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Optimization of Transmission in The Satellite System For Determined Locations of The Ground Station*

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Abstract

In most cases, the exchange of business information is carried out via fixed fiber optic links or wireless links (mobile telephony). In special cases, when business activity is conducted in places with no access to developed telecommunications infrastructure, the only solution is to use satellite communication. At the same time, the use of this solution ensures global communication, i.e., between any points located on Earth. The advantage of this communication is high resistance to environmental disasters and terrorist attacks, which is important in the implementation of special purpose business contracts. Currently, the GEO (Geostationary Earth Orbit, approx. 36,000 km) geostationary links are commonly used in satellite communication. In the case of these links, the field infrastructure contributes to the limitation of information transmission possibilities, which plays a special role at latitudes of 25-70 degrees.

The article is devoted to the assessment of the influence of the complex terrain structure and the visibility of satellites on the quality of satellite links. Here, the main attention is focused on the practical verification of link quality, which ensures the development of a methodology for selecting the optimal location of communication devices in the environment in relation to the satellite. The presented results of measurements carried out in Poland indicate the necessity to select a satellite located at the optimal geographical length of the GEO orbit. This choice ensures the implementation of a link with sufficient transmission quality for the transmitted information. The general algorithm for selecting the device location and satellite selection is presented in this article.

Keyword: satellite communications, measures of the quality of information transmission

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