

A COMPACT 2×1 MIMO MICROSTRIP PATCH ANTENNA WITH ENHANCED GAIN FOR UWB APPLICATIONS

Issam Trrad

Communication and Computer department
Jadara University

Abstract.

An ultra-wideband UWB 2×1 MIMO antenna, based on the reference single UWB antenna, to enhance the realized peak gain is proposed. The antenna is designed by a modified circular radiator constructed from a circular patch integrated with two circular shapes at 5mm from the main patch center with a radius of 5.35mm for each circle.

The modified patch is fastened on the top of a FR4-epoxy substrate dielectric material and fed by a microstrip type transmission line, and partial ground, while the proposed MIMO UWB antenna is composed of two optimized patch antennas, placed 180 degrees from each other, and a 2mm distance was inserted between the grounds. The simulation results, using CST-EM software package, prove that the realized peak gain is enhanced at about 1.5 dB more than the single UWB antenna without effecting the operating UWB and the Relative BW of the MIMO antenna is about 131%. The radiation pattern of the investigated MIMO antenna also has been investigated for selected resonant frequencies.

The proposed MIMO antenna covers the whole UWB range, while the antenna improves the narrow bands gain that lie within this band, such as narrow bands WLAN, WIMAX, and X-Band, which are suitable for different telecommunication applications.

Dr. Issam Trrad
Dean of Engineering Faculty
Jadara University, Jordan
mobile: +962795428456
[email:itrrad@jadara.edu.jo](mailto:itrrad@jadara.edu.jo)
<http://www.jadara.edu.jo>