Project	**IEEE 802.16 Broadband Wireless Access Working Group** <http://ieee802.org/16>
Title	**Proposed Changes to IR HARQ Bit Selection (15.3.12.3.1) for IEEE P802.16m/D1**
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Re:	Category: P802.16m/D1 comments for LB30 Area: Chapter 15.3.12 (Channel coding and HARQ)
Abstract	This contribution examines the performance of the DL and UL bit selection schemes for DL IR transmissions and determines their performance to be virtually identical. As the UL bit selection scheme is the simpler of the two, it is proposed to support only the UL bit selection for both DL and UL IR transmissions.
Purpose	To be discussed and adopted by TGm for the P802.16m D1 Draft.
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Proposed Changes to IR HARQ Bit Selection (15.3.12.3.1) for the IEEE P802.16m/D1

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1. Introduction

In Section 15.3.12.3.1 of P8021.6m/D1, two different IR bit selection schemes for the DL and UL are defined with respect to the HARQ buffer starting position $P_{i,k}$. Below a performance comparison of the two schemes is shown in terms of achieved spectral efficiency with 5 HARQ transmission attempts in UMA channel conditions. A detailed simulation description is given in Table 1. Spectral efficiency versus SNR of the two schemes is shown in Figure 1. As evident from the figure, the performance of the two bit selection methods is virtually identical on the DL. As the UL method is the simpler of the two, it is then proposed to unify the DL and UL bit selection methods and to support only the current UL bit selection method for both DL and UL transmissions. Proposed text changes for implementing this proposal in P802.16m/D1 are outlined in the next section.

Channel type	UMA
Speed	30 km/h
Allocation size	12 PRUs
Allocation type	DRU
FEC Block size	145 bytes
Modulation	QPSK
Number of attempts	5
MIMO TX format	OL-SFBC w/non-adaptive precoding
Number TX antennas	4
Number RX antennas	2
Receiver type	MMSE
Channel estimation	Non-ideal

Table 1. LLS parameters for DL versus UL bit selection comparison.

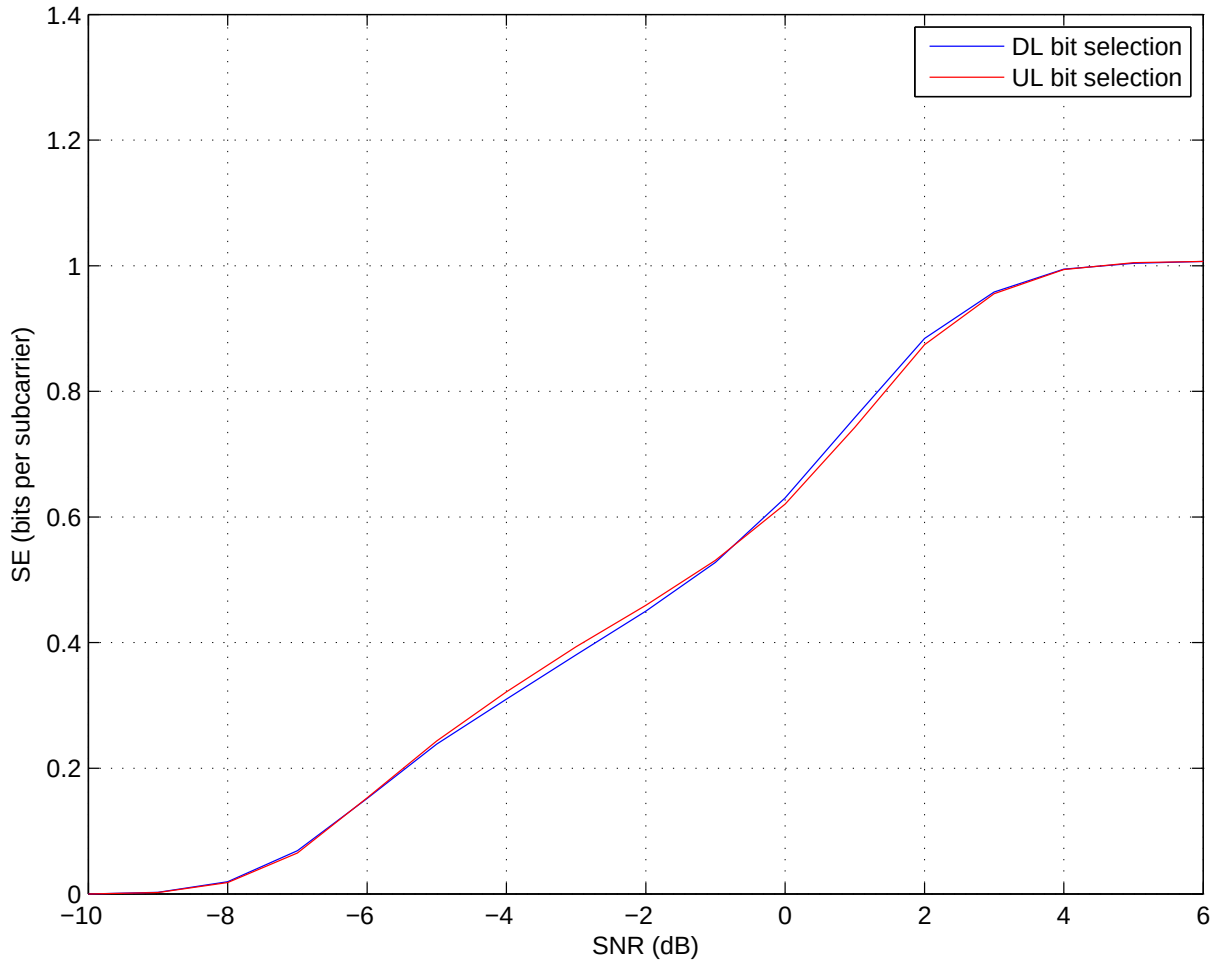

Figure 1. SE comparison of the DL and UL bit selection methods.

---------- Start Text Proposal ----------

< *Modify Subsection 15.3.12.3.1 IR HARQ, lines 10-11, as follows* >

~~For downlink HARQ, the starting point for the bit selection algorithm as described in <<15.3.12.1.5.1>> is determined as a function of SPID using Table 769.~~

< *Delete Table 769 – Starting position determination for downlink HARQ - from Subsection 15.3.12.3.1* >

< *Modify Subsection 15.3.12.3.1 IR HARQ, line 31-32, as follows* >

For uplink and downlink HARQ, the starting position for the bit selection algorithm as described in section <<15.3.12.1.5.1>> is determined as a function of SPID ~~for~~ in Equation (280).

< *Modify Subsection 15.3.12.3.1 IR HARQ, line 38-39, as follows* >

For uplink and downlink HARQ, subpackets shall be transmitted in sequential order. In other words, for the tth transmission, the subpacket ID shall be set to SPID = t mod 4.

-------------------------------------- End of Text Proposal --