MIMO MMSE Decoder

Features
● Includes QR Decomposition, Dynamic scale and K-best Decoder
● Fixed Depth K-Best Decoder (K=16)

● Achieves close-to ML BER performance
● Supports synchronized streams with different QAM (from BPSK to 64 QAM) dependent on MIMO mode
● Supports square and non-square QAM
● Supports OFDM based systems with different Space Time Coding (STC)

● Soft input soft output
● Supports (MIMO 2X2) or (MIMO 3X3) or (MIMO 4X4), selectable during run time

● Sliding window algorithm for internal memory reduction.
● Uses parallel internal interleaver/de-interleaver

System Overview
The MIMO Decoder accepts two independent input streams, and the channel estimation matrix as shown in Fig. 1. The inputs to the MIMO Decoder are the estimated channel matrix and the received vector of symbols. Since the transmitted symbols could be pre-coded, some processing may be needed (optional) at the beginning of the detection. The QR decomposition $(\mathbf{QR} = \hat{\mathbf{H}})$ is performed in preparation for the K-Best decoding. The outputs of the QR decomposition $(\mathbf{R})$ and $(Z = Q^H \hat{y})$ are fed to the K-Best decoder.

Application Areas
● MIMO Systems
● Wi-Fi IEEE 802.11n/ac
● WiMAX 802.16e
● LTE standard
● RFID
● DVB-NGH

Deliverables
● Synthesizable Verilog
● System Model (Matlab)
● Verilog Test Benches
● Documentation

A comprehensive MIMO MMSE decoder datasheet can be provided under an NDA, please contact info@global-ipc.com.