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| Source: | Wen Tong, Peiying Zhu, Jianglei Ma, Ming Jia, Hang Zhang and Mo-Han Fong<br>Nortel Networks<br>3500 Carling Avenue<br>Ottawa, ON. K2H 8E9<br>CANADA<br>Voice: (613)-763-1315<br>Fax: (613)-765-7723<br>wentong@nortelnetworks.com |
| Re: | IEEE 802.16e D2 Draft |
| Abstract | Enhance MISO for single antenna MSS reception |
| Purpose | To incorporate the changes here proposed into the 802.16e D2 draft. |
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# Reception of the Spatial Multiplexing signaling by using single receive antenna for 802.16e OFDMA

## 1 Background

The reception of the two-transmit spatial multiplexing (SM) signal requires at least two transmit antennas being employed. In order to keep the MSS low-cost, it is desirable that the spatial multiplexing signal can be decoded by using single antenna. In this contribution, we discuss a time domain fractional sampled transmission and reception of the spatial multiplexing signaling to allow using single antenna to demodulate the 2-transmit BLAST signal.

### *1.1 Time domain fractional sampling based BLAST*

For the 2x1 MISO transmissions, the OFDM pre-coded waveform in time-domain can support the single antenna MSS reception for the DL spatial multiplexing transmission as shown in Figure 1.

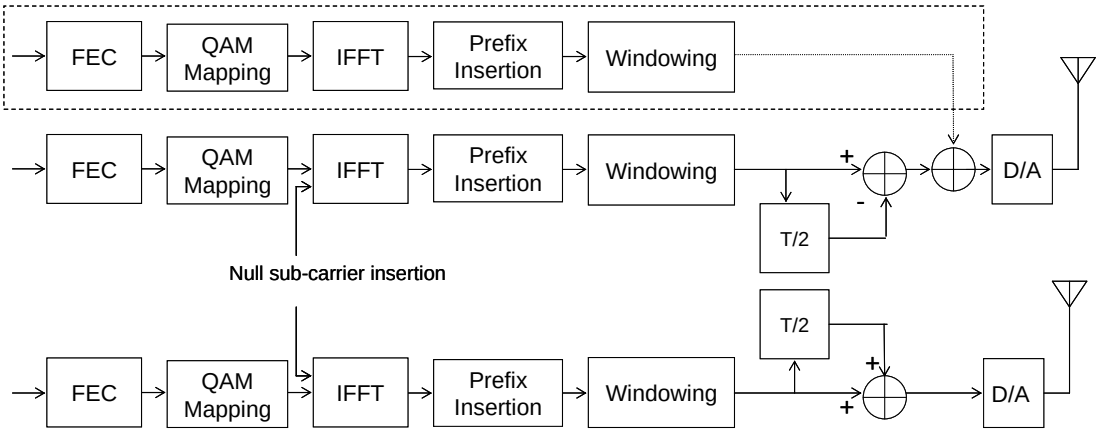


Figure 1 2x2, 2x4 MISO/MIMO transmission

In this case, the SM transmission sub-channel is pre-encoded in time domain. The receiver structure is shown in Figure 2. The single antenna receiver performs ½ space fractional sampling and arrangement the even sample and old samples as two distinct receive chains to perform the MLD decoding of spatial multiplexing. The same scheme can be used for the dual-antenna receive MSS to achieve 2x4 MIMO SM reception.

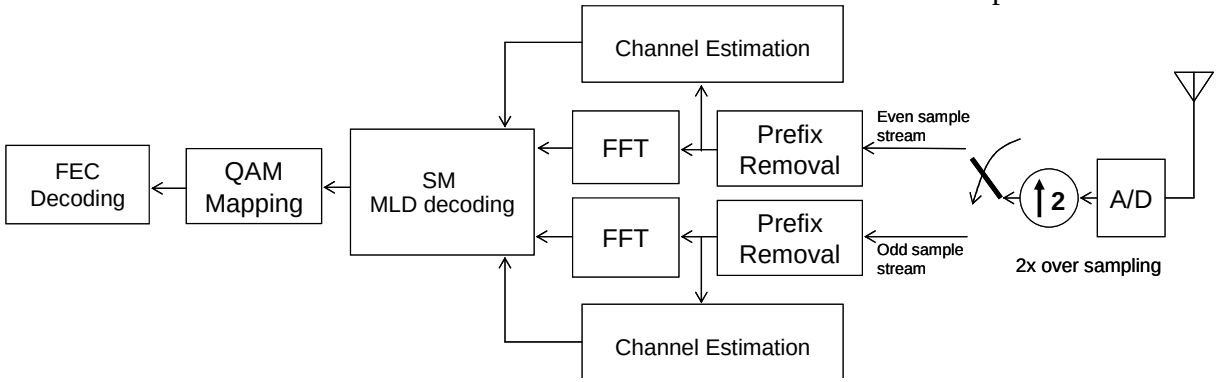


Figure 2 Fractional sampled receiver