

Improved Wi-Fi Backscatter System for Multi-to-Multi Communication

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Abstract : The conventional Wi-Fi back scatter system can only process one-to-one communication between the Wi-Fi reader and the Wi-Fi tag. For improvement of throughput of the conventional system, this paper proposes the multi-to-multi communication system. In the proposed system, the interference by the multi-to-multi communication is effectively cancelled by the orthogonal multiple access based on the identification code of the tag. Although the overhead is generated by the procedure for the multi-to-multi communication, because the procedure is processed by the Wi-Fi protocol, the overhead is insignificant for the entire communication procedure. From the numerical results, it is confirmed that the proposed system has nearly proportional increased throughput in according to the number of the tag that simultaneously participates in communication.

Keywords : backscatter, multi-to-multi communication, orthogonality, Wi-Fi

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