

ABSTRACT

Wireless Capsule Endoscopy (WCE) is a wireless technique of endoscopic exploration which offers to depict whole gastrointestinal (GI) tract including small intestine which is hard to explore using conventional endoscopy. The main challenges of Wireless Capsule Endoscopy (WCE) is how to improve data rate, high image resolution, and transmitting data with low power consumption. Antenna plays major role as a part of transmitter in WCE system. In this research, we proposed a technique to optimize the Ultra Wide Band (UWB) antenna operating in the frequency band between 3.1 GHz to 10.6 GHz. The antenna performs well inside human body in terms of bandwidth, gain, size, and radiation pattern. In order to improve antenna's performance, we propose an antenna optimization by using a linear regression. The optimization is based on analyzis using pre-designed antenna from previous research, a UWB slotted microstrip antenna with half ground plane with size of 11 x 8 mm. The validation of this optimization technique is done by using a simulation. This UWB Capsule Endoscopy antenna performance is assesed in terms of antenna gain and radiation pattern which has lower than -10 dB, higher than -9 dB, and omnidirectional radiation pattern, respectively.

Keywords: Antenna Formula, Wireless Body Area Network (WBAN), Ultra Wideband (UWB), Capsule Endoscopy.