

Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >
Title	Interference and SINR prediction for IEEE 802.16j Multi-hop Relay network
Date Submitted	2007-4-18
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Re:	IEEE 802.16j-07/007r2: "Call for Technical Comments and Contributions regarding IEEE Project 802.16j"
Abstract	The text proposed in this contribution aims to clarify the purpose of interference prediction.
Purpose	Clarify the purpose of interference prediction
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Interference and SINR Prediction for IEEE 802.16j Multi-hop Relay Network

One of the purposes to perform RS neighborhood measurement is to predict the potential interference level in advance of determining MR network topology, radio resource reuse pattern [1,2], RS transmit power or etc. In the 6.3.27.1 of 802.16j-07/026r3, there is already a paragraph to describe how to utilize the RS neighborhood measurement results for predicting the potential interference. However, people may not be very clear on its purpose and need more clarification. The following text is proposed to clarify when the MR network may need to perform neighborhood measurement and what may be the purposes to predict the interference and SINR level.

I. Proposed Text Revision

[Adopt the following text revision in 6.3.27.1]

6.3.27 Interference measurement for MR

6.3.27.1 Interference prediction by RS neighborhood measurement

According to the neighborhood discovery mechanism defined in 6.3.26, RS can measure the received signal strength of the R-ambles transmitted by neighbor stations and report the measurement results to MR-BS. These measurement results may be utilized to predict the potential interference level in relay link or access link, which is useful for proprietary algorithms to determine MR network topology, radio resource reuse pattern, RS transmit power and etc.

In order to predict the interference or SINR of the radio links for different MR network topology and radio resource reuse pattern, the following prediction method [can may](#) be considered based on the RSSI reported by RS_NBR-MEAS-REP message (see 6.3.2.3.638).

1. Prediction of the interference plus noise power received by node $#i$: The interference [can may](#) be the summation of (1) the thermal noise plus background interference power received by node $#i$ and (2) the signal power not intended to be received by node $#i$ but transmitted by the same radio resource.
2. Prediction of the received SINR of node $#i$: The SINR [can may](#) be the ratio of “the total signal power destined to node $#i$ ” to “the interference plus noise power obtained in Step 1”.

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II. References

- [1] W. P. Chen et al, “Interference Detection and Measurement in OFDMA Relay Networks,” Technical Contribution, *IEEE C802.16j-07/020r4*, Jan. 2007.
- [2] W. P. Chen et al, “Interference Measurement by RS Sounding in MR Networks,” Technical Contribution, *IEEE C802.16j-07/019*, Jan. 2007.