

ABSTRACT

Power divider is a device as a volt connector and separator, the volt flows to signal generators and vice versa. This process will change the input signal to the output with the same phase. Its core principle is providing the high isolation between outputs by limiting the effect of signal reflection because of lossless reciprocal, and three-*port* networks don't have *ports* match at the same time. The purpose of using the EBG method is to create a wide *bandwidth* with its width more than 500MHz when the coupling effect appears. Then, adding another resistor to work on the *port* output match and the *port* 2 and *port* 3 will be fully-isolated in the mid-frequency.

This thesis will objectify the *power divider* 1:2 with EBG method using Roger PCB material series 5880 to apply the Air Surveillance Radar research. Steps to process the *power divider* are calculating its specification using the CST software, then creating the simulation and objectifying the *power divider* itself. After simulating, objectifying and estimating the *power divider*, required parameters will be issued, such as *bandwidth* ≥ 500 MHz, *return loss* ≥ -10 dB, 50Ω impedance and *insertion loss* ± 3 dB.

By using this *power divider*, the output is the *bandwidth* more than 500 MHz which will be settled on the transmitter and receiver. The placement position is needed to be settled with a directional coupler after the LNA and right before the amplifier.

Keywords: *Power divider*, EBG, Air Surveillance Radar.