

This paper presents the design and simulation of a solar cell coplanar patch antenna for IoT and Wireless sensor Networks. In this proposed work, a single solar cell is ...

In this proposed work, a single solar cell is used as the radiating element and can be used as a power harvesting device. Initially, coplanar patch antenna is designed and ...

In this paper, a hybrid energy supply system based on solar cells integrated metamaterial (MTM) antenna is presented for use in Internet of Things (IoT) nodes. The work develops an energy supply system having dimensions of  $40 \times 40 \text{ mm}^2$ , that is qualified for storing and releasing energy. To realize miniaturization technique and gain enhancing, the design of ...

Several previously reported works on fully textile and optically transparent wearable antennas showed that the simulated peak 1 g and 10 g average SAR generated from the antennas in a homogeneous flat phantom, in the chest, upper arm, and the wrist of the HUGO human body model, in a multilayer cylindrical human body model and in a forearm ...

A hybrid energy supply system antenna is presented for use in IoT nodes. CSRR metamaterial structures are adopted in antenna design. The proposed antenna provides gain of 3.9 dBi at 5.8 GHz. The maximum conversion efficiency of RF rectifier circuit is 56.6%. The proposed design can provide stable output voltage of 2.9 V.

**3.1. Approach.** This work builds on previous work [10-13] in which we investigated and designed new patch antennas based on solar cells. However, in this work, antennas will be dedicated to both energy harvesting and data transmission via RF wave emission and reception (Figure 1). The similarity between the patch antenna and the solar

These antennas enable IoT devices to operate autonomously by converting ambient energy into electrical power, reducing maintenance costs and environmental waste. This paper explores the development, efficiency challenges, integration with energy storage solutions, ... such as RF signals or solar radiation, is often weak, and the efficiency of ...

wide range of IoT devices, from environmental sensors to home automation devices. While the flexibility of the antenna design might make it suitable for integration into flexible communication modules or boards that can be adapted to various types of IoT sensor nodes and devices with different form factor.

This paper presents a shaped antenna suitable for seamless integration onto a flexible solar panel. The antenna consists on a thick folded dipole based on environment-friendly materials (PET, PEDOT:PSS) in whose layout

the solar cells are embedded, serving both as solar panel and as RF resonant path, which constitutes a radiating element at the LoRa european ...

How Data From IoT Devices Helps Solar Energy Farms . IoT solutions are helping to optimize the way that solar energy farms are built, maintained, and monitored, ...

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An RF decoupler was also designed for use under the second substrate, so that the solar cells and the antenna work independently. The proposed solar cell-integrated antenna has a wide impedance bandwidth of 42.45% with a very compact size of 50 mm  $\times$  20 mm  $\times$  0.571 mm (0.382  $\times$  0.152  $\times$  0.0043 at 2.28 GHz) and a high form factor of ...

Figure 5: The ST0224-10-401-A Wi-Fi pc board trace antenna is efficient in both the 2.4 and 5 GHz bands. (Image source: Amphenol) Another option for space-constrained IoT products is a chip antenna. Automated equipment can directly mount this compact component on a pc board. The antenna suits wireless IoT applications based on Bluetooth LE or ...

In this paper, we propose a framework for designing a solar rectenna for IoT-over-satellite applications using nanosatellites. Utilizing such a framework will allow valuable

Learn more about the integral antenna solutions in the creation of IoT applications and the creation of smart environments. IoT is helping to create smart environments by linking devices to everyday settings and tasks that help individuals, businesses and potentially whole societies, live in a smarter and more comfortable way - and it's growing fast.

In this paper, a hybrid energy supply system based on solar cells integrated metamaterial (MTM) antenna is presented for use in Internet of Things (IoT) nodes. The work develops an energy supply system having dimensions of 40 $\times$ 40 mm, that is qualified for storing and releasing energy. To realize miniaturization technique and gain enhancing, the design of antenna employs ...

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