INVESTIGATION OF BACKSCATTERING OF RESONANT DIELECTRIC MAGNETIC DIPOLES AT DIFFERENT ANGLES OF INCIDENCE OF A PLANE ELECTROMAGNETIC WAVE IN THE MICROWAVE RANGE

Pecherkin V. Ya.,* Vasilyak L.M., Vetchinin S.P., Privalov P.A.

JIHT RAS, Moscow, Russia

**vpecherkin@yandex.ru*

The aim of this paper was to investigate the amplitude of the backscattering resonance frequency dependence on the angle between the plane of dielectric magnetic dipoles in the form of a ring or an ellipse and the magnetic field vector and to check the theoretically predicted disappearance of scattering at zero angle between the plane of the ring and the magnetic field vector. The network analyzer Agilent E5071C ENA was used to generate and record the emission spectra of the GHz band. The magnetic field was recorded by a shielded probe with a sensing circle element diameter of 3.8 mm. Magnetic response measurements for the ring with dimensions of 16x10x3 mm and ellipse with dimensions of large and small axes of 51 and 11 mm, respectively, with rectangle cross-section of 5x7 mm were made every 10 degree. The experimental data showed that the resonance value frequency of magnetic dipoles does not depend on the angle of rotation of the dielectric ring relative to the magnetic field vector. At the zero angle of the dipoles plane location to the magnetic field vector, the signal of the main resonance frequency disappears, which corresponds to the results of numerical simulation. The work is supported by the grant in the form of a subsidy for a large scientific project in priority areas of scientific and technological development No. 13.1902.21.0035.