

## GASEOUS DISCHARGE PLASMA SWITCHING IN OVERSIZED INTERFERENCE MICROWAVE SWITCHES\*

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The report presents the results of the experimental study of gaseous discharge plasma switching in interference oversized switches of X-band active resonant compressors. Switching in the spontaneous breakdown mode was initiated by considerable discontinuity at an electric field antinode in the switching arm. The study was conducted for the interference switch made of the rectangular waveguide with the cross section area of  $50 \times 25$  mm<sup>2</sup> [1] and for the switch with the combination of the rectangular waveguide of  $50 \times 25$  mm<sup>2</sup> cross section and the circular waveguide having the diameter of 50 mm [2]. At plasma gas-discharge switching the threshold nature of effective acting initiated by discontinuity in the form of a thin copper wire introduced into the arm through the cut-off frequency waveguide was found. The switching efficiency as a function of the wire length was determined. The conditions for effective switching with the sequential cascade of the oversized switches are obtained. It is shown the effective switching in oversized interference microwave switches is possible and may be identical to switching in the single-moded switches.

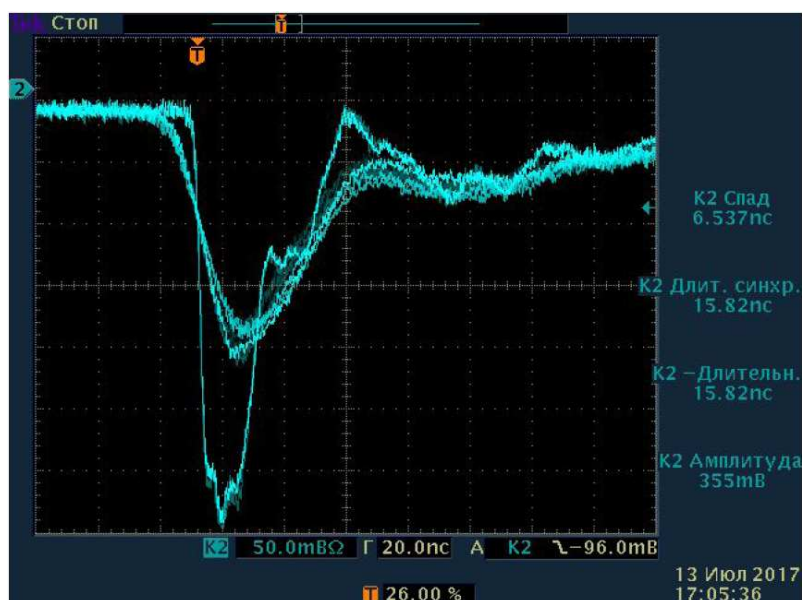


Fig. 1. The oscillogram showing the change in the parameters of the output pulse of the active resonant microwave compressor when the threshold is passed. The interference switch was made of oversized waveguides

### REFERENCES

- [1] V.A. Avgustinovich, S.N. Artemenko, A.A. Zhukov // Technical Physics Letters. – 2013 – Vol.39. – №5. P.492-494.
- [2] S. N. Artemenko, S. A. Gorev, V. S. Igumnov, and R. E. Beverly // Proc. IEEE Int. Power Modulator and High Voltage Conf., San Francisco. CA. US. 5 – 9 July. – 2016.

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