Features of Calculation and Designing of High-Speed Radio Links of Earth Remote Sensing Spacecraft

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Abstract. The paper discusses the issues of selecting the parameters of a "thin" structure of the modulated signals to optimize frequency-energy resources when designing a high-speed (hundreds and thousands of Mbit/s) radio links for data transfer. Their features is application of signal-code constructs with the kinds of a high-order modulation and coding methods with high code rates.

Based on the analysis of a model of a radio link with nonlinearity, which limits a peak power in the output of the power cascade of the transmitter and a modulating signal with a nonzero value of a crest factor, the estimations of the main characteristics of a radio link are made.

It is marked, that the results received in the paper, are expedient to use during designing, tests, measurements, and optimization of the parameters of onboard and ground complexes of the radio lines of high-speed data transmission aimed to operate in Earth remote sensing (ERS) systems.

Keywords: high-speed radio links, modulated signals, signal-code constructs, frequency-energy resources, Nyquist filter, crest factor