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| Project | IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 > |
| Title | Proposed text for Distributed Interference Mitigation Scheme in IEEE 802.16m Amendment (SON) |
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| Re: | 802.16m Amendment Working Document Call for contributions on “Support for Self-organization” |
| Abstract | This contribution proposes the distributed interference mitigation scheme for SON. |
| Purpose | For discussion and approval by IEEE 802.16m TG |
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Distributed Interference Mitigation Scheme in IEEE 802.16m Amendment

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Introduction

Interference Management and Optimization for SON is supported in the current SDD [1]. In this contribution, we propose the text to support the distributed interference mitigation scheme in AWD.

Proposed Text

[Insert a new subclause 15.x.x as follows]

-----Start of the Text-----

15.X Support for SON

15.X.X Distributed Interference Mitigation Scheme

When a femtocell BS powers on or needs to increase its downlink (DL) transmission power (to send more data traffic), the macrocell base stations and neighboring femtocells can vote on the femtocell's transmission power with different weights according to the metrics reported by their own MSs. If the voting result is negative, the femtocell BS has to change its planned transmission power. The proposed procedure is as follows:

1. When a femtocell BS (BS A) needs to increase its transmission power to a certain level, firstly it only increases its transmission power on the preamble and waits for the response of other BSs, and a message should be broadcasted to inform its neighbors that this femtocell BS (BS A) will attempt to change its downlink transmission power level;
2. When a MS, which is near this femtocell but does not belong to it, receives the message of changing DL transmission power of neighboring femtocell BS (BS A), it measures both the current preamble CINR and the change of preamble CINR after the femtocell BS A increases its transmission power on the preamble, and reports the results to its own BS;
3. The Microcell BSs and neighboring femtocell BSs estimate the effect of the femtocell BS (BS A) increasing its DL transmission power and send their votes to femtocell BS (BS A) according to the status and QoS of users and the reported information by their users. The voting message may include average throughput information and BSs' options of increasing power by the femtocell BS A. This option may have several levels. For example, it may be a number selected from 1 to 5, and 1 means strongly disagree and 5 means totally agree. This voting message can be sent by air or/and backhaul;
4. Femtocell BS (BS A) decide if it can increase its DL transmission power according to the received

voting messages, the priorities of each BS who gives feedback message, its own priority and average throughputs, QoS requirements, etc. Usually, macrocells BSs have the highest priorities and if any macrocells BSs have negative options, the femtocell BS A shall not increase its DL transmission power.

- a. If the femtocell BS A cannot increase its DL transmission power, it may wait a period and try to request to increase its DL transmission power again.
- b. If a positive decision is obtained, the femtocell BS A can increase downlink transmission power.

-----End of the Text-----

References

- [1] IEEE 802.16m-09/003r9a, "IEEE 802.16m System Description Document (SDD)"