Project	**IEEE 802.16 Broadband Wireless Access Working Group** <http://ieee802.org/16>
Title	**Proposed Text of Interference Mitigation for the IEEE 802.16m Amendment**
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Re:	"802.16m amendment text": IEEE 802.16m-09/0012, "Call for Contributions on Project 802.16m Draft Amendment Content". Target topic: "11.11 Interference Mitigation".
Abstract	The contribution proposes the text of Interference Mitigation section to be included in the 802.16m amendment.
Purpose	To be discussed and adopted by TGm for the 802.16m amendment.
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Proposed Text of Interference Mitigation for the IEEE 802.16m Amendment

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1. Introduction

The contribution proposes the text of Support for Interference Mitigation section to be included in the 802.16m amendment. The proposed text is developed so that it can be readily combined with IEEE P802.16 Rev2/D9 [1], it is compliant to the 802.16m SRD [2] and the 802.16m SDD [3], and it follows the style and format guidelines in [4].

2. Modifications to the SDD text

The text proposed in this contribution is based on interference mitigation section in the IEEE 802.16m SDD [3].

3. References

[1] IEEE P802.16 Rev2/D9, "Draft IEEE Standard for Local and Metropolitan Area Networks: Air Interface for Broadband Wireless Access,"

[2] IEEE 802.16m-07/002r7, "802.16m System Requirements"

[3] IEEE 802.16m-08/003r7, "The Draft IEEE 802.16m System Description Document"

[4] IEEE 802.16m-08/043, "Style guide for writing the IEEE 802.16m amendment"

4. Text proposal for inclusion in the 802.16m amendment

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15.9.2. Inter-ABS Coordination

In order to support inter-ABS coordination to mitigate inter-cell interference, the ABSs should be capable of exchanging the interference measurement results such as the recommended PMI subset to be restricted or to be applied in neighboring cells with each other or with some control element in the backhaul network. For UL inter-ABS coordination, this subset is estimated by ABS through estimating the sounding signals transmitted by specific AMSs. In order to facilitate the PMI coordination and interfering PMIs estimation, the information on the PMI and the associated resource allocation applied in each cell should also be exchanged. The interference measurement results exchanged between ABSs over the backhaul may include interference statistics corresponding to all PMIs in the base codebook or a subset thereof.

In order to support precoding with interference nulling, the associated resource allocation and some control element should be exchanged between neighboring ABSs.

Note that the PMI coordination may also be integrated with the FFR defined in 20.1. For example, the ABS may apply FFR to isolate some of the interference sources if the inter-ABS coordination recommended by different AMSs contradict each other.

Further, the PMI coordination may also be integrated with the PMI cycling defined in 15.x.   In this case, the PMI sequences may be coordinated among multiple ABSs.

24.2.1.1. Interference Measurement

In order to support DL PMI coordination to mitigate inter-cell interference, the AMS that is capable of measuring the channel from the interfering AB can, calculate the worst or least interfering PMIs, and feedback the restricted or recommended PMIs to the serving ABS together with the associated ABS IDs or information assisting in determining the associated ABS IDs. PMI for neighboring cell is reported based on the base codebook. (cf. **Error! Reference source not found.** and **Error! Reference source not found.**). The measurement can be performed over the region implicitly known to AMS or explicitly designated by ABS. The PMIs can then be reported to ABS by UL control channel and/or MAC layer messaging in solicited/unsolicited manner. The AMS may report CQI corresponding to one or multiple [TBD] subchannel(s) allocated by the ABS for interference measurement.

For UL PMI coordination, the ABS is capable of measuring the channel from the interfering AMS using sounding signals. Neighboring ABS should calculate the PMIs with least interference and forward them to the serving ABS. The mechanism to identify the interfering AMS is FFS.

The priority of selection of PMIs forwarded from neighboring ABS is set in DL/UL. For priority of selection of PMIs, measurements such as SINR, normalized interference power, or IoT for each resource unit (e.g., a subchannel, a fraction of PRU) is required, and it should be forwarded from neighboring ABS. The measured CINR should provide an accurate prediction of the CINR when the transmission happens with coordinated DL closed loop transmission. In order to mitigate UL interference, corresponding to each sub-band, or RB(s), ABSs may send an indication to neighbor base stations if the IoT is above the thresholds.

In addition to PMIs, additional interference measurements may need to be reported to resolve conflicting requests from different AMSs. More details are FFS.

In order to support precoding with interference nulling to mitigate inter-cell interference, an ABS is capable of measuring the channel from an interfering AMS.