IEEE P802.11  
Wireless LANs

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| TG ax Scenarios  Proposed Text additions to 14/980 for Box5 Calibration | | | | |
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Abstract

This document contains proposed changes to document 14/980 to make clear the scenarios and detail parameters such that Box5 integrated system-level simulator can be better calibrated.

**CID 166**

# Background

Box5 simulator is being calibrated and used for performance evaluation, but there is lack of formal definition of the calibration-specific simulation parameter assumption in the Simulation Document 11-14/0980.

# Proposed Edits

## Adding the following context prior to the appendix 1

**Scenarios for calibration of Box5 simulator**

As shown in Table 2 of 11-14/0571, scenarios 1 and 4 are used for Box5 calibration. Besides, 11ac scenario 6 [11-09/0451r16] is suggested to be used for initial and quick calibration.

**Common parameters**

The basic procedure of packet reception and preamble detection is defined in the appendix 4 of 11-14/0571 which is simplified specifically for Box5 calibration in the subsection “Box 5” of section “System Simulation Calibration”

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| **PHY parameters** | |
| **BW** | All BSSs at 5GHz [80 MHz, no dynamic bandwidth] |
| **Primary channel** | Aligned primary 20MHz channel for each co-80MHz-channel BSS;  The detection of preamble and BA should only focus on primary 20MHz |
| **Channel model** | TGac D NLOS per link |
| **Shadow fading** | iid log-normal shadowing (5 or 0 dB standard deviation) per link |
| **Preamble Type** | Control: legacy 20us; Data: 11ac (20us+20us for 1antenna case) |
| **AP/STA TX Power** | 20/15 dBm per antenna |
| **Power Spectral density** | Scaled to 80 MHz |
| **number of antennas at AP /STA** | 1/1 |
| **AP /STA antenna gain** | 0/-2 dBi |
| **Noise Figure** | 7dB |
| **CCA-ED threshold** | -56 dBm (measured across the entire bandwidth after large-scale fading) |
| **Rx sensitivity/CCA-SD** | -76 dBm (a packet with lower rx power is dropped) |
| **Link Adaption** | Fixed MCS =5 for 11ac SS6 and TBD for 11ax SS1-4 |
| **Channel estimation** | Ideal unless otherwise specified |
| **PHY abstraction** | RBIR, BCC (see appendix 1&3 in [11-14/0571]) |
| **Symbol length** | 4us with 800ns GI per OFDM symbol |

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| **MAC parameters** | |
| **Access protocol** | [EDCA, AC\_BE with default parameters] [CWmin = 15, CWmax = 1023, AIFSn=3 ] |
| **Queue length** | A single queue for each traffic link is set inside AP/STA sized of 2000 packets |
| **Traffic type** | UDP CBR with rate 10^8bps (may not enough to model full buffer)  Random start time during a 10ms interval |
| **MPDU size** | 1544 Bytes (1472 Data + 28 IP header + 8 LLC header + 30 MAC header + 4 delimiter + 2 padding) |
| **Aggregation** | [A-MPDU / max aggregation size / BA window size, No A-MSDU, immediate BA without explicit request], Max aggregation: 32 or 64 MPDUs |
| **Max number of retries** | 10 |
| **Beacon** | Disabled unless otherwise specified |
| **RTS/CTS** | OFF unless otherwise specified |
| **Running time** | >= 10s per drop |
| **Output metric** | -CDF or Histogram of per non-AP STA throughput (received bits/overall simulation time)  **-**PER of all AP/STA (1 - # of success subframes / # of transmitted subframes) |

**Test Cases of 11ac Scenario 6**

No shadowing is assumed.

* 1 BSS (upper-right corner BSS B)
  + DL only case
  + UL only case
    - 1 STA: each STA-AP
    - 2 STAs: 3+9, 3+15, 3+27
    - 3 STAs: 3+9+15, 3+9+27
  + DL & UL case
* 2 BSS (A+B)
  + Both DL only
  + Both UL only
  + A DL and B UL
  + B UL and A DL
* 3 BSS
  + DL only
  + UL only
  + Mixed DL & UL

