ABSTRACT

Beach monitoring system become something urgent now, it's because many crimes at the side of beach, so it's needed monitoring system with Radar. Radar use spiral archimedean antenna as receiver, passive radar work without using transmitter, so it doesn't need frequency allocated, that's why passive radar use ultra wide band. But, there are two problems, the first is appearing current at the outer of coaxcial cable, and the second is different impedance between antenna spiral archimedean and common coaxial cable, if this condition is forced, it will cause miss-match and of course persuading the performance of balun. So, it's needed balun (balunced-unbalanced) to solve the problems, eliminating current at the outer coaxial cable and make equivalent between antenna and coaxial cable.

This Final Task has been designed and realized a balun for Ultra Wide Band (UWB) microstrip spiral archimedean antenna which applied for receiver antenna at passive radar system. With using tapered balun methode, this balun is used to convert impedance from 50 Ω to 188 Ω. In this final task has been done 4 scenarios to get the best design.

From the design and realization, has been get design result with specifications VSWR $\leq$ 2, Return Loss $\leq$ -10 dB, and for frequency 2-18 GHz. Tapered balun methode which used is 1:12, at the length of substrat is 80 mm, and width of ground is 2X width of patch with modification at w'_{11} and w'_{12}.

Keywords : Balun, UWB, microstrip spiral archimedean antenna, tapered balun