ABSTRACT

Body Centric Wireless Communication (BCWC) is a wireless technology refers to human body. One example of the BCWC is Wireless Wearable Sensors. Wearable application of wireless sensor such as sport and physioteraphy used in the world health to detect pulse and heart of the workout when using a device that is placed in the chest area. Inside the device there is an antenna that is used to convert electromagnetic waves guidances into electromagnetic waves in free space or vice versa. However, antenna used having dimensi large enough.

In this final project, it has been designed and realized small dimensional antenna using rectangular microstrip antenna able to work according BCWC application. Design process starts from determination of the specifications antenna, then do modeling and simulation antena on phantom. Design phantom undersized 120mm x 120mm x 26mm, Consisting of layers of the skin (ε_r= 38,006660 $\sigma = 1{,}464073$), *fat* (ε_r= 5,280096 $\sigma = 0{,}104517$), *and muscle* (ε_r= 54,417614 $\sigma = 1{,}882011$). *As the simulation of the human body parts of the chest area. And the final steps are realization and measurement antenna.*

This antenna is able to work on the working of frequency 2,45 GHz at distance 4 cm from human body with characteristic VSWR ≤ 1,5 , impedance are 52.657 Ω + j23,643 Ω . Gain that are obtained 2.145 dbi, with the radiation pattern unidirectional. Thus, antenna designed has fulfilled specifications.

Keywords : *Body Centric Wireless Communication, Wireless Wearable Sensor, phantom*