

Threshold-based CQI reporting method for FFR in IEEE 802.16m

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Venue:

Re : Interference Mitigation: FFR; in response to the TGm Call for Contributions and Comments 802.16m-08/033 for Session 57

Base Contribution:

IEEE C802.16m-08/1170

Purpose:

To discuss and adopt the proposed text in the next revision of the 802.16m SDD

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Introduction

- This contribution addresses the threshold-based CQI reporting method for fraction frequency reuse (FFR).
- In particular, we focus on a broadcast approach, in which threshold-based reporting method that can be used to facilitate the fraction frequency reuse and reduce the overhead for reporting.
- We describe the proposed threshold method of CQI reporting for FFR.

Discussion

- FFR is a important method in the interference mitigation. One of the key issues for FFR is to make decision on allocating users to difference frequency reuse zones. The decision can be based on the channel quality of the users.
- In 802.16Rev2/D6, BS can inform MS to report its channel quality information via REP-REQ or allocating a CQICH in a unicast manner. MS can use REP-RSP or allocated CQICH for downlink reporting.
- For FFR, it is not necessary for all the users to make CQI report to BS. Only the users, whose CQI or other metric is bellow or above the threshold, need to perform the reporting, thus decrease the signalling overhead.
- It is not efficient for each MS to use a unique CQICH and it may cause significant overhead. Contention-based reporting could be used as well to further decrease the overhead.

Threshold-based CQI reporting for FFR

- We have proposed a broadcast approach.
- In this approach, the BS can broadcast the channel information request, which may includes a specified threshold.
- When MS report the metric to BS, MS can report the exact value to BS. Alternatively, MS can report “0” or “1” to BS to indicate its metric is above the threshold or not. “0” or “1” can use 1 bit to be represented, thus reduce the overhead.
- MSs can contend for the allocated CQICHs.

Summary

- From the discussion above, we have proposed a new threshold-based method of CQI reporting for FFR.
- If the BS broadcast the report request and MSs use the threshold-based method to report, the overhead can be reduced.
- Contention-based reporting can further reduce the overhead.

Proposed Text

Insert the following text into Interference Mitigation sub-clause ([IEEE 802.16m-08/003r4](#)):

----- Text Start -----

20 Support for Interference Mitigation

20.1 Interference Mitigation using Fractional Frequency Reuse (FFR)

20.1.1.1 Threshold-based CQI reporting method of CQI reporting for FFR

BS can broadcast the channel information request, which may includes a specified threshold.

When MS report the metric to BS, MS can report the exact value to BS. Alternatively, MS can report “0” or “1” to BS to indicate its metric is above the threshold or not. “0” or “1” can use 1 bit to be represented, thus reduce the overhead.

MSs can contend for the allocated CQICHs.