

12.5.2 CDMA results

Once SEAMCAT has completed the simulation, the results are shown as displayed in Figure 261, when the CDMA network is the victim. This figure presents the difference between the 2 steps power balancing process (1-initial power balancing, 2- power balancing after introduction of an external interference), that is to say " non-interfered capacity " is the number of UEs in the victim network prior to adding an external interferer and "interfered capacity" is the number of UE in the victim network after adding the external interference.

- Units: number of connected UEs;
- Initial capacity: Number of connected UEs before any external interference is considered;
- Interfered capacity: Results after External interference is applied;
- Excess outage, users: How many UEs were dropped due to external interference;
- Outage percentage: Percentage of UEs dropped due to external interference.

When the CDMA system is the interfering link, the total received power at the receiver in the victim link, due to the transmit power of all the active mobile stations in the three cells of the center cell site of the CDMA cluster, adjusted for spectral masks, etc., is counted as the interfering power in the victim link. Therefore, it is not necessary to keep track of any capacity loss in this case, unless the victim link is also a CDMA system.

CDMA Results			
Average capacity loss (ref. cell)	10.894888444888448	%	Double
Average capacity loss (system)	10.522388059701491	%	Double
Non interfered capacity per cell	6.0		Double
Highest PC loop count	Array[10]	#	Vector
Non Interfered Capacity (active users o...	Array[10]	Active served users	Vector
Non Interfered Capacity (active users o...	Array[10]	Active served users	Vector
Non Interfered Capacity (active and ina...	Array[10]	Active and inactive served users	Vector
Non Interfered Capacity (active and ina...	Array[10]	Active and inactive served users	Vector
Initial Outage Percentage, system	Array[10]	%	Vector
Initial Outage Percentage, ref cell	Array[10]	%	Vector
Dropped before interference	Array[10]	users	Vector
Average network noise rise, (initial - no ...	Array[10]	dB	Vector
Average network noise rise, (initial)	Array[10]	dB	Vector
Average network rise, (resulting)	Array[10]	dB	Vector
Number of Affected Cells	Array[10]	Number of Affected Cells	Vector
Interfered Capacity (active users only), r...	Array[10]	Active served users	Vector
Interfered Outage Percentage, ref cell	Array[10]	%	Vector
Capacity Loss (based on dropped user...	Array[10]	%	Vector
Capacity Loss (active and inactive user...	Array[10]	%	Vector
Capacity Loss (active and inactive user...	Array[10]	%	Vector
Number of Dropped users, System	Array[10]	Dropped users	Vector
Number of Simulated users, System	Array[10]	Simulated users	Vector
Interfered Capacity (active users only), ...	Array[10]	Active served users	Vector
Interfered Capacity (active and inactive ...	Array[10]	Active and inactive served users	Vector
Interfered Capacity (active and inactive ...	Array[10]	Active and inactive served users	Vector
Interfered Outage Percentage, system	Array[10]	%	Vector
Capacity Loss (active and inactive user...	Array[10]	%	Vector
Excess outage (ref. cell)	Array[10]	Active served users	Vector
Excess outage (system)	Array[10]	Active served users	Vector

Figure 261: Example of the CDMA results display panel

Victim Pre Simulation			
Non Interfered capacity	6		Integer
Capacity finding	Bar Chart[7]	Average Noiserise (dB)	Bar Chart

Figure 262: Example of the CDMA results display panel

SEAMCAT is able to calculate (for CDMA) 3 losses:

- 1) Loss of UEs for the whole network based on the before and after number of UE

$$\text{System capacity loss} = 100 - (\text{interfered_capacity} / \text{non-interfered_capacity}) * 100 \quad (\text{Eq. 70})$$

- 2) Loss of UEs for the reference cell based on the before and after number of UE

$$\text{Ref cell capacity loss} = 100 - (\text{interfered_capacity} / \text{non-interfered_capacity}) * 100 \quad (\text{Eq. 71})$$

- 3) Loss of UEs for the whole network based on the total number of dropped UE

$$\text{System capacity loss} = \text{total_dropped_UE_system} / \text{total_simulated_UE} * 100 \quad (\text{Eq. 72})$$

It is quite important to understand that there is not a 1-to-1 map between non-interfered active/interfered users and the dropped users. Dropped user can occurs at many level of the algorithm, it can be due to:

- “Unable to connect during first initialisation of UE” during the initialization (long before the step 2 balancing) but still it will be registered;
- During the balancing. For CDMA UL (no cell selection activated), when the noise rise is balanced, i.e. the number of UE is acceptable is reached after introduction of external interferers, then the BS estimates the signal-to-interference ratio (C/I), measured in bit energy-to-noise density ratio E_b/N_0 , and compares it to a target value (E_b/N_0_target). If the difference between the estimated C/I and the E_b/N_0_target , is higher than a call drop threshold, then the UE is dropped;
- “ E_b/N_0 requirement does not meet while scaling the channel power” during the scaling power.



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