

Mixer of Optical and Microwave Frequencies Based on the LFD-2a Photodetector

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Abstract. A mixer for optical frequencies (corresponding to a wavelength of 0.85–1.2 μm) and microwave frequencies (up to 200 GHz) based on APD-2a has been created. Preliminary experimental results of a study of a structure (hereinafter referred to as MLPD) consisting of an LPD-2a germanium structure and a discharge electrode, which serves as an antenna for a microwave field placed in a waveguide, are presented. The resulting signal is removed from the lead-off electrode and used to supply an optimizing offset. The detecting and mixing properties (MLPD) have been investigated. It is shown that high sensitivity for the detection of both laser radiation, corresponding to the LFD-2a photodiode, and microwave radiation are preserved. The speed of the created mixer MLPD exceeds 200 GHz. The efficiency of the device for mixing laser and microwave radiation is shown.

Key words: photodetector, mixer, laser, microwave radiation.

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The paper has been received on 21/06/2021