Preparation of Electrically Conductive Silver Ink for Silk-Screen Printing Near Field RFID Tag for Identification Applications

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Abstract:

The present paper introduces the analysis and design of a near-field RFID tag for IoT in the sub-six GHz 5G frequency band, the proposed radio frequency identification technique is based on the near-field interaction between the RFID tag and a wideband antenna reader. This near-field interaction adjusts the resonances of the wideband antenna according to the used RFID tag. In addition, the far field RCS of the RFID tag is also investigated to study the relationship between the near field and the far field responses of the proposed RFID tag. The proposed RFID tag is characterized by adjustable six resonances based on concentric square rings printed on a dielectric slab. For manufacturing and experimental verification, the dielectric slab is assumed to be FR-4. However, the proposed structure can be generalized to other thin and flexible substrates like paper, plastic, and textile.

Keywords:

Radio Frequency Identification, Multi-resonator RFID Tag, Near field Sensing.