

Vilnius Gediminas Technical University
Faculty of Electronics
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ISBN	ISSN
Copies No.	
Date-.....-.....	

Master Degree Studies **Electronics Engineering** study programme Master Graduation Thesis

Title	Modeling and Investigation of Microstrip Microwave Filters
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Thesis language: Lithuanian

Annotation

The purpose of this work - to investigate the transmission and reflection characteristics of microstrip microwave filters and to determine the central frequency control capabilities of these filters. For this purpose, an analytical review of work on microstrip filters was made, an analysis of the dependencies of the relative dielectric permittivity parameter of ferroelectric materials was made, algorithms and programs for calculating microstrip dimensions was developed and two ferroelectric Parallel-Coupled Half-Wavelength Resonator filters was made and investigated. One of them uses 1 μm thick substrate, other uses 2 μm thick substrate. Respectively center frequencies are 31 GHz and 30,6 GHz, tunability at 20 V bias voltage are 31,7 % and 21,15 %, insertion losses (when $E=0$) are 10,8 dB and 8,7 dB, return losses are 3 dB and 4 dB. Such parameters of simulated filters meet the task conditions, because the filters have high tunability at low bias voltage (up to 20 V).

Modeling and Research of Microstrip Microwave Filters. Master's Thesis for Electronics Engineering Degree. Vilnius Gediminas Technical University. Vilnius, 2019, 53 p., 21 illustrations, 5 tables, 35 bibl., 2 appendixes.

Keywords: tunable, microstrip, band-pass, microwave, thin-film, ferroelectric, filter, MATLAB, Sonnet, relative, dielectric permittivity, barium, strontium, titanate, center frequency.