Objective - Study how the number of channels increases and the Call blocking probability decreases as the Voice activity factor of a CDMA network is decreased

Theory -

What is CDMA?

Architecture of CDMA

Difference between GSM and CDMA

**Voice Activity factor** – This property defines the Voice activity for current system. This

value is always in between 0-1. By default, 0 is set default voice activity factor.

**Channel Characteristics-**

Path loss exponent – This property defines the path loss exponent of the channel used by

the current scenario. By default, this value is set as 4.

Fading Figure – This property defines the fading figure of channel used by the current

scenario. By default, this value is set as 0.5.

Standard Deviation – This value denotes the standard deviation of fading of channel

used by current scenario. By default, this value is set at 6.

**How to Create Scenario & Generate Traffic:**

Please navigate through the below given path to,

* Create Scenario:

In the Simulation menu , select New -> Cellular Networks -> CDMA

Inputs

Follow the steps given in the different samples to arrive at the objective.

In all Samples,

• Total no of BTS used: 1

• Total no of MS used: 22

The devices are inter connected as given below,

• All the MS is placed in the range of BTS1

Set the properties of BTS and MS by following the tables for each sample,

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| MS Properties | MS1 | MS3 | MS5 | MS7 | MS9 |
| Destination | MS2 | MS4 | MS6 | MS8 | MS10 |
| Mobility Model | No Mobility | No Mobility | No Mobility | No Mobility | No Mobility |

Likewise, MS 11 to MS 12, MS 13 to MS 14, MS 15 to MS 17 and MS 19 to MS 20.

Inputs for Sample 1

|  |  |
| --- | --- |
| BTS Properties | BTS |
| Standards Total | IS95A/B |
| bandwidth | 1.25 MHz |
| Chip rate | 1.2288 McPS |
| **Voice Activity factor** | **1.0** |
| Transmitter power | 20 W |
| **Path loss exponent** | **3** |
| Fading figure | 0.5 |
| **Standard deviation** | **11** |

**Change the voice activity factor from 1.0, 0.9, 0.8, 0.7.... to 0.1.**

**Output**

To view the output by using NetSim Sample experiments need to be added onto the Analytics

interface. Given below is the navigation for analytics -

“Simulation -> Analytics”

Select the experiments by selecting

-> Cellular Networks

-> Select the Experiments

-> Select the Metric: Call Blocking probability & Number of channel

When the system Voice activity factor decreases from 1.0 to 0.1, the number of channels

increases from 3 to 37. (Note: All other parameters like Bandwidth 1.25 MHz, chip rate

1.2288McPS, target SNR 6, Path loss exponent 3, Fading figure 0, and standard deviation 11, are

constant in all the samples taken.)

In CDMA network, the number of channels is inversely proportional to the voice activity factor.

***Number of Channels ∝ (1/ Voice activity factor)***

Conclusion