Project	IEEE P802.16 Broadband Wireless Access Working Group	
Title	Operator Viewpoint on Coexistence	
Date Submitted	4 June 1999	
Source	Lou Olsen Teligent 8065 Leesburg Pike Vienna, VA 22182	Voice:(703) 628-0914 Fax:(703)762-5348 E-mail:louis.olsen@teligent.com
Re:	At the 1999 Boulder, CO meeting, the audience requested operator's viewpoints on coexistence.	
Abstract	Describes and prioritizes key areas of coexistence from an operator's perspective	
Purpose	Provide a matrix that can be used by the 802.16 Coexistence Task Group to prioritize work product.	
Notice	This document has been prepared to assist the IEEE P802.16. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.	
Release	The contributor acknowledges and accepts that this contribution may be made publicly available by 802.16.	

Operator Viewpoint on Coexistence

Lou Olsen
Teligent

Introduction

This contribution is meant to describe what an operator would view as key requirements of the Coexistence Practice from 802.16. Key areas of interest are defined, and a priority is placed on what an operator like Teligent would need first.

Teligent Background

Teligent has licenses to operate broadband wireless systems in many markets throughout the United States. Teligent is currently deploying both PMP and PTP systems in it's licensed markets. Teligent's spectrum is in the 24 GHz range, and is not adjacent to LMDS or any other identified broadband PMP spectrum. Teligent is currently the sole licensee of the spectrum and does not have to contend with other BWA operators in band or in adjacent bands.

Three Key Areas of Interest

Teligent is concerned with the following areas:

1. Coexistence of equipment from different vendors within a network. In this case, an operator would own both pieces of equipment. An assurance is needed that when equipment from different vendors is deployed in close proximity to each other, they do not create interference with each other. The interference of concern does not include co-channel and adjacent channel issues managed through routine system planning.

2. Coexistence of equipment from different or the same vendors, operated by another operator, but in the same geographic area. The operators would not be on the same operating frequencies, but may be in adjacent bands, or may be many GHz away. Note that in dense environments, multiple operators may be collocated on the same building, or may be on adjacent building separated by 50 meters or less.

3. Coexistence with other equipment commonly found in the environment which BWA operator's will deploy equipment. Many rooftop and tower environments have high power paging, cellular, PCS, public safety, or broadcast systems. High power equipment may operate in the range of 30-2000 MHz. A BWA system may be susceptible to the energy levels via its outdoor equipment or cabling between indoor and outdoor equipment.

Coexistence Matrix

The following matrix is Teligent's view on key Coexistence issues and priority of those issues.

Priority	Case	Manufacturer	Operator	Spectrum	Physical Proximity	Comments
1	Multiple BWA vendors and technologies in an operator's market	More than one, owned by one operator	One	Same spectrum or a band plan	Same or adjacent building or tower	This is an issue found in field trials. Will be a common deployment scenario in dense environments.
1	Non-BWA systems such as Paging, cellular, PCS, Public Safety	Not known. May be more than one non-BWA system for a given location	One	30-2000 MHz	100 meters or less, may be on same rooftop or tower structure	Hi-power systems, all BWA systems should coexist. This is a common deployment scenario
3	Non-BWA systems – Commercial Broadcast	Not known. May be more than one for a given location	One	Below 1000 MHz	100 meters or less, may be on same rooftop or tower structure	Hi-power systems. May be expensive to design for coexistence. Suggest field coordination guidelines be developed by 802.16
1	Other non-BWA systems known to be in adjacent spectrum	Not known	One	Co-channel or Adjacent channel	Co-channel – some physical separation Adjacent channel – 0+ physical separation	This would include any legacy systems that may exist including satellite. Given the broad range of unknown systems, guidelines for coordination would be helpful.
2	Operators in adjacent license boundaries	Don't care	Two or more	Co-channel	Separated by license boundaries including International	Coordination guidelines needed.
2	Operators in adjacent license boundaries	Don't care	Two or more	Adjacent channel	Separated by license boundaries including International	Coordination guidelines needed for band edge.

Priority Scheme

The priority ranking is defined as follows:

1. High priority. Operator's need to manage the issue today. Guidelines needed as soon as possible.
2. Medium Priority. Not an issue today, but will be an issue in the future.
3. Low Priority. May or may not become an issue for Teligent.