

What is low-power and low-complexity backscatter communications (backcom)?

The low-power and low-complexity backscatter communications (BackCom), which simply relies on passive reflection and modulation of an incident radio-frequency (RF) wave, has emerged to be a promising technology for tackling this challenge.

How does a small backscatter coefficient affect reflected signal power?

A smaller backscatter coefficient reduces the reflected signal power and thereby increases the received signal power, and vice versa. There are two methods for implementing full-duplex BackCom. Both require a reader to have a full-duplex antenna allowing simultaneous transmission and reception.

What is a backcom theory?

This can be achieved via a full-fledged BackCom theory leveraging the advanced communication technologies such as small-cell networks, full-duplexing 1, multi-antenna communications, massive access, and wireless PT, as well as advancements in electronics such as miniature radios (e.g., button-size radios) and low-power electronics.

What is a backward backcom?

A key characteristic of the backward BackCom (i.e., the tag-to-reader information transmission) is the double path-loss due to the fact that the backscatter signal received at a reader propagates through the closed-loop channel cascading the downlink and uplink channels.

How to perform simultaneous forward and backward information transmission in a backcom system?

Consider simultaneous forward and backward information transmission in a BackCom system having one pair of reader and tag. For the first method, by leveraging prior knowledge of forward information, the reader can cancel it in the backward information transmission signal and thereby retrieve the backward information.

What is backward information transmission?

The backward information transmission is the dominant mode for most of the conventional RFID applications, which have asymmetric data traffics, e.g., a low-rate command through the forward information transmission and a high-rate information-bearing data through the backward information transmission.

14 And judgment is turned away backward, and justice standeth afar off: for truth is fallen in the street, and equity cannot enter. 15 Yea, truth faileth; and he that departeth from evil maketh ...

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As a key low-power communication technique, backscatter communications exploits the reflected or backscattered signals to transmit data, where the backscattered signals can be the ...

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Through reverse engineering, the authors 114857 C. Sharma et al.: Review of Security of Backward-Compatible Automotive Inter-ECU Communication of [35] were able to learn the ...

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