

Nuno Souto, João Carlos Silva, Américo Correia, Francisco Cercas, António Rodrigues, Mário M. Silva, "HSDPA Performance Results with Enhanced TX/RX Schemes" SEACORN Workshop on Simulation of Enhanced UMTS Access and Core Networks, Cambridge, UK, March 23, 2004;

Abstract: This paper addresses the performance of the downlink High Speed Data Packet Access (HSDPA) in multipath fading channels using several enhancement schemes applied both at the transmitter and at the receiver.

3GPP specifications define several transmit diversity schemes for two antennas, namely the standardized closed loop modes 1 and 2 and the open loop Space Time Transmit Diversity (STTD). This paper studies these techniques but also other transmitting schemes such as open loop modes using space time block codes (STBC's) for 4 and 8 transmitting antennas, Selective Transmit Diversity (STD) and hybrid modes combining space time block codes and STD.

It is shown that the multipath interference introduced by the channel induces a severe performance loss, which is especially relevant for the CQIs with 16-QAM modulation, using several simultaneous physical channels. A Multipath Interference Canceller (MPIC) using clipped soft decision (CSD) is proposed for suppressing this multipath interference at the receiver. The performance impact of all these techniques is compared and evaluated using a HSDPA link level simulator.