

## ABSTRACT

IEEE 802.15.1, or better known as Bluetooth was developed as a means for short range communications. Bluetooth devices are generally have a low *power* and low cost. This wireless communication technology has been integrated in mobile phones, laptops, PDAs, and other portable devices to connect and share with each other. However, the limitation range of Bluetooth devices that tend to be narrow led to the use of Bluetooth is less developed. Whereas, with its properties, sharing of data should be done easily and cheaply. Several studies have been put forward on ways to utilize the Bluetooth connection with a wider range than the average limit has, including through the development of adhoc network and CMOS transceiver.

This project has designed a different development, that is transceiver antenna that works at a frequency of Bluetooth, 2.4 GHz ISM-band. Antenna is designed in the form of a *microstrip* antenna that is small and compact. *Microstrip* antenna types have been selected because its characteristic is quite suitable for wireless communication and is generally operated at a frequency narrowband. Design and realization of antenna transceiver done through several stages of research methods, such as the study of literature, design, simulation, optimization, realization, testing, and analysis.

At the design stage the methods of Complementary Split Ring Resonator (CSRR) had been applied to reduce the dimensions of the antenna. Optimization of the dimensions of the antenna is done as a way to get the best results in the simulation, for use in the fabrication process. The results of this final project is a form of an transceiver antenna that works at a frequency of 2.398 GHz to 2.47 GHz with -30.815 dB *return loss* and VSWR worth 1,074. While the resulting radiation pattern is directional with a gain of 11.84 dB. The CSRR methods has reduced the dimension of antenna by 37.67%.

Keywords : Bluetooth, CSRR, ISM-band, *microstrip*, *transceiver*