

## **Design of microstrip patch antenna at 900 MHz for charging mobile applications**

This research provides a guideline for designing a microstrip antenna for charging mobile applications. It will be a new source for new researchers to investigate on antenna design and keep with the latest progress in this area. This design is developed using transmission line model. The proposed module had been designed to operate in GSM band range 900 MHz. The simulation carried out for different materials substrate with different dielectric constant values; FR-4 ( $\epsilon_r = 4.3$ ), Roger 8550 ( $\epsilon_r = 2.2$ ) and Perspex r r glass ( $\epsilon_r = 3.4$ ). This study showed that smaller values of dielectric constant will generate larger size of r microstrip antenna. Antenna parameters are compared such as gain, radiation pattern and return loss for the three modules. Prototyping of the antenna of  $\epsilon_r = 4.3$  is illustrated as a design example. It had been proved by r using it in charging mobile charging project. The proposed antenna harvests the RF power then it had been converted to DC voltage to charge the battery of mobile. These results show that this antenna and the method are a good choice for charging using RF harvesting. The proposed antenna had been chosen to transmit the power as a transmitter antenna then receive it using rectenna (antenna integrated with rectifier circuit) for charging mobile applications the experiment worked successfully. © Medwell Journals, 2017.

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