

ERROR PERFORMANCE of NCBFSK WIRELESS COMMUNICATION SYSTEMS WITH CO-CHANNEL INTERFERENCE in NAKAGAMI FADING CHANNELS

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Abstract—In this paper, the bit error rate (BER) performance of non-coherent binary frequency shift keying (NCBFSK) communication systems with co-channel interference at the receiver side is analyzed in Nakagami- m fading channels with arbitrary (integer as well as non-integer) values of m . This channel condition is assumed for both the desired signal as well as the co-channel interfering signals. In addition, the practical case of unequal average fading powers between the interference signals is assumed in the analysis. Accurate closed-form approximate expression for the BER performance of the modulation scheme under study is derived. The analysis assumes an arbitrary number of independent and non-identically distributed (i.n.i.d.) interfering signals at the receiver. The derived closed-form expression is simple and easy to evaluate as compared to the one using simulation.

Keywords: FSK, Nakagami- m , BER, Wireless Communication.

References:

- [1] J.C.S. Santos Filho and M. D. Yacoub, "Nakagami- m approximation to the sum of M non-identical independent Nakagami- m variates," IET Electron. Lett., vol. 40 no. 15, pp. 951-952. Jul. 2004.
- [2] Cvetković, A.M., Āorević, G.T. , Stefanović, M.C. , "Performance of interference-limited dual-hop non-regenerative relays over Rayleigh fading channels," Communications, IET, 17 January 2011.

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