

Model of the signal reflected from passive dipole reflector cloud interference

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The article describes the model of a radio signal reflected from a dipole reflector cloud. The model is necessary for developing noise-protected algorithms for the on-board radar system operation. The resultant signal is calculated, its characteristics are determined on the computer. Initial data are presented for dipole reflector clouds with a large, medium and short lifetime. A technique for modeling radio signals is developed taking into account the mutual influence of the dipoles and the effect of dipoles shading by the impending dipoles. To reduce the calculation time, the concept of an elementary volume containing a certain number of dipoles is introduced into the methodology. Probabilistic laws for the distribution of the effective scattering surface of elementary volumes are obtained to allow for the random nature of the radio signal reflection from the dipole reflector cloud and the randomness of the amplitude and phase of the reflected signal. The possibility of obtaining signal implementation close to real is shown.

Keywords: dipole reflector clouds, reflected signal, statistical characteristics, quadrature

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