

CONNECTED ARRAY MIMO ANTENNA SYSTEM FOR 4G and 5G APPLICATIONS



The Invention

The invention is an integrated design of **Planar Inverted-F** based Multi input – Multi output (MIMO) antenna system for 4G standards along with a planar connected antenna array (PCA) for future 5G bands. The unique feature of the proposed design is its planar structure (fabricated on a two layer PCB), low profile, compact and accommodating 4-elements along with a connected array in an area of a typical smart phone backplane size.

Market Need

- Antenna Technologies which concentrate on delivering key requirements are sought by fifth generation of communication include large scale antenna, Massive MIMO, and 2D antenna arrays.
- One of the key enabling technologies for 5G Wireless Network is Technology relating to deployment/design of MIMO, Massive Distributed MIMO and Large Scale Multiple Antennas.
- Due to its higher spectral efficiency and link reliability or diversity, MIMO has evolved to be an important part of the modern wireless communication standards such as HSPA+ (3G), Long Term Evolution (4G), WiMax (4G) and IEEE 802.11n (WiFi). MIMO held the largest share of the market in 2014.

Competitive Advantage

- The antenna uses the concept of connected arrays (CA) that result in reduced antenna dimensions while offering high performance.
- Proposed design is the first to present a dual function slot array that behaves as a defected ground structure (DGS) for isolation enhancement within the MIMO antenna system band at 2.1 GHz and as a radiator (PCA) for 5G applications at 12.5 GHz.
- The design is planar, low profile and compact structure suitable for wireless handheld devices and mobile terminals.

Project Status

This technology is at TRL 4-5 (Demonstrated using laboratory prototype). The prototype could be further scaled down to meet specific requirements for size and frequency.



Looking for a Development Partner

Industry has customized antenna design requirements with regards to specific needs. Industrial partner collaboration is step forward for technology development and customization as per specific requirements.

Patent Protection

A patent application covering this technology and design has been filed in the United States.

About KFUPM

King Fahd University of Petroleum & Minerals is a leading educational organization for science and technology. KFUPM Innovation & Industrial Relations is the IP management and technology licensing office tasked with taking innovation from lab to market place.

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