

**Broadband Proximity Coupled Microstrip
Planar Antenna Array for 5G Cellular
Applications**

MICANS INFOTECH

ABSTRACT

A novel low-cost, high-gain mmWave antenna has been presented. The antenna is a 6 x 5 proximity-coupled planar array suitable for 5G cellular applications. Good agreement between simulated and measured results achieved shows that the proposed antenna structure is efficient in achieving broadband characteristics and low sidelobe levels with a compact size. The antenna has a gain of 21 dBi over a bandwidth of 27.5 GHz to 28.5 GHz. It also exhibits an impedance bandwidth of 9.8% from 26.04 GHz – 28.78 GHz.

EXISTING SYSTEM

- A novel linear structure is proposed which has both the bandwidth capabilities of a coupled antenna and a series configuration as that of a direct-feed antenna.
- The antenna has a simple structure which permits the easy formation of tightly spaced planar and phased arrays with a coupled-feed structure which in general is quite difficult to design.

PROPOSED SYSTEM

- In this paper, a 6 x 5 array is formed to verify the simplicity of the planar array formation capabilities of the antenna in while achieving a gain
- The proposed planar array has a bandwidth of 9.8% and demonstrates a way of forming proximity coupled microstrip planar arrays without the use of cumbersome corporate feeding networks with the ability to easily form any planar configuration desired.
- This is very useful in applications where compact size is a major requirement, This can also be extended for aperture coupled structures as well.

SYSTEM REQUIREMENTS

HARDWARE REQUIREMENTS:

- Processor - intel core i3
- RAM - 2GB
- Hard Disk - 20 GB

SOFTWARE REQUIREMENTS:

- Ansoft HFSS(High Frequency Structure Stimulator)

REFERENCE

- [1] O. M. Haraz, M. M. M. Ali, S. Alshebeili and A. R. Sebak, "Design of a 28/38 GHz Dual-Band Printed Slot Antenna for the Future 5G Mobile Communication Networks," in *2015 IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting, Vancouver, BC, 19-24 July 2015*.
- [2] N. Ojaroudiparchin, M. Shen and G. F. Pedersen, "Multi-Layer 5G Mobile Phone Antenna for Multi-User MIMO Communications," in *Telecommunications Forum Telfor (TELFOR), 2015 23rd, Belgrade, Nov. 2015*.
- [3] V. K. Kothapudi and V. Kumar, "A 6-Port Two-Dimensional 3×3 Series-Fed Planar Array Antenna for Dual-Polarized X-Band Airborne Synthetic Aperture Radar Applications," *IEEE Access*, vol. 6, pp. 12001 - 12007, March 2018.
- [4] H. Tsutsumi, Y. Kuwahara and H. Kamo, "Design of the series fed microstrip patch planar array antenna by the parato genetic algorithm," in *Antennas and Propagation & USNC/URSI National Radio Science Meeting, 2015 IEEE International Symposium on, Vancouver, BC, Canada, July 2015*.
- [5] J. Xu, W. Hong, H. Zhang and Y. Yu, "Design and measurement of array antennas for 77GHz automotive radar application," in *Millimetre Waves and Terahertz Technologies (UCMMT), 2017 10th UK-Europe-China Workshop on, Liverpool, UK, Sept. 2017*.