

Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >	
Title	Simulation of Multiple CS Interferers	
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Re:	Recommended Practice for Coexistence of BWA Systems; Descriptions of Simulations.	
Abstract	Draft text for final section describing simulation of multiple CS interferers, based on an original contribution by Leland Langston. This text is for consideration as part of the appendix describing all the simulation methods and results previously contributed. Each description is a précis of the more extensive contribution provided by each of a number of task group members	
Purpose	Completion of the appendix on simulations (all other descriptions of simulations have been drafted)	
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Simulation of Multiple CS Interferers

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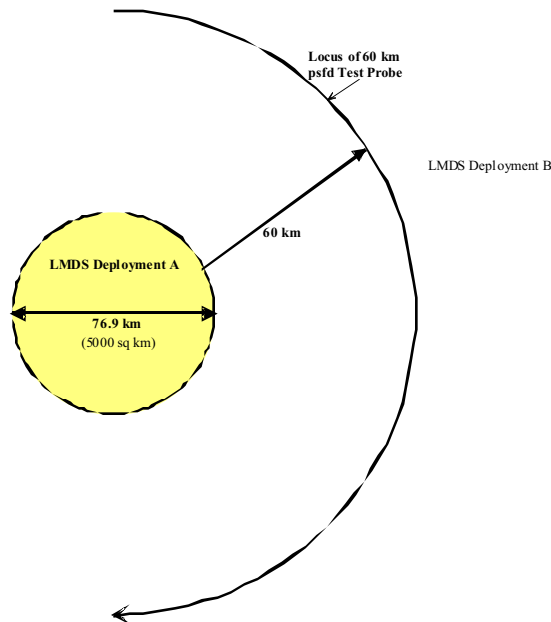
CS to CS, co-channel, multiple interferers

This simulation considers the case of multiple CS interferers in a multi-cell deployment, interfering with a victim CS (or other station) in a neighbouring LMDS system deployment. The victim station is assumed to be on a high site, so that path obstruction due to intervening terrain is unlikely to occur. This is a low probability situation but, where it occurs, it is important to note the likely value of interference that could be received.

The original simulations also studied the case of multiple TS interferers.

The calculations determine the psfd at the boundary of the victim system deployment and so can be applied to any type of victim station that has a wide enough antenna beam pattern to encompass all the interferers.

Simulation method



The interfering system deployment (A) contains a number of BTS sites that may be co-channel to the victim station in (B). Calculation shows that up to 70 BTS sites could be involved. The victim station is 60km from the boundary of the deployment (A) and on a high site 500m above local ground level. Earth curvature is taken into account but no additional building or ground obstruction is considered.

The simulation places the 70 interfering stations randomly over the area of (A) and pointing in random directions. Realistic antenna RPEs and transmitter EIRPs are used. The sum of the power from all interferers that are not over the horizon is taken into account in calculating the psfd along the 60km locus and the results plotted as cumulative probability distributions.

Simulation results

The multiple BTSs produce unacceptable psfd levels at 60km, when there is no additional path loss due to buildings or terrain. With typical system parameters, the nominal psfd value of -114dBw/MHz-m^2 (derived in an earlier section of this document) is exceeded by 7-12dB.

Thus, in the case where terrain is unfavourable, additional measures may be needed to reduce the interference to acceptable levels. This situation is likely to be untypical and in most circumstances buildings, trees and terrain will reduce the interference considerably.

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