ECE320: Fields and Waves

Lab 3 Report: Design of a Double Stub Matching Network

PRA106

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1 Introduction

This laboratory session was focused on investigating the voltage standing wave (VSW) pattern along a microstrip transmission line, as well as its depedance on the load impedance. Figure 1 shows the schematic for a double-stub tuner and its equivalent circuit.

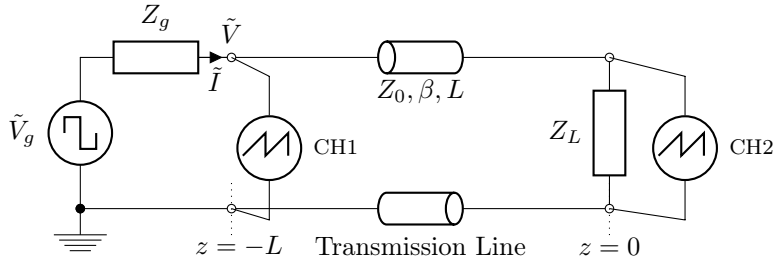

Figure 1: A double-stub matching network

2 Measurement of the Unknown Load Impedance

Parameter	**Value**
L_1	12.15 cm
L_2	48.697 cm
L_1'	16.88 cm
L_2'	16.69 cm

Table 1: Theoretically calculated stub length pairs

3 Smith Charts and the Graphical Matching Process

4 Designing a Double-stub Matching Network

5 Experimental Determination

6 Bandwidth Calculations

7 Notes

All images taken during the lab were post-processed in a batch using a custom script that bit-wise inverts the pixels and binarizes the resulting image based on a custom threshold. No adjustments or modifications were made to the readings, for which the measurements on the VNA are also shown alongside the waveforms. All scripts and related work can be found at `github.com/pranshumalik14/ece320-labs`.