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Design of a Slotted Chipless RFID Humidity Sensor Tag

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Highlights

- This paper proposes a chipless RFID humidity sensor tag, which advantages are shown as follows:
- The proposed sensor tag does not need any silicon chip and can be fabricated in printing technology, which resulting in its low cost.
- The proposed sensor tag can work on passive mode, resulting it is suitable for long-term monitoring application.
- The proposed sensor tag shows good sensitivity and consistency performances.

Abstract

This paper proposes a chipless Radio-Frequency Identification (RFID) sensor tag for low-cost and long-term humidity monitoring. The slotted scatterer structure are fabricated on FR4 substrate by grooving etching. The encoding unit stores the ID information by the combination of the different length slots. Si nanowires are deposited on the surface of the slots to form the sensing unit. Based on the principle of radar electromagnetic backscattering, the test system measures the transmission coefficient curve to obtain the ID and humidity information of the tag. The test results show that the

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