

DATA Speed Check through NetPerSec Tool

NetperSec Tool can be downloaded free-of-cost from Internet.

The screenshot shows a Windows desktop with a NetPerSec tool window and a command prompt window. The NetPerSec window displays network speed statistics for received and sent data. The received data statistics are:

Category	Value
Received: 165.4 Mbits	
Current	80.1 kbits/s
Average	2.4 Mbits/s
Max	3.3 Mbits/s

The sent data statistics are:

Category	Value
Sent: 4.3 Mbits	
Current	2.2 kbits/s
Average	62.9 kbits/s
Max	82.1 kbits/s

The command prompt window shows the following output:

```
C:\WINDOWS\system32\cmd.exe - ftp 10.147.4.10
UPEast3Gdemo1.avi
UPEast3Gdemo2.avi
UPWest3Gdemo2.avi
avg25free_441a944.exe
fashion.mp3
mvs-bolt-sample.avi
punjab3Gdemo1.avi
punjab3Gdemo2.avi
sample1.avi
test.BMP
226 Transfer complete.
ftp> 503 bytes received in 0.56Seconds 0.89Kbytes/sec.
ftp> get Test.rar
200 PORT command successful.
150 Opening BINARY mode data connection for Test.rar (303165 bytes).
226 Transfer complete.
ftp> 303165 bytes received in 1.78Seconds 170.13Kbytes/sec.
ftp> get Rajasthan3Gdemo1.avi
200 PORT command successful.
550 Rajasthan3Gdemo1.avi: No such file or directory.
ftp> get Rajasthan3Gdemo1.avi
200 PORT command successful.
150 Opening BINARY mode data connection for Rajasthan3Gdemo1.avi (567181824 bytes)
>
```

A red box highlights the 'Max' value for received data (3.3 Mbits/s) with an arrow pointing to it. The text 'Max data throughput' is written in white inside the red box.

Max data throughput

List of HSPA Parameters - NodeB

Following are the main parameter for Node-B which effect the data throughput in HS

Node-B Parameters	Suggested Values
hsdpaCapability	HSDPA_CAPABLE (Set through script)
maxNumHsPdschCodes	15 (Licensed based)
queueSelectAlgorithm	1 (default 0)
hsPowerMargin	2 (default 2)
cqiAdjustmentOn	On (default false)
maxHsRate	44 (For 3 E1's)
steeredHsAllocation	False (Licensed based)
supportOf16qam	true (Licensed based)
flexibleSchedulerOn	On (Licensed based)
maxedchrate	51000(valid for WRAN P5.0)

hsdpaCapability

This parameter is use to set the HSDPA capability of cell.

Possible values:

- HSDPA_CAPABLE ----- Support HSDPA
- HSDPA_NON_CAPABLE ----- HSDPA Not supported.

```
Struct eulOptimalNoiseFloorLock has 2 members:  
>>> 1.eulNoiseFloorLock = false  
>>> 2.eulOptimalNoiseFloorEstimate = -1040  
eulSlidingWindowTime          1800  
eulThermalLevelPrior          -1040  
hsCodeResourceId              0  
hsdpaCapability                1 (HSDPA_CAPABLE)  
localCellId                   2  
maxDlPowerCapability           430  
maxEAgchPowerDl               -183  
maxNumHsPdschCodes            5  
maxNumHsdpaUsers              16
```

maxNumHsPdschCodes

The maximum number of HS-PDSCH codes is dependent on license level and parameter maxNumHsPdschCodes; up to 15 codes may be allocated.

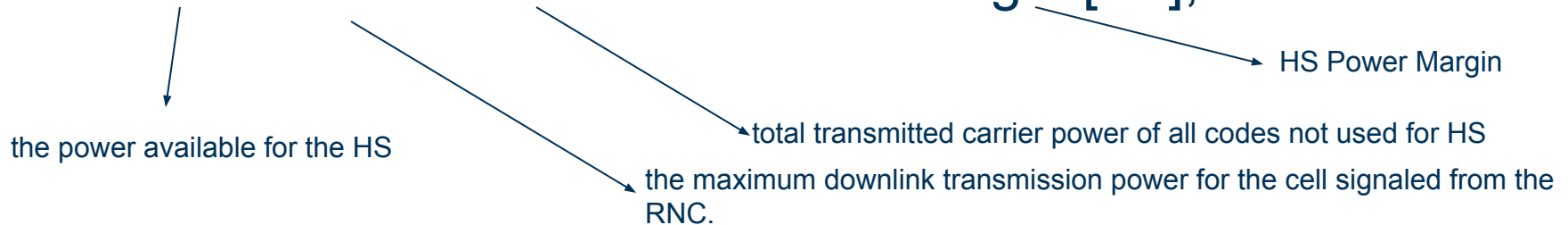
For BSNL it is 5 codes.

maxNumHsPdschCodes	Max. Speed(Mbps)
5	3.6
10	7.2
15	14.4

```
localCellId                    1  
maxDlPowerCapability           430  
maxEAgchPowerDl               -183  
maxNumHsPdschCodes            5  
maxNumHsdpaUsers              16  
maxUserEHichERgchPowerDl      -183  
minDlPowerCapability           190  
minSpreadingFactor            4
```

hsPowerMargin

$$P_{HS} = P_{max} - P_{non-HS} - \text{hsPowerMargin [dB]},$$



It is possible to use the entire remaining carrier power for the HS-PDSCH and HS-SCCH, but if a more conservative power allocation is desired, this can be configured with the parameter `hsPowerMargin`, which acts as a back off from the maximum downlink transmission power of the cell.

It is relative to the maximum available power of the cell.

Value Range = 0 to 200

New value =2 (earlier it was set to 0)

Value 2 = $2 * .1 = .2\text{dB}$

```
dbccDeviceRef[1]
>>> dbccDeviceRef = ManagedElement=1,Equipment=1,S
dpclDeviceRef      ManagedElement
frequencyPlane    1
hsPowerMargin      2
hsScchMaxCodePower -20
hsScchMinCodePower -150
operationalState   1 (ENABLED)
```

maxHsRate

maxHsRate is the maximum HSDPA bit rate possible over lub i.e it determines the max possible HSDPA bit rate of HS flow over the Transport N/w. The value of maxHsRate is related to the capacity of the AAL2 paths allocated to AAL2 connection of Class C in one Node B. it is defined per lub interface. Default value is 15 that will support 1.5Mbps.

In BSNL channelization code is 5, i.e. we can get maximum speed of 3.6 Mbps. For achieving this speed we need to tune the value of maxHsRate. We change it to 44 means it can support speed up to 4.4 Mbps.

Old Value

MO	ManagedElement=1,NodeBFunction=1,Iub=1,IubDataStreams=1
IubDataStreamsId	1
hsDataFrameDelayThreshold	60
maxEDchRate	17000
maxHsRate	15
noOfCommonStreams	12
noOfDedicatedStreams	0
Proxy Id	1230

maxHSRate=15
Max. speed~ 1.5 Mbps

New Value

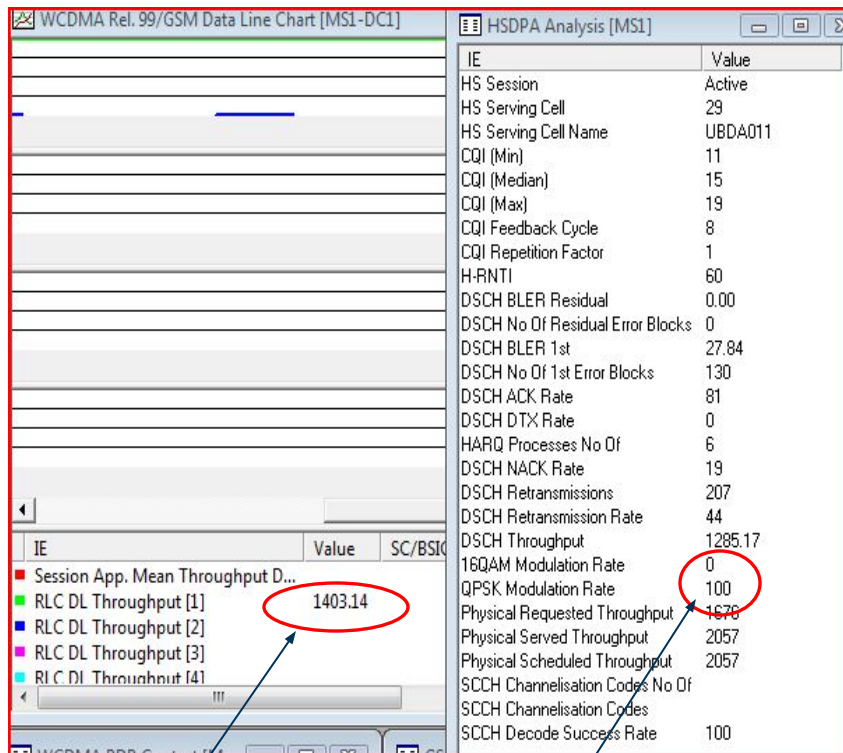
MO	ManagedElement=1,NodeBFunction=1,Iub=1,IubDataStreams=1
IubDataStreamsId	1
hsDataFrameDelayThreshold	60
maxEDchRate	51000
maxHsRate	44
noOfCommonStreams	12
noOfDedicatedStreams	8

maxHSRate=44
Max. speed~ 3.5 Mbps

supportOf16qam

Symbol rate for QPSK and 16QAM are 2bits and 4bits respectively ie we can achieve higher rate with 16QUAM with the same resource and good radio condition. The available modulation type impacts the maximum achievable bit rate in the cell.

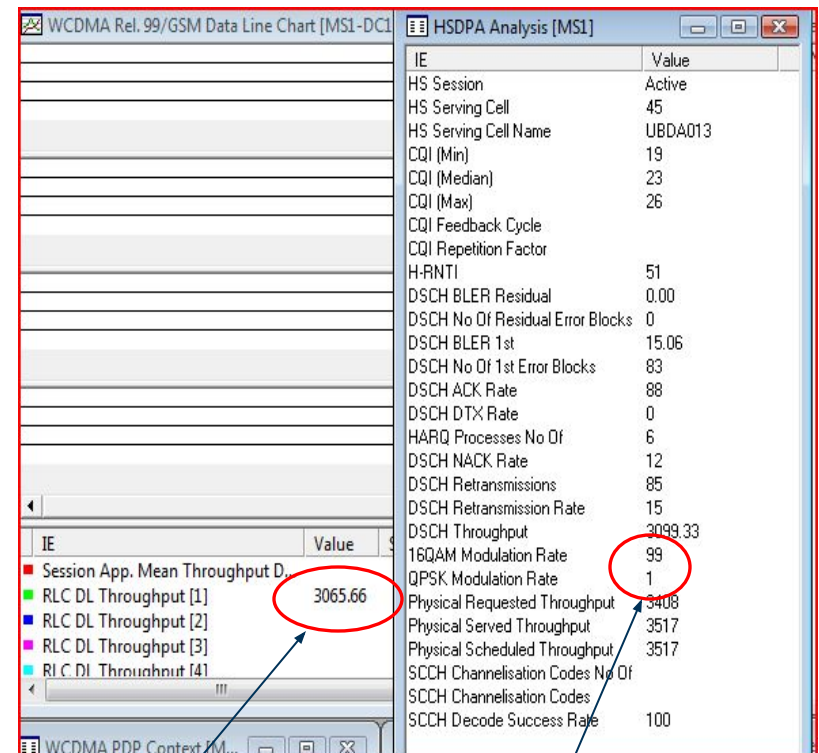
supportOf16qam=False



RLC Throughput

Modulation consist of 100% QPSK and 0% 16QAM

supportOf16qam=True



RLC Throughput

Modulation consist of both QPSK and 16QAM