IEEE P802.11  
Wireless LANs

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| Proposal on Simulation Scenario Document for 11ax PAR verification(doc) | | | | |
| Date: 2017-01-16 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Suhwook Kim | LG Electronics |  |  | Suhwook.kim@lge.com |

Abstract

This submission proposes text for simulation scenario document

## Common Parameters for all simulation Scenarios

*Add following table after MAC parameters*

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| --- | --- |
| **OFDMA parameters** | |
| Resource Unit Configuration | 20 MHz BSS   * 26 tone RU\* 9 * 52 tone RU \* 4 + 26 tone RU * 106 tone RU \* 2 + 26 tone RU * 242 tone RU   80 MHz BSS   * 26 tone RU\* 37 * 52 tone RU \* 16 + 26 tone RU \* 5 * 106 tone RU \* 8 + 26 tone RU \* 5 * 242 tone RU \* 4 + 26 tone RU * 484 tone RU \* 2 + 26 tone RU * 996 tone RU |
| Symbol length | 14.4 usec |
| Guard Interval | 1.6 usec |
| Trigger frame length | 28 bytes + 5 bytes\* number of User Info + padding(0~3)  e.g.) 4 User info: 28 + 20 + 0 = 48 bytes  9 User info: 28 + 45 + 3 = 76 bytes |
| MCS of Trigger frame | MCS 0 (BPSK, 1/2) |
| Multi-STA BlockAck frame length | 22 bytes + 12 bytes \* number of User |
| MCS of M-BA | MCS 0 (BPSK, 1/2) |
| RTS/CTS Threshold | No MU-RTS/CTS |

*Add following subchapter*

**1 - 1: Simplified Residential Scenario**

|  |  |
| --- | --- |
| **Topology** | |
| **Figure x - Residential building layout** | |
| **Parameter** | **Value** |
| Environment description | Multi-floor building   * 1 floor, 3 m height * 2x10 apartments in each floor * Apartment size:10m x 10m x 3m |
| APs location | In each apartment, place AP in center of xy-locations at z = 1.5 m above the floor level of the apartment. |
| AP Type | All 11ax AP or all 11ac AP  5GHz band only |
| STAs location | In each apartment, place STAs in random xy-locations (uniform distribution) at z = 1.5m above the floor level of the apartment |
| Number of STA  and STAs type | All 11ax STA or all 11ac STA  Number of STA: 4 ~ 20  5GHz band only |
| Channel Model  And Penetration Losses | Fading model  TGac channel model D NLOS for all the links. |
| Pathloss model  PL(d) = 40.05 + 20\*log10(fc/2.4) + 20\*log10(min(d,5)) + (d>5) \* 35\*log10(d/5) + 18.3\*F^((F+2)/(F+1)-0.46) + 5\*W   * d = max(3D distance [m], 1) * fc = frequency [GHz] * F = number of floors traversed * W = number of walls traversed in x-direction plus number of walls traversed in y-direction |
| Shadowing  Log-normal with 5 dB standard deviation, iid across all links |
|  | |
| **PHY parameters** | |
| MCS | [use MCS7 for all data transmissions] and  [use MCS0 for all control transmissions] |
| GI | Short |
| AP #of TX antennas | All HEW APs with [2] or all with 4 |
| AP #of RX antennas | All HEW APs with [2] or all with 4 |
| STA #of TX antennas | All HEW STAs with [1] or all with 2 |
| STA #of RX antennas | All HEW STAs with [1] or all with 2 |
|  | |
| **MAC parameters** | |
| Access protocol parameters | [EDCA with default parameters according to traffic class] |
| Center frequency, BSS BW and primary channels | Operating channel:  5GHz: 3 80MHz non-overlapping channels |
| Aggregation | [A-MPDU / 64 MPDU aggregation size / BA window size, No A-MSDU, with immediate BA] |
| Max # of retries | Max retries: 10 |
| RTS/CTS Threshold | No RTS/CTS or RTS/CTS |
| Association | X% of STAs in an apartment are associated to the AP in the apartment; 100-X% of the STAs are not associated  [X=100] |
| Management | Each AP is independently managed |

**Traffic model**

* Traffic Type: CBR (Constant Bit Rate)
* Traffic Rate: 0 ~ full buffer
* Traffic Direction: DL only, UL only, DL/UL mixed
* Access Category: VO, VI, BE

**4 – 1: Simplified Outdoor Large BSS Scenario**

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| --- | --- | --- |
| **Parameter** | | **Value** |
|  | | |
| **Topology (A)** | | |
| **Figure 9x – BSSs layout** | | |
| Environment description | Outdoor street deployment  BSS layout configuration  Define a 7 hexagonal grid as in Figure 9x  With ICD = 130m  h=sqrt(R2-R2/4)/2 | |
| Wrap-around (radio-distance based) | Not used | |
| APs location | Place APs on the center of each hexagon  Antenna height 10 m. | |
| AP Type | All 11ax AP or all 11ac AP | |
| STAs location | .  STA antenna height 1.5 m.  STAs are placed randomly (uniform distribution) in each cell  Minimum distance from AP: 15 m  Maximum distance from AP: 55 m | |
| Number of STA and STAs type | All 11ax STA or all 11ac STA  Number of STA: 15 ~ 50  2,4 GHz band or 5GHz band | |
| Channel Model | UMi  The following equations from ITU-UMi model [4] are to be used for computing the path loss for each drop in an outdoor scenario  LOS Links  where the effective antenna height parameters are given by  and  and  NLOS Links  Modify height parameters as follows depending on the link   * + = 1.5m for the STA; = 10m for AP in the AP🡨🡪 STA links   + = 1.5m for STA🡨🡪 STA links   + m for AP 🡨🡪 AP links   In the above equations, the variable d is defined as:  d = max(3D-distance [m], 1) | |
| Penetration Losses | None | |
|  | | |
| **PHY parameters** | | |
| MCS | Not fixed | |
| GI | Long | |
| AP #of TX antennas | All APs with [2] or all APs with 4 | |
| AP #of RX antennas | All APs with [2] or all APs with 4 | |
| STA #of TX antennas | All STAs with [1] or all STAs with 2 | |
| STA #of RX antennas | All STAs with [1] or all STAs with 2 | |
|  | | |
| **MAC parameters** | | |
| Access protocol parameters | [EDCA with default EDCA Parameters set] | |
| Center frequency, BW and  primary channels | Frequency reuse 1 is used.  5GHz  all BSSs are using the same 80MHz channel  [Same Primary channel]  2.4GHz  All BSSs are 20MHz BSS on same channel | |
| Aggregation | [A-MPDU / max aggregation size / BA window size, No A-MSDU, with immediate BA] | |
| Max # of retries | 10 | |
| RTS/CTS Threshold | no RTS/CTS or RTS/CTS | |
| Association | X% of STAs are associated with the strongest AP, Y% of STAs are associated with the second-strongest AP, and Z% of STAs are associated with the third-strongest AP. Z% of STAs are not associated. Detailed distribution to be decided.  [X=100, Y=0,Z=0] | |
| Management | It is allowed to assume that all APs belong to the same management entity | |

**Traffic model**

* Traffic Type: CBR (Constant Bit Rate)
* Traffic Rate: 0 ~ full buffer
* Traffic Direction: DL only, UL only, DL/UL mixed
* Access Category: VO, VI, BE