Project	**IEEE 802.16 Broadband Wireless Access Working Group** <http://ieee802.org/16>
Title	**Proposal for Link adaptation schemes in IEEE 802.16m**
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Re:	IEEE 802.16m-08/016r1: Call for Contributions on Project 802.16m System Description Document (SDD). Target topic: “Link Adaptation Schemes”.
Abstract	This contribution proposes for link adaptation schemes in IEEE 802.16m
Purpose	To be discussed and adopted by TGm for the 802.16m SDD.
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Proposal for Link adaptation schemes in IEEE 802.16m

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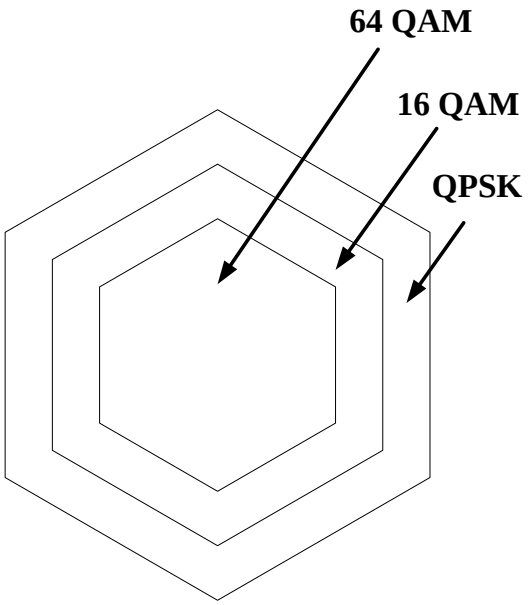
1. Introduction

When MS moves and it moves away from its serving BS the receiving RSSI level will be correspondingly becoming lower we therefore can use the RSSI level to determine which modulation mode can be adopted in the transmission to accomplish the link adaptation task. When the RSSI level becomes lower it means, in normal situation, it moves and leaves away from its serving BS and the situation of its receiving interferences from other BSs becomes more serious and consequently we can determine how often the pilot patterns need be changed per unit of time to reduce possible interference effects coming from other BSs.

2. Determining the Revolving Period of Pilot Pattern Based on the RSSI Level and the Link Adaptation Scheme

As shown in Fig. 1 when MS moves close to the serving BS its RSSI level is high and meanwhile it suffers lower interference level from other BSs and the pilot pattern will also be less affected by the interference, we can then use 64 QAM as the modulation mode in the transmission of data and the period to keep the same pilot pattern in the transmission can also be held longer, this period can be in the Superframe range. As the MS moves away from the serving BS, its receiving RSSI becomes lower the data transmission mode may be changed from 64 QAM to 16 QAM and then go to QPSK to reflect the lower receiving RSSI level. The period of changing pilot patterns will then become shorter to reflect the possible interference levels the periods to change pilot patterns may be in the Frame range when the modulation mode is 16 QAM or in the Subframe range when it uses the QPSK in its transmission. In Fig.2 we define three levels High (H), Medium (M) and Low (L) to reflect three corresponding RSSI levels so that when the received RSSI level falls in a particular range its pilot pattern will revolve in a period as specified in the table, e.g. when the RSSI level lies between H and M ranges the pilot pattern will be changed in the Frame time period.



	64 QAM	16 QAM	QPSK
	Super Frame	Frame	Sub Frame
	Super Frame	Frame	Sub Frame
	Super Frame	Frame	Sub Frame
	Super Frame	Frame	Sub Frame

Fig. 1 Link Adaptation and Pilot Pattern Revolving Period

Super Frame	RSSI > H
Frame	M < RSSI < H
Sub Frame	L < RSSI < M

Fig. 2 RSSI Levels and Pilot Patterns Revolving Period

Text Proposal for the 'Link Adaptation Schemes/UL MIMO Schemes'

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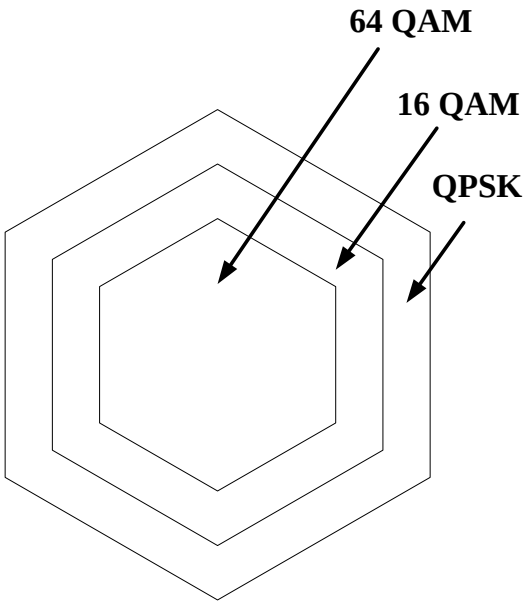
XX. Link Adaptation Schemes

XX.X.1 Pilot Patterns Revolving Period Based on the Location Area in the BS

As shown in Fig.X.1 are the recommended pilot patterns revolving periods when different modulation schemes are exploited in different areas of the BS.



	64 QAM	16 QAM	QPSK
	Super Frame	Frame	Sub Frame
	Super Frame	Frame	Sub Frame
	Super Frame	Frame	Sub Frame
	Super Frame	Frame	Sub Frame

Fig. X.1 Pilot Pattern Revolving Period for the Modulation Schemes exploited in the Different Areas of the BS.

XX.X.2 Pilot Patterns Revolving Period Based on RSSI Levels

As shown in Fig.X.2 are the recommended pilot patterns revolving periods based on RSSI levels.

Super Frame	RSSI > H
Frame	M < RSSI < H
Sub Frame	L < RSSI < M

Fig.X.2 Pilot Pattern Revolving Period Based on RSSI Levels

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