

DESIGNING VIVALDI ANTENNA WITH DEFECTED GROUND STRUCTURE
FOR WIRELESS APPLICATIONS

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ABSTRACT

Abstract - A Vivaldi antenna is fabricated on Rogers Duroid®5870 substrate with Defected Ground Structure on the ground plane. This antenna structure was designed to resonate at 5.28 GHz for Wireless applications. The objective of this thesis focused on investigating whether Vivaldi antenna can be designed using Defected Ground Structure and to reduce the size of the antenna using Dumbbell-Shaped DGS method. Comparison of the designated antennas were made using Vivaldi antenna with Defected Ground Structure for Type 1, Vivaldi antenna with Defected Ground Structure for Type 2 and Non- Defected Ground Structure in term of return loss (S_{11}), gain, bandwidth, directivity and size of reduction. Simulations have been carried out using Computer Simulation Technology Microwave Studio. Vector Network Analyzer (VNA) was used to measure the actual antenna performance. The fabrication has been done for Vivaldi Antenna without DGS and Vivaldi antenna with DGS for Type 2. The simulation and measurement results shows that the designated antenna has improved in terms of size reduction , return loss (S_{11}), gain and bandwidth of antenna by 27.33% x 19.23% compared to the conventional antenna.

Index Terms — Vivaldi Antenna, Defected Ground Structure and Wireless Applications.

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