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A Tree-profile Shape Ultra Wide Band Antenna for Chipless RFID Tags

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Abstract

In this article, a new small size planar microstrip tree profile shaped Ultra-Wide Band (UWB) antenna with partial ground plane has been presented. The antenna is designed for chipless RFID tags that are working in UWB region. The operating frequency of the antenna is between 2.72 GHz to 11.1 GHz which covers the entire UWB frequency band . The antenna exhibits comparatively high realized gain of 4.2 dBi with respect to its small size of 27× 40 mm^2 and have a gain to aperture ratio of 0.243 which is comparatively higher than other existing retransmission-based chipless RFID antennas. Another aspect of this antenna is its total efficiency which never goes below 80% throughout the entire bandwidth whereby it reaches as high as 96% at 3.5GHz. This design will motivate the chipless RFID designers to produce small size and cost effective tags. © 2021

Author keywords

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