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| Additional Test Cases for MAC calibration |
| Date: 2014-09-16 |
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# Summary:

The following additions are suggested for the section: “Scenarios for Calibration of Mac simulator” in the simulation scenario document: **11-14- 0980-02-00ax Simulation Scenarios.**

**Test 5a: One BSS with multiple STAs**

**Goal:** Testing deferral on both energy detection and preamble detection within a single BSS



STA2 to STA4 & AP are within ED range of each other;

STA1, 5 is outside of ED range but inside PD range of each other

Parameters:

CCA energy threshold -62 dBm in 20 MHz

Preamble Detection Threshold -82 in 20 MHz

20 MHz channel

Aggregation= 2 MPDUs

MSDU size 1500 bytes

Max number of retries 10

MCS 0

TxPower AP:20 dBm/antenna

TxPower STA: 15 dBm/antenna

1 tx antenna 1 rx antenna

Noise figure 5 dB.

Per curve: AWGN (TBD)

Pathloss file: TBD

Output: MAC tput cdf

1. Run the simulation at least 20 times with different random seeds, each run should simulate at least 4 seconds
2. Compare 5%-tile,50%-tile,90%-tile, mean throughput of all STAs

**Test 5b: Same as test 5a, with RTS/CTS on**

**Test 6a: Two BSSs with multiple STAs**

**Goal:**

Testing deferral on both energy detection and Preamble detection when there are 2 BSSs

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STAi,2 to STAi,4 & APi are within ED range of each other;

STAi,1, STAi,5 are outside of ED but inside PD range of each other

STA1,5 and STA2,1 are within ED range of each other

Parameters: same as test 5

Deferral to OBSS packets:

* + - Nodes defer to any received packet received from an OBSS
			* Option 1: Nodes may choose to stop decoding packet if it is from OBSS.
			* Option 2: Nodes decode any packet they lock on to regardless of whether it’s from an OBSS or not.

Output: MAC throughput c.d.f.

-Run the simulation at least 20 times with different random seeds

-5%-tile,50%-tile,90%-tile, mean throughput of all STAs

**Test 6b: same as test 6a, with RTS/CTS on**

**Pathloss Model for Test 5 and 6**

Channel model are TGax model:

* No Antenna gain
* No shadowing
* PL=40.05+20\*log10(fc/2.4e9)+20\*log10(min(d,5))+(d>5)\*35\*log10(d/5) +5\*W
	+ d is the distance between two nodes
	+ If two nodes are in different apartments, 2 Walls are assumed

Nodes location coordinates (with reference point (0,0) at the left-bottom cornor of apartment 1):

|  |  |  |
| --- | --- | --- |
| Node Index | Coordinate X(meter) | Coordinate Y(meter) |
| AP1 | 5 | 5 |
| AP2 | 15 | 15 |
| STA1,1 | 0.5 | 0.2 |
| STA1,2 | 4 | 5 |
| STA1,3 | 5 | 6 |
| STA1,4 | 5 | 4 |
| STA1,5 | 9.5 | 9.8 |
| STA2,1 | 10.5 | 10.2 |
| STA2,2 | 14 | 15 |
| STA2,3 | 15 | 16 |
| STA2,4 | 15 | 14 |
| STA2,5 | 19.5 | 19.8 |

Pathloss Matrix for Test 5:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|   | **AP1** | **STA1,1** | **STA1,2** | **STA1,3** | **STA1,4** | **STA1,5** |
| **AP1** | 0.00 | 64.58 | 46.43 | 46.43 | 46.43 | 64.58 |
| **STA1,1** | 64.58 | 0.00 | 63.02 | 66.24 | 62.89 | 75.11 |
| **STA1,2** | 46.43 | 63.02 | 0.00 | 49.44 | 49.44 | 66.16 |
| **STA1,3** | 46.43 | 66.24 | 49.44 | 0.00 | 52.45 | 62.89 |
| **STA1,4** | 46.43 | 62.89 | 49.44 | 52.45 | 0.00 | 66.24 |
| **STA1,5** | 64.58 | 75.11 | 66.16 | 62.89 | 66.24 | 0.00 |

Pathloss matrix for Test 6:

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   | AP1 | AP2 | STA1,1 | STA1,2 | STA1,3 | STA1,4 | STA1,5 | STA2,1 | STA2,2 | STA2,3 | STA2,4 | STA2,5 |
| AP1 | 0.00 | 86.21 | 64.58 | 46.43 | 46.43 | 46.43 | 64.58 | 76.71 | 85.45 | 86.97 | 85.45 | 92.01 |
| AP2 | 86.21 | 0.00 | 92.01 | 86.97 | 85.45 | 86.97 | 76.71 | 64.58 | 46.43 | 46.43 | 46.43 | 64.58 |
| STA1,1 | 64.58 | 92.01 | 0.00 | 63.02 | 66.24 | 62.89 | 75.11 | 86.21 | 91.50 | 92.54 | 91.49 | 96.21 |
| STA1,2 | 46.43 | 86.97 | 63.02 | 0.00 | 49.44 | 49.44 | 66.16 | 78.15 | 86.21 | 87.66 | 86.28 | 92.53 |
| STA1,3 | 46.43 | 85.45 | 66.24 | 49.44 | 0.00 | 52.45 | 62.89 | 75.34 | 84.61 | 86.21 | 84.70 | 91.49 |
| STA1,4 | 46.43 | 86.97 | 62.89 | 49.44 | 52.45 | 0.00 | 66.24 | 78.09 | 86.28 | 87.72 | 86.21 | 92.54 |
| STA1,5 | 64.58 | 76.71 | 75.11 | 66.16 | 62.89 | 66.24 | 0.00 | 57.07 | 75.25 | 78.09 | 75.34 | 86.21 |
| STA2,1 | 76.71 | 64.58 | 86.21 | 78.15 | 75.34 | 78.09 | 57.07 | 0.00 | 63.02 | 66.24 | 62.89 | 75.11 |
| STA2,2 | 85.45 | 46.43 | 91.50 | 86.21 | 84.61 | 86.28 | 75.25 | 63.02 | 0.00 | 49.44 | 49.44 | 66.16 |
| STA2,3 | 86.97 | 46.43 | 92.54 | 87.66 | 86.21 | 87.72 | 78.09 | 66.24 | 49.44 | 0.00 | 52.45 | 62.89 |
| STA2,4 | 85.45 | 46.43 | 91.49 | 86.28 | 84.70 | 86.21 | 75.34 | 62.89 | 49.44 | 52.45 | 0.00 | 66.24 |
| STA2,5 | 92.01 | 64.58 | 96.21 | 92.53 | 91.49 | 92.54 | 86.21 | 75.11 | 66.16 | 62.89 | 66.24 | 0.00 |