Circularly Polarized Antenna Array Technique for MIMO Application

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Abstract

This paper presents the design of a 2.77GHz MIMO antenna with two rectangular patches loaded by two split ring resonator (SRR) as the antenna elements. Each antenna element has area of 56×25mm². A compact and low correlation coefficient antenna system covering bandwidth 178MHz for wireless communication standards is proposed.

First, a linearly polarized rectangular patch antenna is discussed. In order to increases the circular polarization; the patch structure is further modified into split ring structure. An array of such split ring is then constructed to increases the directivity, axial ratio, gain and efficiency. The antenna is fabricated on a FR4 substrate.

The performance of the proposed antenna design is analyzed and the results are compared with the simulations using IE3D tool. Through the analysis of mutual coupling and correlation between each pairs of antenna ports, it is shown that the antenna achieves good polarization and directivity diversity. A high diversity gain is therefore being achieved. The performance
results exhibited by the proposed antenna make it extremely useful for the future generation of wireless broadband communication system.

**References**

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**Index Terms**

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**Keywords**

Rectangular patch, rectangular patch loaded with SRR, antenna array, MIMO application, wireless communication.