ABSTRACT

Power divider is a subsystem in telecommunication device system which has important using in power amplifier, transmitter, and antenna array. Power divider is realized by using the concept of lumped element. It has one input, two outputs, and the characteristics impedance is different for each port.

In this final project was realized an Unequal Power Divider which respectively having two output ports with 1:4 ratio of output power, wide frequency band at 400 – 1000 MHz. Then, within five months, it has been designed and realized an 1:4 unequal power divider with Wilkinson method and realized using lumped element, the amount of VSWR to be achieved ≤1.5, the isolation between the output port to be achieved ≥ 20 dB, and the insertion loss to be achieved < 0,5 dB.

To determine the performance of the power divider which has been realized, in this final project has also carried out measurements of a power divider with predetermined specifications. The measurement results power divider with Epoxy/FR-4 material for insertion loss ranged from 0,2 – 0,8 dB, VSWR maximum of 1,5598, the maximum return loss is -21, 896, and isolation between the output ports anges from 35-50 dB.

From the measurement data can be seen that power divider already having an output between the output port with an unbalanced ratio of 1:4, the first output ranging from -7 dB, while the second output -1 dB. Insertion loss at some point do not meet the original specification frequency > 0,5 dB, where results obtained ranged from 0,2 - 0,8 dB. The maximum VSWR value 1,5598 with initial specifications VSWR ≤ 0,5. Maximum return loss is -21,896 dB. Whereas isolation ranged from 35-50 dB and meets the specifications of ≥ 20 dB.

Key words: unequal power divider, lumped element, Wilkinson method