Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**System architecture for 2-11 GHz Coexistence Simulations**
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Re:	Coexistence study group activities in session # 14
Abstract	This document provides tables of parameters and draft parameter values for systems operating in the 2-11 GHz frequency range. These parameters are relevant to interference calculations and simulation work. The complete set of system parameters required for standardization is not required, only those that significantly impact coexistence.
Purpose	To provide a basis for discussion with TG3 and TG2a members at session # 14 and as a basis for producing an output document. This will be used to specify simulation work.
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System architecture for 2-11 GHz Coexistence Simulations

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Introduction

One of the planned tasks for TG2 (a) is to produce coexistence recommendations and guidelines for fixed BWA systems operating in the frequency range 2-11 GHz. One of the first tasks is to specify simulation methods, for which one or more system architectures have to be defined.

The system architecture(s) are for the purpose of assessing interference, so that not all system details are needed. The important aspects are listed below. During session # 14, it is hoped that sufficient information can be agreed to allow the simulation work to proceed.

Information required to specify and prepare simulation tools is shown in the attached tables. Table 1 is for systems with a cellular architecture (including the possibility of repeaters). Table 2 is for multipoint to multipoint systems (mesh – like architectures). There may be more than one set of parameters in each category and there may be additional categories specified from the work of TG2. These should be added to the tables below.

The purpose of the tables is as a framework for the preparation of sufficient system information to allow coexistence work to start. Not all system parameters are needed. An output document should include agreed tables of parameters and associated system diagrams (one set of results for each significantly different system variation).

Table 1: Systems with a cellular architecture.

Characteristic (cellular systems)	Examples
Layout of system(s) including diagrams	Single cell, multi – cell (uniformly distributed), multi – cell (variable cell sizes)
Typical sector arrangements and frequencies	4-sectors per cell, 2 frequencies, 2 polarizations
Propagation	Line of sight, partly obstructed, rain fading assumptions
Cell size	Up to 5km radius
Number of cells in a system	1 to 10
Number of terminal stations per cell/sector	25
Distribution of terminal stations in relation to link length	Uniform per unit area, uniform with link length.
Frequency of operation (for each variant to be studied)	2.5 GHz, 10.5 GHz
Duplex method	TDD, FDD
Receiver parameters	
Channel bandwidth	12.5, 20, 25 MHz
filter response	Response curve to be specified
noise floor	?
acceptable level for co-channel interference	-100dBm?
Transmitter parameters	
Channel bandwidth	12.5, 20, 25 MHz
emission mask	Depends on modulation – to be specified (use one of ETSI masks?)
maximum power	?
typical power	?
use of ATPC, steps and range	Uplink only, 2dB steps, 40dB range
Tx-Rx parameters	NFD (net filter discrimination)
Antenna characteristics (base station)	RPE azimuth plane, RPE elevation plane, gain
Antenna characteristics (subscriber station)	RPE azimuth plane, RPE elevation plane, gain
Antenna characteristics (repeater station)	RPE azimuth plane, RPE elevation plane, gain
Backhaul links	In band, separate assignments

Table 2: Systems with a mesh – like architecture

Characteristic (mesh – like systems)	Examples
Layout of system(s) including diagrams	Quasi – random mesh of fixed/ steerable links
Link lengths	50 to 2000m
Density of terminal station in mesh – like systems	Up to 100 / sq km
Distribution of terminal stations in relation to link length	Uniform per unit area, uniform with link length.
Frequency of operation (for each variant to be studied)	2.5 GHz, 10.5 GHz
Duplex method	TDD, FDD (TDD may use different up and down link frequencies)
Access method	TDMA, FDMA
Receiver parameters	
Channel bandwidth	12.5, 20, 25 MHz
filter response	Response curve to be specified
noise floor	?
acceptable level for co-channel interference	-100dBm?
Transmitter parameters	
Channel bandwidth	12.5, 20, 25 MHz
emission mask	Depends on modulation – to be specified (use one of ETSI masks?)
maximum power	?
typical power	?
use of ATPC, steps and range	Uplink and downlink, 2dB steps, 40dB range
Tx-Rx parameters	NFD (net filter discrimination)
Antenna characteristics (central station at point of connection to backhaul or core network)	RPE azimuth plane, RPE elevation plane, gain, steering method
Antenna characteristics (subscriber station)	RPE azimuth plane, RPE elevation plane, gain, steering method
Antenna characteristics (repeater station)	RPE azimuth plane, RPE elevation plane, gain, steering method
Backhaul links	In – band, separate assignments

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