

Abstract: A compact RLSA antenna with polypropylene composite

The research presents the effects of using polypropylene (PP) configuration on the novel radial line slot array (RLSA) antenna. The combination of PP with FR-4 could be affect the value of dielectric permittivity itself. Polypropylene leads the proposed antenna in achieving high gain performance of 40% higher than air gap antenna and 60% over than conventional RLSA antenna. Parametric study has been done towards achieving the optimum antenna performance such as return loss, gain, half-power beamwidth (HPBW), and bandwidth. This proposed novel antenna is capable of shaping its radiated beam in terms of half-power beamwidth (HPBW) and gain up to  $45.3^\circ$  and 10.52 dB ( $\approx 11$  dB) respectively with ability to operate within the frequency range 5.4953 GHz to 5.894 GHz. With all capabilities mentioned, the antenna is highly potential to be deployed for point to point application.