ABSTRACT

Airport surveillance radar is a radar used at airport to detect and display the presence and position in the aircraft terminal aircraft terminal which has two types of system, the Primary and Secondary radar.

In this design, a band pass filter for ASR will be placed the in primary radar block. The filter has an important function to pass the frequency needed. In this case, the filter will pass the frequencies between 2.75 — 2.85 GHz or 100 MHz bandwidth with 2.8 GHz central frequency, which bandwidth -3 dB is 100 MHz that designed of Chebyshev filter by microstrip line that is types of transmission line which the path is combline that filter have structure of resonators connected by ground. The nature of combline filter is the attenuation is unlimited to wavelength resonators. However, the main pass band resonator is very high and depends on the resonator length at center of the pass band, while the cut rate on the top side on the pass band can be made steeply The result of the filter output would be implemented by the network analyzer. After the filter spec is found, the simulation process would be implemented in CST in CST design studio suite to analyze an ideal design, then the result of the simulation is checked to qualify the standard of the implemented design in the hardware After the realization process in combline band pass filter, there are several parameters that will be analyzed at the parameters of this proto-type, such as frequency response, insertion loss, return loss, central frequency, and bandwidth.

The spec of this result passed the 72.5 MHz bandwidth at frequency worked|2.91 GHz, insertion loss is -5.758 dB, and minimum return loss is -27.5 dB.

Keywords: *Airport surveillance radar, band pass filter, combline, mirostrip line.*