A Flexible Wideband Microstrip Antenna on TPU Substrate using Inset Slot Feed and Partial Ground Plane

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Abstract

This paper aims to present a flexible and wideband microstrip antenna on a Thermoplastic Polyurethane (TPU) substrate. TPU is used as the substrate in designing the flexible antenna due to its high flexibility, elasticity, and strength properties. The characteristic of the antenna is further enhanced by inserting inset slot feed and using a partial ground plane to improve the resonant frequency and realize a wide bandwidth, respectively. The performance of the proposed antenna is

analyzed and compared with a common antenna design method which typically produces a narrower bandwidth. The antenna shows promising results resonating from 7.5 to 10.2 GHz with a percentage increase of 17.4% in terms of bandwidth, and greater return loss along the operating frequency range. © 2024 IEEE.

Author keywords

flexible microstrip antenna; inset slot feed; partial ground plane; Thermoplastic Polyurethane (TPU); wideband

Indexed keywords

Engineering controlled terms

Antenna feeders; Antenna grounds; Elastomers; Microwave antennas; Polyurethanes; Slot antennas; Thermoplastics

Engineering uncontrolled terms

A: thermoplastics; Flexible antennas; Flexible microstrip antenna; Inset slot feed; Micro-strips; Partial ground plane; Thermoplastic polyurethane; Thermoplastic polyurethanes; Wide-band; Wideband microstrip antennas

Engineering main heading

Microstrip antennas

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