Project	IEEE 802.16 Broadband Wireless Access Working Group <**http://ieee802.org/16**>
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Re:	IEEE 802.16 Working Group Letter Ballot #24, on P802.16h/D1
Abstract	This contribution proposes to perform channel detection using quiet period, including slave sub-frame, extended quiet period and quiet period during CSI/CMI.
Purpose	Define how to find anther free channel or sense primary user during operating stage.
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Using Quiet Period for Channel Measurement

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Introduction

The current 16h draft has defined the procedure of working channel selecting during initial stage but not considered the detailed procedure in the operating stage. Considering the wireless environment change from time to time, the channels not free in IBS initial stage may be free later, or a channel which is available in the initial stage may be not available because of detection of primary user or overcrowded. So it is perfect if the system in the operating stage listens for the availability of other channels.

On the other hand, system will be quiet during its slave sub-frame, extended quiet period and slave CSI/CMI. These quiet periods are periodic and may be more than 1ms. So it is possible for the system to use these quiet periods to sense the status of anther channel or sense the primary user.

Reference

[1] IEEE 802.16h-D1: Air Interface for Fixed Broadband Wireless Access Systems: Amendment for Improved Coexistence Mechanisms for License-Exempt Operation

Proposed Text

15.3.4 Channel measurement during operating stage

System in the operating stage should seek for anther idle channel. BS and its associated SSs should use their quiet period to sense anther channel. System may be quiet during its slave sub-frame, extended quiet period and non-operating CSI/CMI slot.

BS shall maintenance a table which marks the status of non-operating channels. The channel status may be the value shown in the REP-RSP MAC message.

BS may send the channel number to be measured to its associated SSs in advanced using REP-REQ MAC message or measurements IEs in DL-MAP. During the slave sub-frame and the extended quiet period, system, including BS and its associated SSs may switch to the channel to be measured channel to sense if the channel is free.

Furthermore, during the ICSI, BS may switch to the channel to be measured channel and broadcast its interference information on that channel. The SSs on the measured channel will detect this broadcast and report their serving BS. Then the BS working on the measured channel will send IP message to the measurement BS to tell its existence on the measurement channel. This procedure is performed just like community entry procedure of new BS (15.3.1.3) except that no need to perform interference avoidance coordination. BS and its neighbor BS on the measured channel just record the existence of each other.

Similarly, during the quiet CMI slot, BS may switch to the channel to be measured channel and find a free CMI to broadcast its interference information on that channel just like community entry procedure of new BS

(15.3.2.3) except that no need to perform interference avoidance coordination. BS and its neighbor BS on the measured channel just record the existence of each other.

If a system finds a free channel and decide to switch to that channel, it will notify its neighbor system of its departure and the MAC frame number when it will leave. The neighbor systems may coordinate with each other and update their sub-frame distribution after channel switching.