate the field as "Total number of TX sectors" and "Total number of RX sectors", if this field is only defined for TX sector, clarify it in the text.  |

Proposed Resolution: **Counter**

See CID 73.

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| 449 | 64 | 6 | TR | In what unit the RXSS length is defined, in time, bit or Number of Training frames | clarify it |

Proposed Resolution: **Reject**

Discussion: The RXSS length can be defined in units of 4.05x10-11 fortnight, however, it is defined in P64L30 to be in units of SS-Frame.

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| 316 | 188 | 31 | TR | Reference to the section needed "During a CBP, an initiator may obtain a TXOP with an initiator TXSS if an ISS is required to obtain the TXOP. ": I don't find any discussion in the spec on TXOP obtained with TXSS/RXSS field set. It is not even obvious if SLS can be done in TXOP. | Add section number where details to this are given. (I searched but don't seem to find where a TXOP is obtained with an initiator TXSS.) |

Proposed Resoluton: **Counter**

Discussion: the text may be clearer if the text “if an ISS is required to obtain the TXOP” is deleted.

***TGad Editor: remove the text “***if an ISS is required to obtain the TXOP” ***from P188L32***

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| 58 | 190 | 1 | It seems contradictory that during the initiator RXSS, the initiator has to transmit training frames. What if the initiator has a separate Tx and Rx antenna array, and if it cannot transmit with the Rx array? | Probably, the responder has to transmit frames during the initiator RXSS? |
| 59 | 192 | 22 | It seems contradictory that during the responder RXSS, the responder has to transmit training frames. What if the responder has a separate Tx and Rx antenna array, and if it cannot transmit with the Rx array? | Probably, the initiator has to transmit frames during the responder RXSS? |

Proposed Resoluton: **Counter**

Discussion: It should be made clear that the initiator is always transmitting during the ISS and the responder is always transmitting during the RSS.

***TGad Editor: edit P186L16 as follows:***

An initiator shall begin the SLS phase by transmitting the frames of the ISS

***TGad Editor: edit P186L18 as follows:***

A responder shall not begin transmitting the frames of an RSS before the ISS is successfully completed

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| 317 | 193 | 34-35 | "...the L-RX field shall be set to indicate the number of receive AWVs the initiator will use during the MID sub-phase.": The number of TRN-R subfields as described in Section 7.3a.4 is 4 times L-RX value. This is misleading as it is not clear if the number of TRN-R subfields represent different receive directions (different AWVs) or the number of TRN-R subfields/4 correspond to one receive direction. In the latter case, what is the purpose of defining TRN-R subfields? | Clarify whether L-RX value or 4 X L\_RX specify the number of receive directions. If L-RX specify a distinct recerive direction, remove the confusing notation of defining TRN-R subifields. |

Proposed Resolution: **Counter**

***TGad Editor: Editor P91L35 as follows:***

The L-RX field indicates the compressed number of TRN-R subfields requested by the transmitting STA as part of beam refinement. To obtain the desired number of TRN-R subfieds, the value of the L-RX field is multiplied by 4. Possible values range form 0-16, corresponding to 0-64 TRN-R fields. If the field is set to zero, the transmitting STA does not need receiver training as part of beam refinement. If the MID-REQ is set to 1, the L-RX field indicates the compressed number of AWV settings that the STA will use during the MID phase. To obtain the number of AWVs that will be used, the L-RX field is multiplied by 4.

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| 319 | 194 | 33 |  "The BRP phase is composed of a BRP setup sub-phase, an MID (Multiple sector ID Detection) sub-phase, a BC (Beam Combining) sub-phase, and one or more beam refinement transactions." It is hard to decipher what is the purpose of various sub-phases without any guidelines on what determines the need for different phases. Further, which of the beamforming phases are mandatory and which are optional? If the initiator requests a certain phase by setting appropriate fields, can the responder deny the request because it does not support it? | Clarify |
| 318 | 194 | 39 | "The beam refinement phase can be skipped if both sides indicate that the phase is not needed by setting the appropriate requests fields or by setting grant fields to zero.": It is not clear why many of the beam refinement phases will be requested or why they will not be requested. | Provide guidelines that determine such requests. |

 Proposed Resolution: **Counter**

***TGad Editor: change P194L33 as follows:***

The BRP phase is composed of a BRP setup sub-phase, an MID (Multiple sector ID Detection) sub-phase, a BC (Beam Combining) sub-phase, and one or more beam refinement transactions. The BRP setup sub-phase is used to exchange capabilities and requests between the initiator and responder. The MID and BC sub-phases may be used in case there are significant imperfections in the quasi-omni pattern used by the receivers during the SLS (see 9.25.5.2YY). Beam refinement transactions are used for receiver beamforming training and iterative training of the transmit and receive beams.

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| 461 | 204 | 11 | If the beamforming is conducted in TXOP through contending the channel, there may bestrong intereferences during beam training, how to avoid interference during beam training, there is no clear statement.  |   |

Proposed Resolution: **Reject**

Discussion: By definition of the CBP, there is no guaranteed performance. In this case there is no difference between BF and a single frame transmission.

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| 438 | 221 | 9 | In figure 110, "BR frame" is appeared. Is it different from BRP frame? | Please clarify. |

Proposed Resolution: **Counter**

***TGad Editor: In figure 110, change BR frame to BRP frame.***

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| 386 | 70 | 1 | Among the different feedback types, support for which ones are optional or mandatory? |   |
| 413 | 348 | 11 | What levels/features of Beam Refinement are mandatory/optional? | Clarify |

Proposed Resolution: **Counter**

***TGad Editor: insert the following text at the end of 9.25 (right before 9.25.1)***

Table YY shows the mandatory and optional procedures in the beamforming mechanism described in this subclause.

**Table YY – Mandatory and optional procedures in the Beamforming mechanism**

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| **Beamforming item** | **Support mandatory** | **Notes** |
| SLS phase (9.25.1, 9.25.5.1) | Yes | An mSTA is capable to participate in a SLS with any other mSTA as described in 9.25.1 and 9.25.5.1 |
| Beamforming in BT (9.25.3) | Yes | When operating as a PCP/AP, an mSTA is capable to perform beamforming in the BT as described in 9.25.3 |
| Beamforming in A-BFT (9.25.4) | Yes | When operating as a PCP/AP, an mSTA is capable to perform beamforming in the A-BFT as described in 9.25.4 |
| BRP setup sub-phase (9.25.2.1) | Yes | An mSTA is capable to negotiate BRP settings with any other mSTA as described in 9.25.2.1 |
| MID sub-phase (9.25.5.2) | No | An mSTA does not have to be capable to perform MID as described in 9.25.5.2 |
| BC sub-phase (9.25.5.2) | No | An mSTA does not have to be capable to perform BC as described in 9.25.5.2 |
| BRP phase (9.25.5.3) | Feedback = BS-FBCK | Yes | An mSTA is capable to perform the BRP with any other mSTA as described in 9.25.5.3, and is capable to return the BS-FBCK |
| Feedback = Channel measurement | No | An mSTA is capable to perform the BRP with any other mSTA as described in 9.25.5.3, but does not have to be capable to return channel measurements |
| Beam tracking (9.25.6) | Yes | An mSTA is capable to perform beam tracking with any other mSTA as described in 9.25.6 |