

Wide-band Circular Antenna for 5G Applications

MICANS INFOTECH

ABSTRACT

Millimeter wave is regarded as a solution to an unprecedented challenge to overcome a global bandwidth shortage owing to an ever increase demand for higher data rates and more reliable service capabilities for wireless devices, wireless service providers are facing, thanks to the massive amount of raw bandwidth and potential multigigabit-persecond (Gb/s) data rates. In this paper, a millimeter wave wideband parasitic circular microstrip patch antenna using Rogers RT/duroid 5880 ($\epsilon_r=2.2$) substrate has been designed, simulated, optimized to meet the best possible result and analyzed using both HFSS (High Frequency Structure Simulator) software and CST Microwave Studio software. The performance of the designed antenna was analyzed in term of bandwidth, gain, return loss, VSWR, and radiation pattern.

EXISTING SYSTEM

- Many techniques to overcome this inherent limitation, probe fed stacked antenna, slotted patch antenna, microstrip patch antennas on electrically thick substrate.
- For high data rate transmission system and multifunctional devices, we need wideband directional microstrip antennas with constant gain over the wide frequency range.
- It is a more challenging to achieve high gain antenna which works on multiple frequencies.

PROPOSED SYSTEM

- The base of the proposed antenna is a parasitic circular patch antenna that operates in high frequency range, targeting compact circuit dimension.
- The proposed antenna permits the coverage of multiple wide bands above 6GHz.
- Due to the frequency of operation and compact area occupied, the proposed antenna is promising to be embedded within the different portable devices in different wireless applications.

SYSTEM REQUIREMENTS

HARDWARE REQUIREMENTS:

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

SOFTWARE REQUIREMENTS:

- Ansoft HFSS(High Frequency Structure Stimulator)

REFERENCE

- [1] S. Whitehead, "Adopting Wireless Machine-to-Machine Technology," IEE Journal of Computing and Control Engineering, vol. 15, no. 5, pp. 40-46, Oct-Nov. 2004.
- [2] G. Wu, S. Talwar, K. Johnsson, N. Himayat, and K. Johnson, "M2M: From Mobile to Embedded Internet," IEEE Commun. Mag., vol. 49, no. 4, pp. 36-43, Apr. 2011.
- [3] X. Li et al., "Smart Community: An Internet of Things Application," IEEE Commun. Mag., vol. 49, no. 11, pp. 68-75, Nov. 2011.
- [4] Y. El Gholb, N. El Amrani El Idrissi, H. Ghennioui, « 5G: An Idea Whose Time Has Come” International Journal of Scientific & Engineering Research, Volume 8, Issue 3, March-2017.
- [5] Ban, Y.-L., S.-C. Sun, P.-P. Li, J. L.-W. Li, and K. Kang, "Compact eight-band frequency reconfigurable antenna for LTE/WWAN tablet computer applications," IEEE Transactions on Antennas and Propagation, Vol. 62, No. 1, 471–475, Jan. 2014.