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Outage probability analysis of multi-hop relayed wireless networks over Eta-Mu fading channels

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Abstract: In this paper, we study the outage probability of multi-hop relayed wireless networks assuming independent but not necessarily identically distributed Eta-Mu fading channels. In our analysis, we consider both regenerative and non-regenerative relays. To this end, we provide a novel expression for the moment generating function (MGF) of the reciprocal of the end-to-end signal-to-noise ratio (SNR) and we then use this expression to evaluate the end-to-end outage probability of the non-regenerative network via numerical inversion of the Laplace transform. Moreover, we provide a novel expression for the end-to-end outage probability of the regenerative network. It is worth mentioning here that the derived expressions can be reduced to several other expressions, such as Rayleigh, Nakagami-m, Hoyt, and One-sided Gaussian fading channels. Numerical and simulation results are provided to show the tightness of the derived expressions.