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## Moment Generating Function of the Generalized alpha-mu Distribution with Applications

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**Abstract:** In this letter, we consider the  $\alpha$ - $\mu$  channel fading model and we evaluate the moment generating function (MGF) for the probability density function characterizing this new channel model. The derived MGF expression is used in evaluating the bit error rate for different coherent modulation techniques over this generalized fading channel. We also derive an expression for the outage probability for this channel model. All the derived expressions are in closed forms and general that can reduce to the well-known fading channel distributions in the literature such as Rayleigh, Nakagami-m, and Weibull model as special cases