Abstract

This paper presents the design of a wideband microstrip patch antenna for LTE-A. The bandwidth of the conventional patch is enlarged by using etched slots at the antenna patch. The designed antenna has been fabricated by using thin film and photolithographic technique and has been measured by using the Vector Network Analyzer. The simulated and measured results were found to have good match with each other. Then, by using the designed single element antenna, a four-element MIMO antenna system has been built employing orthogonal polarization diversity. Isolation between the microstrip elements is increased by placing metal structure between antenna elements. For more isolation between antenna elements, Slotted Ground Plane SGP is utilized. It is found, by using commercial software CST Microwave Studio and measurement, that the designed planar MIMO antenna system has sufficiently high return loss and low mutual coupling at the required bandwidth of 70 MHz. It is found also that the developed antenna system meets the requirements for LTE-Advanced (2500 – 2570 MHz) band as of today's standard based on 36. 101 Table 5. 5-1 (March 2012) .
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**Index Terms**

Computer Science

Communications

**Keywords**

- MIMO systems
- SISO systems
- Polarization diversity
- LTE-A
- Mutual coupling
- Slotted ground plane "SGP"

Isolating metal structure.