IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Proposed text to TGax Simulation Scenarios MAC test 4 | | | | |
| Date: 2015-03-12 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Enrico-Henrik Rantala | Nokia Corporation | 2075 Allston Way #200 Berkeley 94704 CA | +1-408-242-5330 | enrico-henrik.rantala@nokia.com |
| Jarkko Kneckt | Nokia Corporation | Otaniementie 19b 02150 Espoo Finland |  | jarkko.kneckt@nokia.com |
| Yanchun Li | Huawei Technology | Bantian Longgang Shenzhen 518129 P.R. China | +86-15337257958 | liyanchun@huawei.com |
| Yunbo Li | Huawei Technology | Bantian Longgang Shenzhen 518129 P.R. China | +86-18666203037 | liyunbo@huawei.com |
| Zhou Lan | Huawei Technology | Bantian Longgang Shenzhen 518129 P.R. China | +86-18565826350 | lanzhou1@huawei.com |

Abstract

The following changes are suggested for the MAC simulator section “Test 4: Deferral Test for 20 and 40MHz BSSs” of the simulation scenario document [1]:

1. Remove sentence that suggest that RTS/CTS is disabled for AP1
2. Fix typos in the text
3. Provide a more clear definition of the required output. Add an example how percentage of occupation on 20MHz/40MHz is calculated.

Straw poll:

Do you agree to adopt the changes below to 11-14-980r6? Y: N: A:

# Proposed text changes in <Test 4: Deferral Test for 20 and 40MHz BSSs>

## Test 4: Deferral Test for 20 and 40MHz BSSs

(AP1 and STA2 are essentially co-located)

Assumptions:

All devices are within energy detect range of each other.

Data PPDU is transmitted in VHT format, while RTS and CTS PPDUs are transmitted in non-HT duplicate format.

When AP1 and AP2 start to transmit on the same slot, both packets are lost (PER= 100%). Otherwise packets get through 100%. PER=0 %.

A non-HT duplicate PPDU can be successfully received by a STA if there is no other signal appearing in the STA’s primary channel within the PPDU duration.

If RTSs transmitted by AP1 and AP2 collide, AP1 obtains a TXOP only in primary channel. The AP2 does not obtain TXOP.

Note:

AP1 and AP2 should defer to each other.

The only packet loss is due to collisions when backoffs periods of AP1 and AP2 end at the same time.

Parameters:

MSDU length:[ 2000Bytes]

RTS/CTS [ OFF, ON]

MCS = [0]

Procedure:

AP1 sends traffic to STA1 on a 40MHz channel with a full buffer continuously. All other setting is the same as test case 2a.

AP2 sends traffic to STA2 on a 20MHz channel starting at t1, which is located at the secondary channel of BSS1.

The traffic is based on the Poisson distribution with following parameters.

* + MSDU length at 2000Bytes.
  + Let lambda, for example, to be 100 ( in the unit of 1/second)
    - The mean inter-arrival time is 1/100 second.

The long time average data rate for the largest MSDU size is 2000\*8/(1/100)=1.6Mbps

1.6 Mbps is non-full buffer traffic since it is lower than the 20MHz BSS MCS0 rate

**Implementing Traffic Generator**

For vendor with proprietary simulator, Poisson distribution traffic generator is a vendor specific implementation.

**How to determine the simulation time for a simulator**

* Each simulator calibrates its running time
  + Step 1: Activating the 20MHz BSS only and monitoring how long it will take for the throughput of the 20MHz BSS to be stabilized. Recording the time, ***t***.
  + The throughput of the 20MHz BSS shall corresponding to the mean “inter arrival time”.
* Step 2: Run the OBSS MAC calibration case for at least time ***t***.

If any packet is transmitted at the overlapping time with another one and on the overlapping channel, both transmissions are considered failure(PER = 1).

Measure the throughput of AP1, AP2, STA1 and STA2. Also measure the percentage of time of the each of the bandwidth specific PHY states of the APs. Listen state is not bandwidth specific whereas Receive and Transmit states are bandwidth specific.

Outputs:

MAC tput.

Percentages of time of the each of the bandwidth specific PHY states of AP. The results are obtained for both AP1 and AP2.

The following example shows how occupations on 20MHz and 40MHz are calculated for AP1 in case when AP1 transmits once using 20MHz and once using 40MHz.



**References:**

[1] 11-14/0980r06, “Simulation Scenarios”, Simone Merlin (Qualcomm)