

ABSTRACT

This final assignment represented a prototype of 180° hybrid with lumped element. A hybrid or a directional coupler is a passive network which means it didn't produce powers. Its network consists of two elements, capacitors and inductors. There is a certain specification for capacitors and inductors in sell. Those for scant the dimension, economical, and reach high local contents need homemade inductors and capacitors. And for make it a new experience.

The engineering process are : making the passive elements (capacitors and inductors), making PCB, building each elements into PCB.

System testing shows specifications of this prototype. 200 MHz bandwidth was gotten at VSWR port 1 = 1.28 at 800 MHz and 1,24 at 1000 MHz, port 2 = 1.359 at 800 MHz and 1.41 at 1000 MHz, port 3 = 1.072 at 800 MHz and 1.494 at 1000 MHz, and port 4 = 1.291 at 800 MHz and 1.383 at 1000 MHz. Coupling factor minimum = 4.5 dB at 850 MHz and maximum = 9.8 dB at 1000 MHz. Directivity minimum = 15.9 dB at 900 MHz and maximum = 31.5 dB at 1000 MHz. Isolation minimum = 21.9 dB at 900 MHz and maximum = 38.5 dB at 1000 MHz. Insertion loss minimum = -0.67 dB at 800 MHz and maksimum = 1.83 dB at 950 MHz.

Key words : 180° hybrid, lumped element, four-port network.