

ABSTRACT

Archimedean spiral microstrip antenna is one type of microstrip antenna, which consists of a patch (conductor) spiral shaped and printed on a substrate. This antenna is capable to working at very high frequencies and ultra wideband. This antenna is applied to passive radar systems that employ Electronic Support Measure (ESM) with a wide frequency (2-18 GHz) and the resulting antenna impedance is 188.5 Ω , so it making difficult to get a VSWR less than 2 in the frequency range. To cover the shortfall, it will be optimized in the design of the antenna.

The final project was prototype design of archimedean spiral microstrip antenna using substrate Rogers RT5880 and the balun matching impedance techniques to match the antenna impedance from 188.5 Ω to 50 Ω to get the antenna VSWR is less than 2 at the antenna operating frequency range 2 - 18 GHz that applied to passive radar system. Antenna design simulation using CST Microwave Studio.

From the results of the prototype design of archimedean spiral antenna with the addition of a balun for impedance matching is obtained values are within specification antenna VSWR ≤ 2 in the frequency range 2-18 GHz with gain $\geq 3\text{dBi}$ and has a bidirectional radiation pattern

Keyword : microstrip, archimedean spiral, wideband, passive radar.