

# Jordan University of Science and Technology

## SFBC-MIMO-CDMA Up-Link Performance Under combined Code and Channel Impairments

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**Abstract:** Closed form expressions for the bit error rate (BER) performance of the up link of the space-frequency block-coded multiple input multiple output code-division multiple-access (SFBC-MIMO-CDMA) systems are derived and evaluated. The multiplicative effects of channel estimation errors, code cross-correlation and user channel cross-correlation on the BER are studied. Both Gold and PN sequences are considered. Rayleigh fading channels are considered. We consider both the Marray phase shift keying (MPSK) and the Marray quadrature amplitude modulation (MQAM) techniques. We compute the analysis results for a wide range of the various parameters involved (M-array size, number of OFDM carriers... etc) as well as different SFBC-MIMO-CDMA configurations. Such evaluations are crucial not only for system performance prediction, but also for network management, monitoring and future cross-layer design.