

Project	<b>IEEE 802.16 Broadband Wireless Access Working Group</b> < <a href="http://ieee802.org/16">http://ieee802.org/16</a> >	
Title	<b>Interference Mitigation through ABS/ARS Coordination of MIMO Transmissions within a Relay-enabled Sector</b>	
Date Submitted	<b>2009-02-27</b>	
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Re:	SDD Change Request	
Abstract	This contribution specifies the relay version of the Single Cell Antenna Processing with Multi-ABS Coordination interference mitigation technique.	
Purpose	For consideration and adoption into the 16m SDD document.	
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# Interference Mitigation through ABS/ARS Coordination of MIMO Transmissions within a Relay-enabled Sector

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## **Introduction**

In section 20.2.1 “Single Cell Antenna Processing with Multi-ABS Coordination”, the IEEE802.16m SDD specifies that inter-ABS coordination mechanisms based on MIMO schemes are supported for inter-cell interference mitigation and improving cell/sector throughput and cell-edge throughput. The SDD also specifies support of ARS in the cell/sector. However, there is no mechanism specifying the coordination mechanisms of MIMO-based techniques within a cell/sector relay-enabled.

This contribution proposes intra-cell/sector Coordination Mechanisms to be supported between ABS and ARSs of the same cell/sector.

## **Motivation**

When an ABS and several ARSs are used in the same cell/sector, operating simultaneously in the same frequency resources, the AMSs located in the overlapping coverage of ABS and ARSs will experience DL interference from the stations they are not associated with, and the ABS and ARSs will experience similar UL interference also. One solution for dealing with this problem is to use DL/UL MIMO-based Coordinated Transmission scheme among ABS and ARSs in the same cell/sector to coordinate the beamforming transmission and interference nulling.

## Text Proposal

*[Insert the following text into section 15 of the SDD]*

### **15.4.x Relay Support for Interference Mitigation** **15.4.x.2 Intra-Sector Coordination**

When ARSs are used within a deployment, the coordination scheme which is described in section 20.2.1 may be used to coordinate the transmissions of the ABS and ARSs within a sector. It should be noted that the coordination mechanisms in this sub-section do not involve the coordinated transmission of the same data to an AMS by the ABS and/or multiple ARSs.

When DL intra-sector coordination is performed by the ABS and ARSs within a sector, the AMSs feed back to the ABS or ARS with which they are associated the PMIs from the stations within the sector which cause them the most interference. The ARSs also feed back the best PMI from the station (ABR or ARS) with which they are associated. The ABS and ARSs can coordinate the precoding schemes using centralized or distributed scheduling. When centralized scheduling is used, the ABS coordinates the PMIs of all ARSs within the sector as part of the centralized creation of the schedule. When distributed scheduling is used the ABS coordinates the allocation of PMIs and signaling is used to communicate the necessary information between the ABS and ARSs.

When UL intra-sector coordination is performed within a sector, the ABS or ARSs coordinate the precoding schemes used at the AMSs using centralized or distributed scheduling.

Intra-cell MIMO-based coordination can be combined with cross-cell coordination as well as with Relay Frequency Reuse or other interference mitigation techniques to improve the relay-enabled system performance by coordinating both spatial transmission and frequency partition.