

Dependence of the light characteristics of a cesium repetitively pulsed discharge on the operating modes of the lamp

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The results of a study of the relationship between the light characteristics of a cesium pulse-periodic discharge and the modes of electric power supply of a gas-discharge lamp are presented. A technical solution was developed for the generator of short ($\sim 10 \mu\text{s}$) bipolar current pulses in the form of a series of several pulses with adjustable pauses between series, on which the characteristics of a repetitively pulsed discharge were compared with the lamp parameters in single pulse modes with a duration corresponding to the time length of the series. In the case of a repetitively pulsed discharge, it was found that the achieved value of light output $\eta = 50 \text{ lm/W}$ is significantly lower than the maximum η (63 lm/W) obtained when the lamp was operated in single pulse mode with a peak current of 40 A. At the same time, it was shown that when. At the same peak current values (20 A), the dependence of light output on the electric power of the lamp in both modes turns out to be almost identical, which makes it possible compact ballasts to create for cesium lamps of a pulsed-periodic discharge.

Keywords: gas discharge, cesium, luminous flux, recombination continuum, plasma concentration and temperature, ultraviolet radiation.

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