IEEE P802.11 Wireless LANs

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| Proposal of Repetition CCA mechanism | | | | |
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Abstract

This document proposes the Repetition CCA mechanism in TGbb.

History

R2: update the figure to better illustrate the channel access examples; update the terms according to the changes in subclause 4.3.

R4: update the text with suitable terms, such as ‘transmission’/‘signals’ instead of ‘data’, ‘repetition’ instead of ‘relayed’; and revise the way to introduce the mechanism of packet repetition.

# 1. Repetition CCA

Due to the nature of LC, the CCA mechanism may not work on non-AP LC STA side. The repetition CCA mechanism could work with the assistance of the LC AP. In general, the LC AP could detect the transmission from any non-AP LC STA as described in 32.3.2.3.5.2 CCA requirements. Then, the LC AP may disseminate the channel occupation information among the non-AP LC STAs within its coverage.

When the LC AP detects a transmission from a non-AP LC STA or transmissions from multiple non-AP LC STAs, it may repeat any signal it received on the uplink channel which does not need to be decodable. The repetition could be done at the analog level, i.e., the detected transmission is forwarded to both receiver physical layer and the lamp. The repetition would be a broadcast to all the non-AP LC STAs within its range, so that the non-AP LC STAs may be able to obtain the occupation status of the uplink channel from the assistance of the LC AP. Non-AP LC STAs that successfully detect the repetition by the LC AP would mark the medium ‘busy’ as in the CCA mechanism, except the sender(s) who are using the uplink channel.

When the LC AP has a packet to transmit, it starts the transmission of the new packet immediately after the repetition of the transmission from a non-AP LC STA.

Figure 1 illustrates an example of channel access with repetition CCA mechanism. The LC AP may retransmit the signals received from non-AP LC STAs on the downlink channel. Other non-AP LC STAs could mark the uplink channel as ‘busy’ in the CCA.indication in order to avoid the collisions on the uplink channel. The LC AP could switch from the repetition of received signals to its own queue at the end of the repetition, as shown in the example of Packet 3 and 4’s switch.

**LC AP**

**non-AP LC STA1**

**non-AP LC STA2**

Packet 1

Repetition

Packet 1

Backoff

Repetition CCA Busy

Packet 2

Repetition Packet 3

Repetition CCA Busy

Delay (ns)

Delay (ns)

Delay (ns)

Packet 3

Backoff

Backoff

Backoff

Backoff

Packet 4

Figure 1 An example of channel access with repetition CCA mechanism