

ABOUT THE ELECTROMAGNETIC COMPATIBILITY OF RADIO COMMUNICATION SYSTEMS

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Abstract – This article is dedicated to the comparative analysis of two methods for estimating electromagnetic compatibility for radio communication systems. The first method makes it possible to determine the permissible noise power in relation to the average signal strength, and in the case of the second method, the period of time for which the radio communications are interrupted is determined on the basis of the convolution of the signal and the noise.

The first method leads to erroneous results in estimating the electromagnetic compatibility of radio communication systems and to the insufficient use of the radio frequency spectrum, as statistics for signal and noise are not taken into account. In order to increase the certainty of the evaluation of the electromagnetic compatibility of radio communication systems, it is proposed to perform a comparative analysis of the first method with the method in which the period of radio communications inactivity is evaluated based on the convolution of statistics for signal and noise.

Thus, for each of the two methods was obtained the dependence of the time difference of radio communications inactivity depending on the signal-to-noise ratio. Estimation of statistics for signal and noise within the radio communications was performed based on ITU-R Recommendations P. 525, P. 526 and P. 452 [1-3].

Keywords: Radio communication systems, electromagnetic compatibility.

References:

- [1] ITU-R Recommendations P. 525: Calculation of free-space attenuation. Approved in 2019-08.
- [2] ITU-R Recommendations P. 526: Propagation by diffraction. Approved in 2019-10.
- [3] ITU-R Recommendations P. 452: Prediction procedure for the evaluation of interference between stations on the surface of the Earth at frequencies about 0,1 and 0,7 GHz. . Approved in 2015-07.