# “Bit Error Rate Performance Analysis of a Threshold-Based Generalized Selection Combining Scheme in Nakagami Fading Channels”

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## Abstract

The severity of fading on mobile communication channels calls for the combining of multiple diversity sources to achieve acceptable error rate performance. Traditional approaches perform the combining of the different diversity sources using either the conventional selective diversity combining (CSC), equal-gain combining (EGC), or maximal-ratio combining (MRC) schemes. CSC and MRC are the two extremes of compromise between performance quality and complexity. Some researches have proposed a generalized selection combining scheme (GSC) that combines the best M branches out of the L available diversity resources ($M \leq L$). In this paper, we analyze a generalized selection combining scheme based on a threshold criterion rather than a fixed-size subset of the best channels. In this scheme, only those diversity branches whose energy levels are above a specified threshold are combined. Closed-form analytical solutions for the BER performances of this scheme over Nakagami fading channels are derived. We also discuss the merits of this scheme over GSC.