

ABSTRACT

The technology of wireless body area networks (WBAN) is a development of the PAN concept that is able to provide the capability of the formation of human body surface network integrated with surrounding tissues. One of the WBAN's technology is the Capsule endoscopy, which is a capsule in which there is a camera that can record or take pictures of the state in the human digestive tract, especially in the small intestine to diagnose the diseases in the digestive tract, given the traditional endoscopes using cameras and cables is less efficient and less comfortable to use. In the endoscope capsule there are several supporting elements namely, cameras, LEDs, batteries and antennas used to transmit the results obtained when the capsule works inside the human body.

Antenna is one of important element in endoscopic capsule. The antenna should be compact and safe, so the patient can comfortably swallow the capsule. In addition, the antenna must be able to transmit the data with high image resolution and high data rate in order to diagnose the state of the digestive tract properly. For that, the antenna used in the endoscope capsule must operate in an ultra wideband frequency range where the image results to be obtained will be very good compared to the narrowband antenna and the size is very small so it can be fitted into the capsule.

In this final project, antenna for endoscopic capsule with Ultra Wideband working frequency of 6.6 - 10.1 GHz with a *bandwidth* of 3.5 GHz is designed. This antenna produces omnidirectional radiation pattern considering the movement of capsules inside the body with $VSWR \leq 2$, $Gain > -16.83$ dBi.

Keywords: Wireless Capsule Endoscopy, Ultra Wide Band, Microstrip Antenna