

REMS Sensors for Environmental Monitoring

A passive sensor based on reflected electro-material signatures (REMS) for monitoring an environmental condition

Georgia Tech inventors have created a sensor concept based on reflected electro-material signatures (REMS) that consists of three distinct components working together to provide passive sensing capability of environment information. The first part of the component includes a electro-material line consisting of a chemical strip sandwiched between the ground plane and top trace of an RF tag's micro-strip transmission line. The second component is a reflector circuitry, consisting of the transmission line itself, and the radio-frequency integrated circuit (RFIC) that performs backscatter and identification functions, and any RF tag antennas. Lastly, the third component is a RF reader that must be used to interrogate the REMS sensor as well as perform the signal processing for data extraction.

Summary Bullets

- **Low cost** – decreases expenses by being compatible with existing UHF or microwave passive RFID integrated circuits
- **Precise** – because an RFID readers filters out unmodulated scatter components, an RFID-based REMS sensor is more precise
- Allows passive interrogation of the sensor

Solution Advantages

- **Low cost** – decreases expenses by being compatible with existing UHF or microwave passive RFID integrated circuits
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Potential Commercial Applications

- Monitoring environmental conditions for perishable goods
- Tracking and recording changes in environmental conditions
- Condition verification during the supply process

Background and More Information

The ability to monitor environmental conditions for perishable goods can provide significant value to the supply chain by ensuring that products remain fresh and safe when supplied to the consumer. In some cases, tracking changes in the environmental conditions over time without battery-operated conventional electronics may be desirable for condition verification during the supply process.

Inventors

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Publications

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