RADIO FREQUENCY IDENTIFICATION (RFID) ANTENNA CIRCUIT DESIGN

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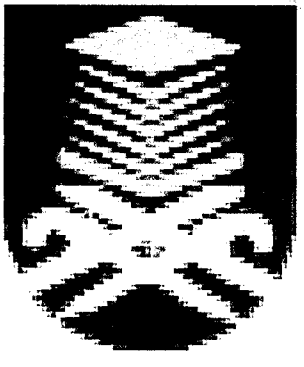

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ABSTRACT

This paper describes Radio Frequency Identification (RFID) antenna circuit design. An RF signal can be radiated effectively if the linear dimension of the antenna is comparable with the wavelength of the operating frequency. The operating frequency band for this project is 13.56 MHz. The wavelength at this frequency 13.56 MHz is 22.12 meters. The wavelength proportional to the antenna dimensions but designing small antennas for practical purposes is a challenging problem in the RFID technology. To overcome this problem, the antenna is designed for this project with appropriate dimensions for the usage in commercial and manufacturing areas as a practical and cheap alternative.

The antenna is implemented on a printed circuit board (PCB). For this project, an antenna with relatively small dimensions 50 x 50 mm for Rectangular Loop Antenna and diameter of 60 mm for Circular Loop Antenna is designed and implemented to overcome this problem. This project also includes lab testing and measurement for testing the performance of the antennas that was designed.

Keywords: Radio Frequency Identification (RFID), antenna, frequency, and wavelength.

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