

10.2 Multiple Interferers generation

You have 3 options to generate multiple interferers in SEAMCAT.

- [10.2.1 Generation of multiple interferer links with different systems](#)
- [10.2.2 Auto-generation of multiple interfering links](#)
- [10.2.3 Generation of interferers with the same characteristics](#)

10.2.1 Generation of multiple interferer links with different systems

This option allows SEAMCAT to generate multiple interferers which may have the same or different technical characteristics from each other. The following menu buttons are available in the interfering system links control panel.

	Add an interfering systems link to the scenario		Generate multiple interfering links
	Duplicate an interfering link		Change the selected system type
	Delete a link		On-line manual help

Figure 210: Interfering system links control

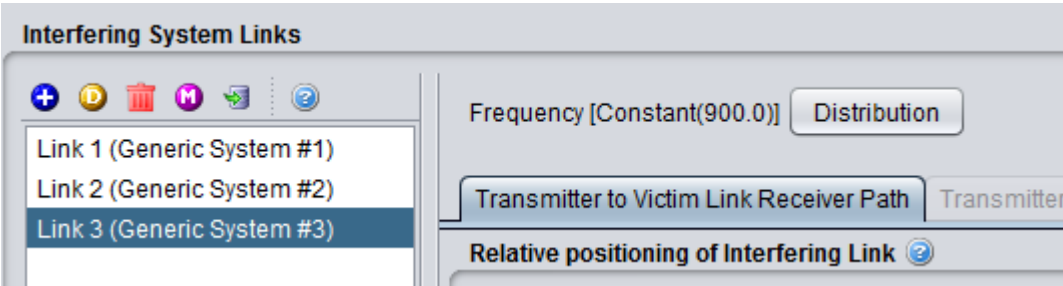


Figure 211:

Generation of multiple interferer links with different technical characteristics from each other

The feature **“to position with”** allows the deployment of a second type of interferer (for instance interfering link 1) for which the transmitters will be located at the same location as the transmitters of another type of interferers (i.e. interfering link 2 or interfering link 3). This feature is of interest since it allows deploying these two interferers at the same location (i.e. with the same coordinates) and these two transmitters could be transmitting at the same time while having different transmitter characteristics (e.g. emission mask, antenna radiation pattern...) or with a relative X, Y

position set by DeltaX and DeltaY.

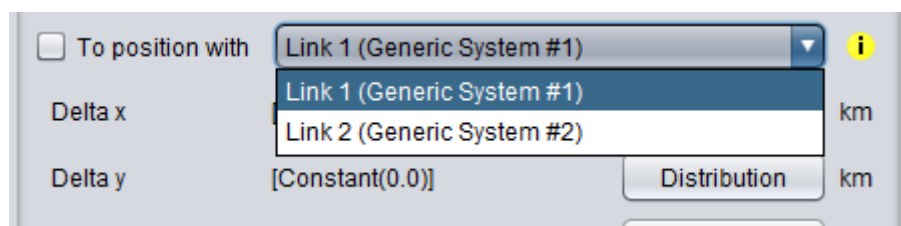


Figure 212: Possibility to position interferer links with one another

If for one interfering link (e.g. interfering link 1) the number of active transmitter is one, then for any extra interfering links, only one Tx is simulated. When the “to position with” feature is selected, any values are grey shaded and only one transmitter is simulated.

10.2.2 Auto-generation of multiple interfering links

This option corresponds to duplicate n times a specific interfering links on a circle or on a hexagonal grid as illustrated below in (a) and (b) respectively. It is available by clicking on (). These interferers have the same characteristics as the reference interfering link. It has the purpose of automatically generating a regular pattern of interfering links.

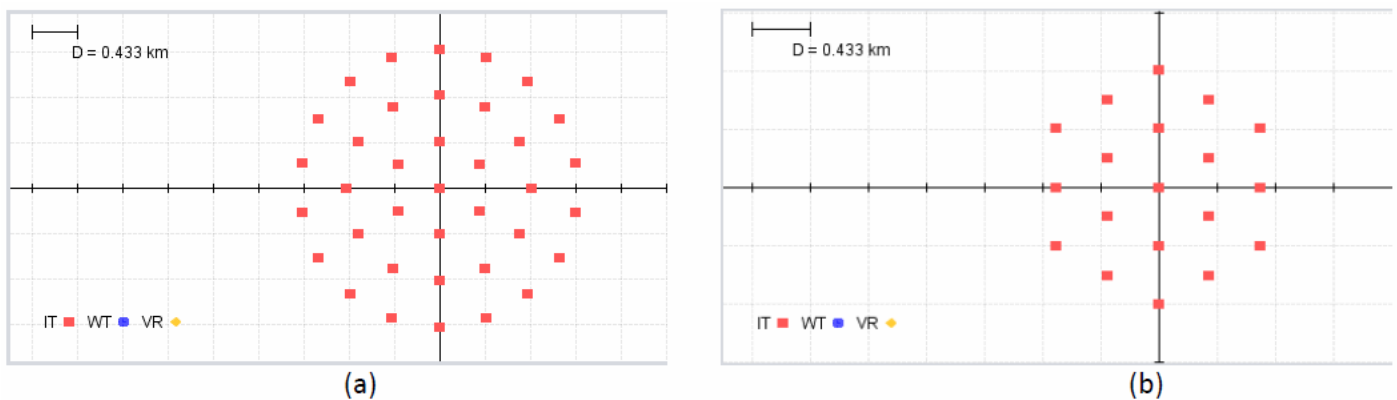


Figure 213: (a) Circular and (b) hexagonal layout

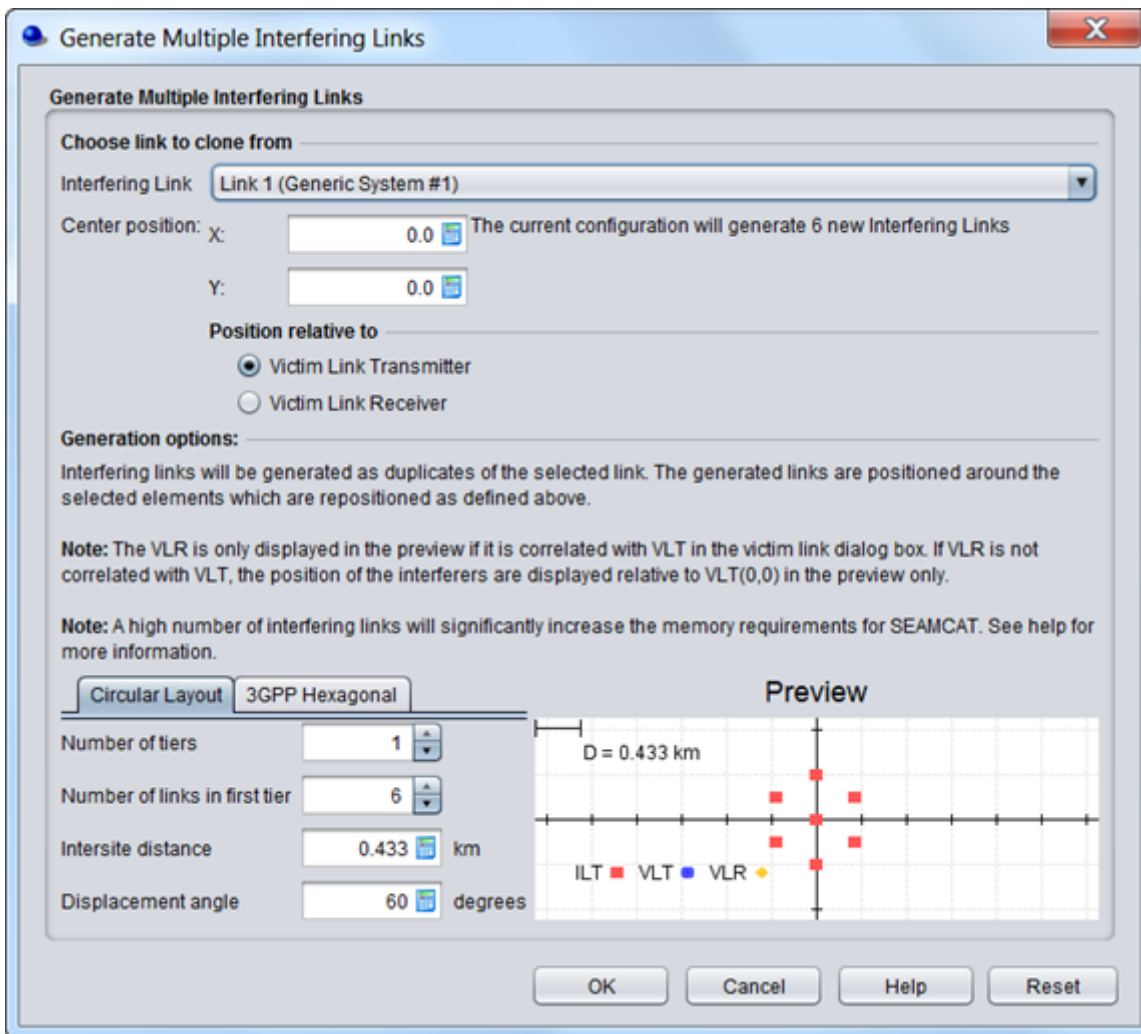


Figure 214: Auto-generation of multiple interfering links

The multiple generate feature graphical interface consists of 3 parts:

- Selection of the reference interferer
- Relative position of this reference interferer to the victim link
- Layout preview of the new interferers

(a) Selection of the reference interferer

You can choose an interfering link that will be used to clone the new interferers.

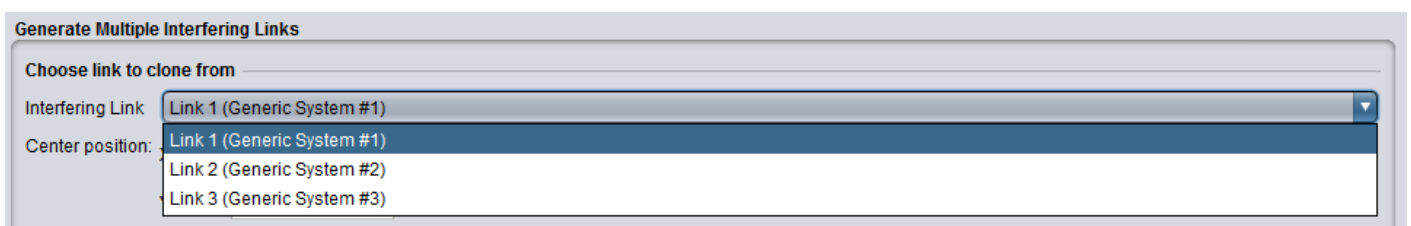


Figure 215: Selection of the reference interferers

In the Generate Multiple Interfering Link dialog box, when selecting ok, 6 new interferers will now be present in the workspace, centered to the selected interferer (i.e. interfering link 1).

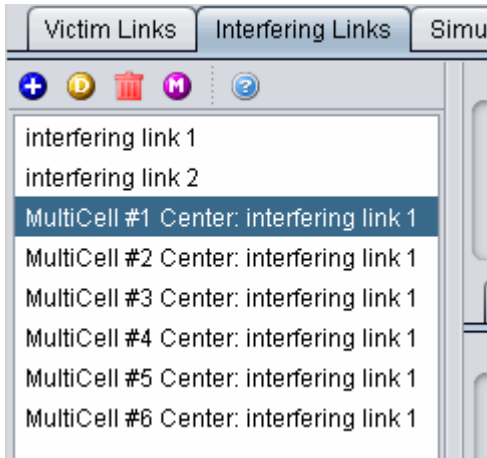


Figure 216: Generated new interferes, centered on interfering link 1

(b) Relative position of this reference interfere to the victim link

You can adjust the position of the interferers with respect to either the VLT (Victim link transmitter) or the VLR (Victim link receiver). When the generate multiple feature is run the relative positioning of interfering link mode (i.e. in the victim receiver to interfering transmitter path tab) is by default overwritten. In this case the center of the interferers is set to (1,1) to VLT.

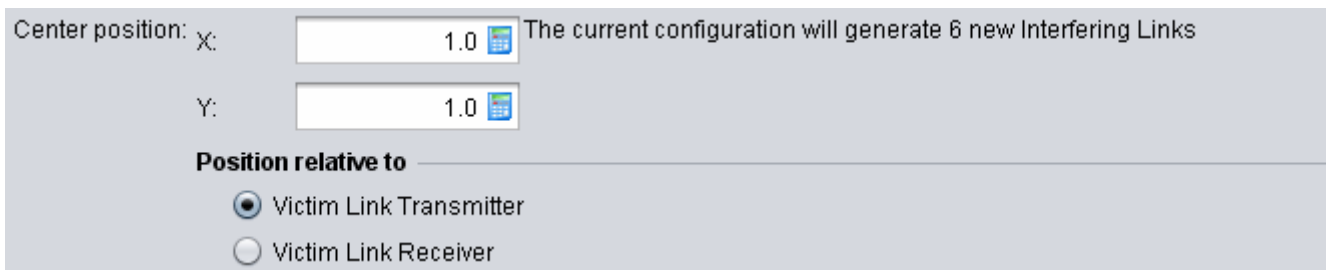


Figure 217: Relative position of the interferer to the VLR or VLT

(c) Layout preview of the new interferes

As a results the preview will display the following illustration

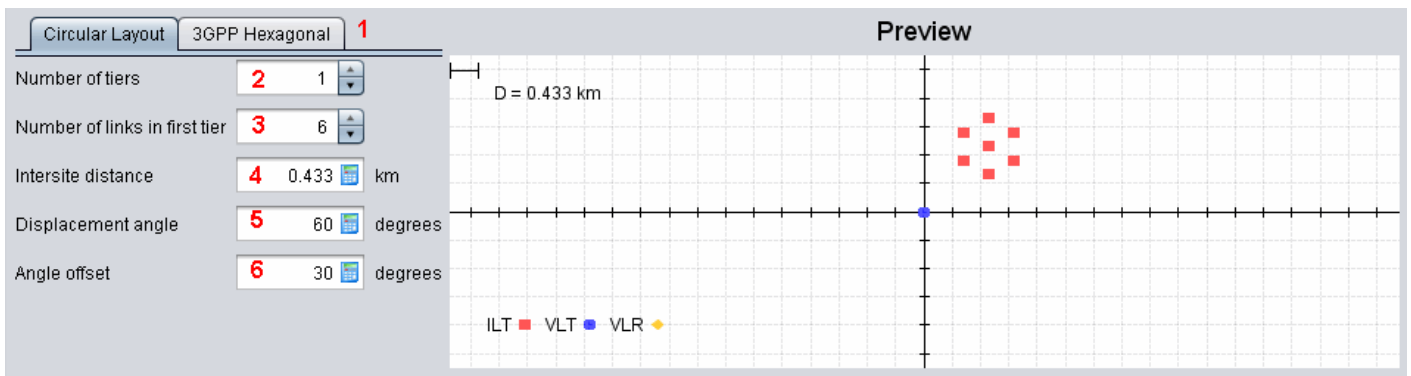


Figure 218: Layout preview of the relative position of the interferer to the VLR or VLT

In the appearing dialog window, you may select the parameters described in .

Table 41: Generate Multiple Interfering Link GUI input parameters

Description	Symbol	Type	Unit	Comments
Circular or hexagonal layout	-	-	-	General circular or hexagonal layout
Number of tiers of generated multiple cells	-	Scalar	-	You can generate as many tiers as you want
Number of links in the first tier	-	Scalar	-	You can set the total number of links in the first tier
Intersite distance	D	Scalar	Km	Distance between 2 BSs
Displacement angle	θ	Scalar	Degree	Angle between the horizontal and the first BS (counter clockwise)
Angle offset		Scalar	Degree	Angle offset of the displacement angle

(d) Illustrative example of the generation of multiple interfering link

The below figure shows an example of scenario that may be used for estimating intra-service interference to a victim base station of cellular system from mobile transmitters operating in the next tier of co-channel cells of the same system.

The displacement angle is calculated automatically by the dialogue window by evenly spacing the specified number of cells around the 360 deg arc, but you may amend this angle. e.g. in order to

achieve placement of multiple cells in a sector of less than 360 deg. The parameter angle offset may be used to specify the offset of an azimuth towards the first interfering cell with regard to the x-axis, as seen from the centre cell.

During the multiple link generation, the intersite distance parameter (0.433 km in the example), in combination with the specified initial offset angle, will overwrite the original coordinates (Delta X/DeltaY) in the Vr-It path tab setting of the Interfering links.



Figure 219: Example where 1 tier is used to position 4 interferers in a square shape (i.e. corners of a building) with the Vr positioned outside the square

10.2.3 Generation of interferers with the same characteristics

Within one interfering link, you can define a number of active interfering transmitters when the mode "None" or "Uniform density" is selected. These active transmitters have the same technical characteristics (i.e. a simple duplicate) and they are deployed spatially independently according to the mode selected. The iRSS result is stored as one vector (of size number of events) where for each event the iRSS value is the simple power summation of the number of active transmitters.

The number of active transmitters is directly used to compute the simulation radius (see Annex A13.2).

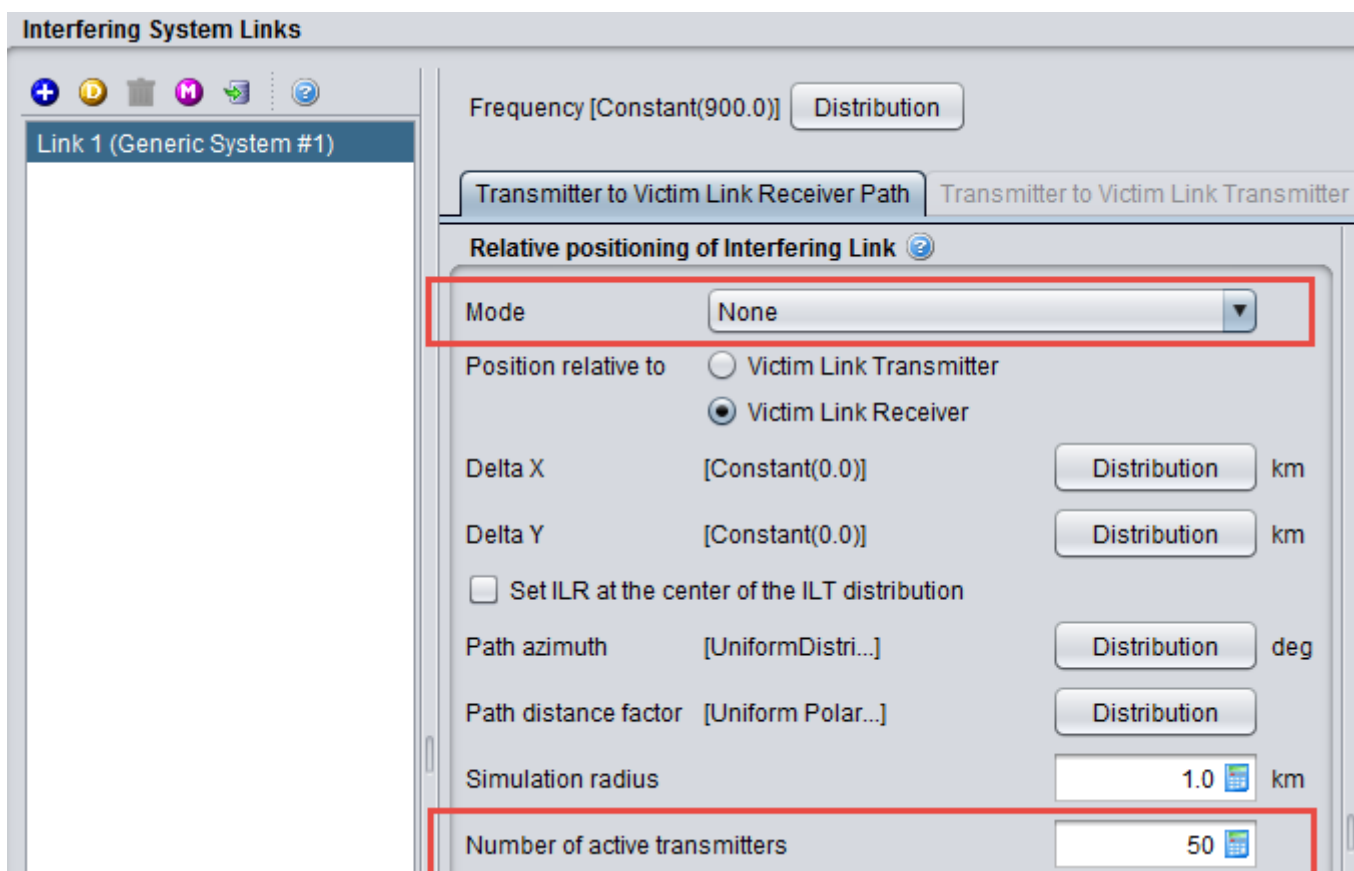


Figure 220: Generation of multiple interferers with the same characteristics and using a specific deployment mode