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| Project | **IEEE 802.16 Broadband Wireless Access Working Group <**<http://ieee802.org/16>**>** | |
| Title | ***Additional parameters for multimode operation*** | |
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| Re: | “IEEE 802.16-12-0142,” in response to Letter Ballot #38 on P802.16.1a/D1 | |
| Abstract | This contribution is a proposal related to multimode operation in IEEE 802.16.1a/D1. | |
| Purpose | To discuss and adopt the proposed text in the IEEE 802.16.1a/D1 | |
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**Additional parameters for multimode operation**

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# Introduction

A multimode HR-MS may operate as an HR-RS to provide connectivity for multiple out-of-coverage HR-MSs. For this purpose, a superorindate HR-BS may select a multimode HR-MSs who can act HR-RS after investigating the amount of energy remained in their batteries.

According to the IEEE 802.16m specification, the multimode HR-MS reports its remaining battery level in percentage to the superordinate HR-BS via AMS Battery Level Report header. Because of the diverse battery types equipped in HR-MSs, the AMS battery level in percentage is not enough to make the optimal choice. In order to solve it, it is required for HR-MSs to inform the full capacity level of battery to the superordinate HR-BS.

In this contribution, we suggest to insert a full capacity level of battery into the AMS Battery Level Report header format.

# Proposed Texts

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

**[*Add the following text and table at the line# 9 in Section 6.2.2 of p802.16.1a/D1.*]**

*Change Table 11 in 6.2.2.1.3.5 as indicated:*

**Table 11—AMS Battery Report Header format**

|  |  |  |
| --- | --- | --- |
| **Syntax** | **Size**  **(bits)** | **Notes** |
| AMS Battery Level Report header ()  { | — | — |
| FID | 4 | Flow Identifier. This field indicates MAC signaling header. Set to 0010. |
| Type | 5 | MAC signaling header type = 0b00100 |
| Length | 3 | Indicates the length of the signaling header in bytes. |
| AMS Battery Status | 1 | 0b0: The AMS is plugged into a power source.  0b1: The AMS is not plugged into a power source. |
| Battery Level Indication | 1 | 0b0: Detailed battery level report is not included.  0b1: Detailed battery level report is included. |
| If (Battery Level Indication == 1) { |  |  |
| AMS Battery Level | 3 | 0b000: Battery level is > 75% and ≤ 100%  0b001: Battery level is > 50% and ≤ 75%  0b010: Battery level is > 25% and ≤ 50%  0b011: Battery level is > 5 % and ≤ 25%  0b100: Battery level is below 5%  0b101–0b111: Reserved |
| *~~Reserved~~* | ~~7~~ | ~~Shall be filled by 0~~ |
| Max Capacity of AMS Battery | 4 | 0b0000: Reserved  0b0001~0b1110: 0.1Wh~1.4Wh (round off to the nearest whole number)  0b1111: The maximum capacity of battery is more than 1.5Wh or the battery is charging. |
| *Reserved* | 3 | Shall be filled by 0 |
| } |  |  |
| else { |  |  |
| *Reserved* | 2 | Shall be filled by 0 |
| } |  |  |
| } |  |  |

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