ANALYSIS OF THE ENERGY CHARACTERISTICS OF M – QAM SIGNALS AT TURNING OF SIGNAL CONSTELLATIONS

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The paper considers the effect of the rotation of the signal constellation on the energy characteristics (signal to noise ratio) of quadrature multi-point modulation methods. Based on the error vector in the Matlab + Simulink simulation environment, models of M - QAM modulators and demodulators with rotation of the signal constellations at an arbitrary angle are elaborated. The most commonly used in digital data transmission systems modulation: 4-QAM, 16-QAM, 64-QAM and 256-QAM are considered. The simulation results of the proposed models confirmed the coincidence of the values of the rotation angles of the signal constellations recommended by the DVB-T2 standard, and also revealed the new additional values of the angles that can be used to improve the energy characteristics (signal to noise ratio) of multipositional quadrature modulation methods. This, in turn, allows to reduce the power of the transmitting station, creating a system with more economical performances.

Keywords: *error vector, noise immunity, signal constellation, quadrature reception, rotation of the signal constellation.*

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