9.1 Introduction

The current OFDMA module has been designed for a Long Term Evolution (LTE) network from 3GPP [12]. Therefore E-UTRA RF coexistence studies can be performed with Monte-Carlo simulation methodology.

The general simulation assumptions are presented in this section to provide a guideline on how to perform coexistence simulations. The OFDMA DL (downlink) LTE algorithm implemented in SEAMCAT assumes a 100% loaded system and each user is allocated with a fixed number of resource blocks. This is equivalent to modelling a Round Robin scheduler with full buffer traffic model and a frequency reuse of 1/1 (i.e. Single Frequency Network is assumed). The OFDMA algorithm as implemented in SEAMCAT takes into account the intra system interference into the reference cell, caused by UEs located in adjacent cells and using the same RBs but also caused by UEs located in the reference cell which are using different RBs. The OFDMA UL (uplink) LTE algorithm implemented in SEAMCAT is similar to the OFDMA DL LTE algorithm with one exception. In the OFDMA, UL system it is possible to load the system with a set number of resource blocks rather than only 100% load like in the OFDMA DL system (see 9.3.6).

The network layout is similar to the one used for CDMA. The methodology assumes that the UEs are deployed randomly in the whole network region according to a uniform geographical distribution. The wrap around technique is employed to remove the network deployment edge effects.

Note that if the OFDMA is a DL interferer, the OFDMA is simulated as in “traditional” simulation with the BSs transmitting at full power. This decreases the simulation time of a full OFDMA simulation. In OFDMA DL interferer case, only the position of the BSs will be calculated because full transmit power is assumed. For all other simulations (including UL) scenarios full OFDMA network simulation is required. Consequently, some of the input parameter of the GUI interface have been grey-out when the OFDMA DL interferer case is selected.

Since it is arguable that some simulation assuming a rural environment would not need to assume full power transmission (i.e. full loaded network) when the system is DL and interferer, you may need to manipulate either the input power or the spectrum mask (or both) in order to simulate the DL interferer case for rural deployment.

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