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Forming of long nanosecond pulses with the rectangular envelope in a compact active microwave pulse compressor.¹ VLADISLAV IGUMNOV, STANISLAV GOREV, SERGEY ARTEMENKO, National Research Tomsk Polytechnic University — The paper presents the results of research of a compact, compared to the length of the emitted wave train, active microwave compression systems. This system allow for generating high power microwave pulses with the duration from ~ 10 ns to ~ 100 ns and a rectangular pulse shape. The variant of the compression system is based on an oversized cylindrical cavity, which generates TE_{0mn} ($m, n > 1$) type oscillations and is composed of a set of $(m-1)$ circular waveguide sections. The sections are embedded coaxially into the cavity volume. The sections have the same diameter as that of the boundaries of radial variant of working mode oscillation and also have a length of half wave less than the working wavelength of the cavity. They fixed at the input and output of the end of the cavity wall. Thus, a set of waveguide sections forms a slow-wave structure, which increased travel time of wave into the volume of a cavity. The energy output device for the cavity is designed as an interference microwave switch based on the H-tee. It was shown experimentally that such compressors form nearly rectangular shaped microwave pulses. The power of the output pulse is comparable to the power of the waves in the classical microwave compression systems.

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