

Design of a Commercial Off-the-Shelf Patch Antenna with Wide Half Power Beam Width for Global Navigation Satellite Systems Application

Authors : Mannahel Iftikhar, Sara Saeed, Iqra Faryad, Muhammad Subhan

Abstract : This paper describes the design of a low-cost dual-band stacked rhombus-shaped slot patch antenna. The antenna is designed on L-band with a GPS (L2) bandwidth of 0.08 GHz centered at 1.207 GHz and a GPS (L1) bandwidth of 0.23 GHz centered at 1.575 GHz. The antenna's dimensions are 8.02×8.02 cm². The antenna has a 3 dB beamwidth of 100° at 1.204 GHz and 117° at 1.575 GHz. The gain of this antenna is 6.5 dBi at 1.575 GHz and 6.43 dBi at 1.207 GHz. The antenna is designed using commercial off-the-shelf components and can be used in any global navigation satellite system receiver covering L1 and L2 communication bands.

Keywords : circular polarization, enhanced beamwidth, stacked patches, GNSS, satellite communication

Conference Title : ICRAMET 2023 : International Conference on Radar, Antenna, Microwave, Electronics and Telecommunications

Conference Location : New York, United States

Conference Dates : January 30-31, 2023