

Tulip-shape Monopole Antenna for UWB Applications

Dau-Chyrh Chang⁽¹⁾, Ji-Chyun Liu⁽²⁾, Ching-Yang Wu⁽³⁾, Ming-Yen Liu⁽¹⁾

(1) Da Yeh University, Taiwan, <http://www.dyu.edu.tw/~werc/>

(2) Ching Yun University, Taiwan

(3) Chung Cheng Institute of Technology, Taiwan

A novel compact tulip-shaped monopole antenna (Fig.1) for ultra wideband (UWB) applications is proposed and studied. In this paper, the novel compact tapered tulip-shaped monopole antenna is composed of a finite ground plane and shape of tulip. This design is easily operated from 3.1GHz to 10.6GHz, with wide bandwidth for UWB. The operating bandwidth is controlled by modifying the dimension of finite ground plane and shape of tulip (Fig.2). The current distribution 3.1 GHz is shown in Fig.3. The impedance bandwidth is controlled by the radius of curvature of tulip as shown in Fig.4. The measured return loss of proposed antenna is from 2.55GHz to 40.5GHz or impedance bandwidth is about 176.3%. The maximum gain of proposed antenna is 3.88 dBi. The simulated and measured results of the antenna are conformed to the characteristics of ultra-wideband. The obtained simulated results are in good agreement with the measured data. Details of the simulated and measured results are presented and discussed in this paper.

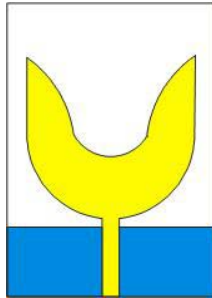


Fig.1 Geometry of tulip-shaped antenna

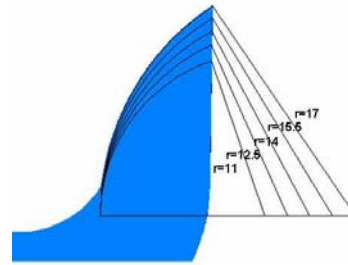


Fig.2 Radius of curvature of tulip

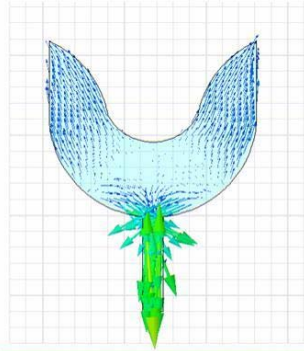


Fig.3 Current distribution at 3 GHz

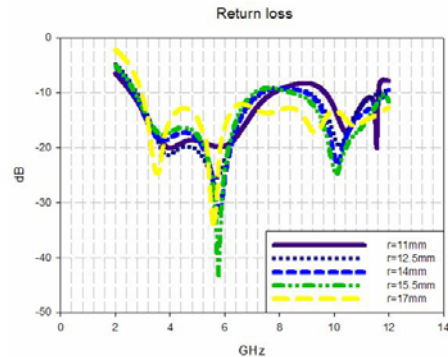


Fig.4 Return loss versus of radius of curvature