

Dual-Feed Series Microstrip Patch Array

Researchers at the University of South Florida have developed an omni-directional antenna array that enables the direction of signal transmission and/or reception to remain fixed as the operating frequency changes.

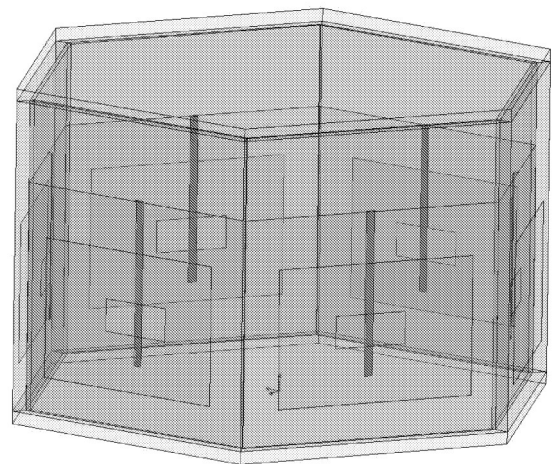
A microstrip antenna, which is a simple antenna made of a small strip of material, is a useful device for wireless communication applications. This is due to ease of fabrication, low cost, simple design, and the ease with which the antenna is integrated into antenna array networks. Due to these characteristics, microstrip antennae are well-suited for phased array applications, which are electronically scanning arrays that steer the radio signal direction without physically moving the antenna. However, current antenna approaches suffer from issues including beam-pointing variation over frequencies, inability for beam steering for attitude correction, and inability to perform advanced beam reconfiguration.

USF inventors have developed a novel microstrip array antenna that utilizes a planar design, which allows for ease of fabrication and signal routing. The design also overcomes the natural tendency of arrays to have beam tilting over different frequencies. Furthermore, this new design is suitable for low-cost frequency-hopped phased array antennae. The functionality is useful for frequency-hopping communication applications in order to maintain the communications link when the transmitting frequency changes. This technology represents a significant improvement in radio communications, and it is useful for applications such as RADAR and wireless communications devices.

ADVANTAGES:

- Easy fabrication and low cost
- Potential to add beam control to mitigate jamming
- Requires no DC power to operate

Fixed Beam Over Changing Frequency



Isometric Diagram of the Omni-Directional Antenna in a Hexagonal Configuration

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