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| Project | **IEEE 802.16 Broadband Wireless Access Working Group <**<http://ieee802.org/16>**>** | |
| Title | **Proposal on use of dedicated channel for talk-around direct communication** | |
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| Re: | IEEE 802.16 Working Group Letter Ballot Recirc #38a (IEEE P802.16.1a/D2) | |
| Abstract | This contribution proposes utilization method of dedicated channel for talk-around direct communication in IEEE P802.16.1a/D2 | |
| Purpose | To be discussed and adopted by TGn | |
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**Proposal on use of dedicated channel for talk-around direct communication**

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# Introduction

This contribution proposes utilization method of dedicated channel for talk-around direct communication in IEEE P802.16.1a/D2. In talk-around direct communication, an HR-MS reserves the dedicated channel to transmit burst by distributed manner. Also, the HR-MS can reserve two or more dedicated channels to transmit multiple bursts. But there is no detailed method to use multiple dedicated channels reserved by the HR-MS.

We suggest Resource ID to identifying multiple bursts transmitted on multiple dedicated channels in a TDC slot. The Resource ID assigned by the sending HR-MS can be not only used for identification of the bursts but also used for combining of the bursts.

Multiple dedicated channels which are having different Resource ID are used for transmitting multiple(different) bursts. Receiving HR-MS has only to decode separately multiple bursts as Figure 1.

Multiple dedicated channels which are having the same Resource ID are used for transmitting the same burst. Receiving HR-MS can combine the same burst in PHY layer before decoding to enhance link quality as Figure 2.



Figure 1



Figure 2

# References

[1] IEEE P802.16.1a/D2, WirelessMAN-Advanced Air Interface for Broadband Access Systems – Draft Amendment: Higher Reliability Networks, Apr. 2012.

# Proposed Text

Note:

The text in **BLACK** color: the existing text in the 802.16.1a AWD

The text in **~~RED~~** color: the removal of existing 802.16.1a AWD

The text in **BLUE** color: the new text added to the 802.16.1a AWD

[-------------------------------------------------Start of Text Proposal---------------------------------------------------]

# *[Remedy1: Modify the following message in the section 6.2.3.65.37 in the IEEE P802.16.1a/D2]*

**6.2.3.65.37 AAI-DC-RTS**

…

**Table 1066kk – AAI-DC-RTS message field description**

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Size**  **(bits)** | **Value/Description** | **Condition** |
| Source DCTID | 24 | Indicates a source HR-MS address |  |
| Destination DCTID or DCGID | 24 | Indicates a destination HR-MS (Group) address |  |
| Maximum Index of Burst Size | 8 | Indicates a maximum index of burst size that the  sending HR-MS suggests the receiving HR-MS  to recommend. The receiving HR-MS selects  burst size that is less than |  |
| Maximum Number of HARQ  Retransmission | 2 | Indicates maximum number of PHY burst  retransmission for HARQ operation.  0: HARQ retransmission is disabled  1~3: HARQ retransmission is enabled |  |
| Destination Address Type | 1 | Indicates type of destination address.  0: DCTID  1: DCGID |  |
| Piggyback Message Indicator | 1 | Indicates whether a control message is  piggybacked or not  0: no piggyback  1: MAC control message |  |
| Transmit Power | 6 | Unsigned integer from 1 to 64 in units of 1 dBm, where  0b000000=1 dBm and 0b111111=64 dBm. |  |
| Resource ID | 4 | Resource identifier |  |
| *Reserved* | ~~6~~2 |  |  |
| MAC Control Message | *varia*  *ble* | MAC control messages in Table 1216 except  AAI-DC-RTS and AAI-DC-CTS messages. | Present if  Piggyback  message  indicator is set  to 1 |

# *[Remedy2: Modify the following text in the section 6.12.2.3.2.6 in the IEEE P802.16.1a/D2]*

**6.12.2.3.2.6 Distributed resource reservation**

An HR-MS listens to all the supplementary channels and all the dedicated channels. If signal strength on a dedicated channel and corresponding supplementary channel is greater than a threshold, the HR-MS shall avoid using the dedicated channel and the corresponding channel.

An HR-MS selects a dedicated channel and reserves it using ‘request to send’ (AAI-DC-RTS) and ‘clear to send’ (AAI-DC-CTS) messages. The HR-MS sends AAI-DC-RTS message on the dedicated channel and the AAI-DC-RTS message includes a sending DCTID and a receiving address – DCTID or DCGID. If the receiving address is DCTID, the receiving HR-MS sends AAI-DC-CTS message on the dedicated channel in response to AAI-DC-RTS message. If the receiving address is DCGID, the receiving HR-MSs sends ACK on corresponding supplementary channel in response to AAI-DC-RTS message and the sending HR-MS detects ACK signal. After exchange of AAI-DC-RTS message and its response, the HR-MS sends packets on the dedicated channel continuously.

When a sending HR-MS reserves dedicated channel, a resource ID is assigned by the sending HR-MS. The Resource ID which is transmitted in AAI-DC-RTS message is used for identifying bursts in a TDC slot. The sending HR-MS transmits different bursts on the dedicated channels with different Resource IDs. The sending HR-MS transmits the same burst on the dedicated channels with the same Resource ID. When a receiving HR-MS receives the same burst on the dedicated channels with the same Resource ID, the receiving HR-MS transmits the same HARQ feedback(i.e. Ack or Nack) on the corresponding supplementary channels.

In addition, AAI-DC-CTS and AAI-DC-RTS messages can piggyback MAC control messages including AAI-DC-LEST-REQ, AAI-DC-LEST-RSP, etc. The ‘piggyback message indicator’ field is in AAI-DC-CTS and AAI-DC-RTS messages and if the field is set to 1 a MAC control message is piggybacked by AAI-DC-CTS and AAI-DC-RTS messages.

[-------------------------------------------------End of Text Proposal---------------------------------------------------]