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| Project | **IEEE 802.16 Broadband Wireless Access Working Group <**<http://ieee802.org/16>**>** |
| Title | **Proposed Editorial Changes to P802.16n/D3**  |
| Date Submitted | **2012-07-16** |
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| Re: | “IEEE 802.16-12-400-00-Gdoc,” in response to Letter Ballot Recirc #37b on P802.16n/D3 |
| Abstract |  |
| Purpose | To discuss and adopt the proposed text in the draft amendment document on GRIDMAN |
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**Proposed Editorial Changes to P802.16n/D3**

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# Introduction

We propose editorial changes to the current 802.16n/D3 draft [1].

# References

[1] IEEE P802.16n/D3, Air Interface for Broadband Wireless Access Systems - Draft Amendment: Higher Reliability Networks, June 2012.

# Proposed Text for the 802.16.1a AWD

Note:

The text in **BLACK** color: the existing text in the IEEE P802.16n/D3

The text in **~~RED~~** color: the removal of existing IEEE P802.16n/D3

The text in **BLUE** color: the new text added to the IEEE P802.16n/D3

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

***[Remedy 1: Modify lines 2-11 in page 13 of IEEE P802.16n/D3 as indicated]***

MM-ADV (multimode advertisement) message

Infrastructure stations and HR-MSs acting as HR-BS or HR-RS may transmit MM-ADV message to support multimode operation in the following cases~~case as follows~~:

* When the backhaul link is down or up
* During ~~maintaining~~ relay link maintainance due to unavailable backhaul link, PHY/MAC layer parameters need to be reconfigured for: ~~such as~~
* Power down
* Power reduction
* FA change
* Multimode service establishment/release/change to inform subordinate stations to perform handover

***[Remedy 2: Modify lines 16-18 in page 23 of IEEE P802.16n/D3 as indicated]***

When HR-BS creates direct communication link between two HR-MSs~~. It~~, it shall allocate a CID for the direct communication link and send link creation message to both source and destination HR-MSs. Direct communication link creation can only be initiated by the HR-BS.

***[Remedy 3: Modify lines 15-17 in page 24 of IEEE P802.16n/D3 as indicated]***

The HR-BS may transmit this message to both HR-MSs of a direct communication link to initiate the removal of that link. See for further details on the procedure for the removal of a direct communications link.

***[Remedy 4: Modify lines 5-6 in page 25 of IEEE P802.16n/D3 as indicated]***

~~HR-BS may require the HR-MS report the status of the direct communication link by sending a request to the relative HR-MS.~~

An HR-BS may require an HR-MS to request the status of its direct communication link by sending a DC-LR-REQ message.

***[Remedy 5: Modify lines 11-12 in page 25 of IEEE P802.16n/D3 as indicated]***

~~HR-MS shall send back report regarding the direct communication link when it receives a link report request from HR-BS.~~

An HR-MS send a DL-LR-RSP message in response to a received DL-LR-REQ message.

***[Remedy 6: Modify lines 24-26 in page 59 of IEEE P802.16n/D3 as indicated]***

This TLV indicates whether the multicast service is being requested or provided for the connection that is being setup. A value of 1 indicates that a~~n~~ multicast service limited to the serving BS is being requested and a value of 2 indicates multi-BS Multicast regardless of proving macro-diversity.

***[Remedy 7: Modify the paragraph in line 5 to 13, page 71 of IEEE P802.16n/D3 as indicated]***

To establish relay link with another HR-BS (serving HR-BS), HR-BS having no connection to backhaul transmits MM-RS-REQ message described in 6.3.2.3.99.5 including relay mode, i.e., either TTR or STR mode. In response to MM-RS-REQ, the serving HR-BS transmits MM-RS-RSP message described in 6.3.2.3.99.6 to inform whether the request is accepted or rejected. Upon receiving the MM-RS-RSP message, the affected HR-BS starts establishing the relay link with the serving HR-BS immediately or retransmits another MM-RS-REQ message at the action time expires. If the serving HR-BS rejects the request, the serving HR-BS informs the HR-BS having no connection to backhaul the rejection of the request. Upon receiving the MM-RS-RSP message with rejection information, the HR-BS either tries to establish relay link with another HR-BS or follows the standalone network operation described in 16.4.

***[Remedy 8: Modify the paragraphs in line 18 to 23, page 71 of IEEE P802.16n/D3 as indicated]***

~~During~~When establishing the relay link, serving HR-BS transmits RS-Config-CMD message described in 6.3.2.3.63 to configure PHY layer parameter set including Frame Number Action indicating the time to establish relay link.

While HR-BS is maintaining the relay link, the serving HR-BS shall send R-link channel descriptor (RCD) message described in 6.3.2.3.60 in the DL relay zone. The HR-BS also shall send RS-Config-CMD message in the DL relay zone when PHY layer parameter needs to be reconfigured.

***[Remedy 9: Modify the paragraph in line 27 to 36, page 71 of IEEE P802.16n/D3 as indicated]***

If the HR-BS recovers from failure of backhaul, it may inform network or notify the current serving HR-BS of the ~~HR-BS having~~ recovered backhaul link through the backhaul network interface. The superordinate serving HR-BS may then initiate HR-MS handover back to the ~~HR-BS in which the~~ recovered HR-BS ~~should be listed in the first priority~~. The HR-BS having recovered backhaul may store MAC context information of the serving MSs (basic capabilities, security capabilities, etc.). Such context information allows HR-MS to perform optimized network reentry when returning back to the HR-BS upon its recovery.

HR-BS transmits MM-ADV message with action type = 0b101 described in 6.3.2.3.99.1 including expected time of backhaul ~~link up~~recovery. When receiving the MM-ADV message, HR-MS performs either handover to neighbor infrastructure station and returns to the HR-BS at the expected time or wait ~~waiting in the HR-BS~~ until restarting service with available backhaul link.

***[Remedy 10: Modify the paragraph in line 12 to 24, page 72 of IEEE P802.16n/D3 as indicated]***

To request a subordinate HR-MS to change its role as HR-RS, HR-BS transmits MM-RS-REQ message described in 6.3.2.3.99.5 including relay mode (i.e., either TTR or STR mode).

In response to MM-RS-REQ, the HR-MS transmits MM-RS-RSP message described in 6.3.2.3.99.6.

To establish relay link with an HR-BS, HR-MS having a role as HR-RS transmits MM-RS-REQ message described in 6.3.2.3.99.5 including relay mode, i.e., either TTR or STR mode. In response to MM-RS-REQ, the serving HR-BS transmits MM-RS-RSP message described in 6.3.2.3.99.6 to inform whether the request is accepted or rejected. Upon receiving the MM-RS-RSP message, the HR-MS starts establishing the relay link with serving HR-BS immediately or retransmits M another M-RS-REQ message at the action time expires. If the serving HR-BS rejects the request, the serving HR-BS informs the HR-MS the rejection of the request. Upon receiving the MM-RS-RSP message with rejection information, the HR-MS either tries to establish relay link with another HR-BS or follows base station function described in 16.1.3.

When~~During~~ establishing the relay link, HR-BS transmits RS\_Config-CMD message described in 6.3.2.3.63 to configure the operation parameters of HR-RS.

***[Remedy 11: Modify lines 13-17 of page 76 of IEEE P802.16n/D3 as indicated]***

HR-MS direct communication using centralized resource allocation, also referred to as BS-controlled direct communication, is described in 16.2.2.

HR-MS direct communication using distributed resource allocation among nearby HR-MSs, ~~that is called~~also referred to as talk-around direct communication, is described in 16.2.3. Resource for talk-around HR-MS direct communication may be allocated in a distributed manner among nearby HR-MSs independent of infrastructure node deployment.

***[Remedy 12: Modify lines 4-20 of page 78 of IEEE P802.16n/D3 as indicated]***

HR-BS may take ~~a few~~the following steps to setup a direct communication link between two HR-MSs.

Firstly, the HR-BS shall schedule the two HR-MSs ~~do a~~ to carry out channel measurement with the method specified in section 16.2.2.1.3. The HR-MSs reports the channel measurement results to the HR-BS after the measurement.

If HR-BS decides to setup a direct communication link, it shall assign CIDs to the direct communication link and send CIDs to the two HR-MSs using DC-LC-REQ messages. The HR-MSs shall sends back DC-LC-ACK for confirmation.

After receiving DC-LC-ACK from both HR-MSs, the HR-BS may help the two HR-MSs establish a security association over the direct communication link ~~if security is required~~. The setup of security association over direct communication link is specified in section 16.2.10.

Once a security association is setup, ~~then~~ the communication link is considered being established between the two HR-MSs. The HR-MSs shall find the existing flows between the two HR-MSs and move the existing flows by setting up new flows over the direct communication link with DSA method specified in section 16.2.4.

Figure 517 shows the procedure to setup a direct communication link between HR-MSs.

When HR-BS~~MS~~ want to delete the direct communication link, it shall send DC-LD-REQ to the two HR-MSs involved.

***[Remedy 13: Modify the paragraph in lines 6-8 of page 79 of IEEE P802.16n/D3 as indicated]***

When HR-BS creates direct communication link between two HR-MSs~~. It~~, it shall allocate a CID for the direct communication link and send link creation message to both source and destination HR-MSs. Direct communication link creation can only be initiated by the HR-BS.

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