Performance Analysis of Odd Bit QAM Constellation

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Abstract

Quadrature Amplitude Modulation (QAM) is used for transmission at high data rate in band-limited channels. A great deal of attention has been devoted to derive expressions for bit error probability of QAM. In this paper, a generalized expression for bit error rate (BER) for odd bit QAM using symmetry properties of Gray code is derived and its performance is compared with existing closed form expression for arbitrary QAM constellation. New BER expression offers a convenient way to evaluate the performance of odd bit QAM for various cases of practical interest.