Abstract

Mobile and wireless communications have undergone an enormous growth in recent years and are still evolving every single day. With the popularity of the fourth-generation (4G) mobile communication long-term evolution (LTE) technology, the demand for fast wireless transmission has been increased and now 5G is the trending wireless technology. In modern wireless communication systems, antennas are needed to be simple, compact, low profile and application specific radiation patterns.

In this report, design of slot antenna is proposed for laptops for Bluetooth and 5G applications; as slot antennas are simple and small in structure. The frequency band used for Wi-Fi application is 2.4 GHz ISM band and the band that is used for 5G application is 3.5 GHz (mid 5G) band.

The slot is attached to a metal plate (Copper) which is behind the laptop screen and of the same size as the laptop screen. The proposed antenna has a simple structure and a small size of dimension $47 \times 9\ mm^2$. The designed antennas have been characterized using CST (Computer Simulation Technology) microwave studio software followed by fabrication of the antenna structure for experimental evaluation.

The bandwidth that is reserved for mid 5G band is from 3.3 GHz to 3.8 GHz with centre frequency 3.5 GHz. The proposed antenna met the above specification as -10 dB bandwidth is found to be from 3.29 GHz to 3.6 GHz with centre frequency 3.46 GHz. Hence the proposed slot antenna can find potential applications in 5G technology.