

**Compact 24GHz Half-slot Antenna for
Energy Combining**

MICANS INFOTECH

ABSTRACT

A compact half-slot microstrip antenna is proposed in this paper. The antenna consists of microstrip line-fed half slot, and an open-circuited stub is connected to the microstrip feed line to adjust the matching at the operated frequency band. A half slot is used for miniaturization, as well as due to concentrating the field at only half slot; consequently, it decreases the resonance frequency and improves the antenna radiation characteristics. The antenna radiates at 24 GHz with measured fractional impedance bandwidth of 9%. The antenna gain at the resonant frequency is 5.2 dBi. The proposed antenna shows about 60% length reduction. Therefore, the proposed half slot antenna could be used for energy harvesting applications, at 24 GHz ISM band, due to its compact size with improved gain value. The proposed antenna was designed using ANSYS high-frequency structure simulator (HFSS). The simulated and measured results show good agreement.

EXISTING SYSTEM

- The most potential methods to harvest the RF energy is to use a rectenna (rectifying antenna).
- A rectenna mainly consists of a receiving antenna, filter, and a rectifying circuit. the RF input power level for energy harvesting circuits is slightly low.
- Consequently, various approaches have been proposed to cope with low input RF power. using multiband antennas to harvest from different frequency bands , antennas with high gain also used with energy harvesters.

PROPOSED SYSTEM

- In this paper, a compact 24 GHz antenna is proposed for energy combining.
- Hence, this compact feature is very useful in rectenna array design to combine higher microwave power at 24 GHz ISM band.
- The antenna radiates at 24 GHz with measured fractional impedance bandwidth of 9%. The antenna gain at the resonant frequency is 5.2 dBi.
- The proposed antenna shows about 60% length reduction.

SYSTEM REQUIREMENTS

HARDWARE REQUIREMENTS:

- Processor - intel core i3
- RAM - 2GB
- Hard Disk - 20 GB

SOFTWARE REQUIREMENTS:

- Ansoft HFSS(High Frequency Structure Stimulator)

REFERENCE

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