

# **Design of Passive RFID Tag Using Frequency Selective Surface with Polarization Insensitive**

## **Abstract**

RFID is not a new technology. It has been applied in various industries such as for wearable applications. Common RFID tags especially for those that have been designed and are available are not independent of the incident receiver angle. Numerous wearable antennas on the market are only designed for a certain received angle. For example, a wearable RFID antenna is used in medical as a pulse reading detector. If the patient makes any movement, the patient's pulse reading is no longer accurate or there may be no pulse reading. Hence, the purpose of this project is to design and RFID antennas using Frequency Selective Surface, FSS for wearable applications that are independent towards the incident angle and small in size. In this project, several antennas design with Frequency Selective Surface (FSS) is proposed. The design for this antenna is round, square, and hexagonal. This antenna has an operating frequency from 2.4 GHz to 5.8GHz, bandwidth efficiency > 50%, dielectric constant 1.30, independent incident angle up to 60 degrees, and has a high gain of around 2 to 3dB.