In the experimental studies of possibilities of the use of the process of third-harmonic generation as a method of diagnostics of plasma in the air that occurs when filamentation of high-power femtosecond laser radiation in near IR range ($\lambda$=1,24 μm, $\tau$=140fs), with high spatial resolution (~$\lambda$/NA) . A numerical model of the process of third-harmonic generation with focused femtosecond laser radiation in the regime of plasma formation in the air. Analyzing the obtained results, it is concluded that the process of third-harmonic generation can be used as a method of 3D microscopy to characterize the position and size of a region of plasma in the air generated by the filament. The obtained values of the diameter and length of the plasma channel of the filament: 100±20 μm and 5.5±0.5 mm respectively. The potentialities of the method are illustrated by the results of the experiments on 3D-microscopy of an optical breakdown plasma in the air that occurs during the generation of the filament.