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A Method for Throughput Enhancement in Wi-Fi Backscatter Communications Using Power-Level Modulation

Hyobeen Park[a], Nayoung Lee[a], Youngjun Jun[b], Yunho Jung[c], Seongjoo Lee[a,*]

[a] *Sejong University 98 Gunjadong, Gwangjingu, Seoul, 05006, Republic of Korea*
[b] *Silicon Works, 16, Maeheon-ro, Seocho-gu, Seoul, Republic of Korea*
[c] *Korea Aerospace University, Goyang, Republic of Korea*

Abstract

An improved data rate technology from tag to reader in Wi-Fi backscatter systems is proposed. The proposed system applies a power-level modulation to the conventional backscatter communication system. This technology can improve the data rate dramatically. It also adopts the Euclidean distance evaluation during demodulation, which looks for the most similar signal to enhance the BER performance. We analyze the error performance of the proposed decoding method, and the numerical results are presented. The power level is formed ranging from 2-level to 8-level. The performance of the detecting algorithm is compared to the conventional system, which utilizes the received power of selected sub-carriers.

Keywords: Wi-Fi, Wi-Fi Backscatter, Multi-level, Internet of Things, Energy harvesting, Euclidean distance

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1. Introduction

As the Internet of Things (IoT), a technology designed to connect the Internet with all things, becomes prevalent, an increasing number of studies regarding

*Corresponding author

Email addresses: hb8971@itsoc.sejong.ac.kr (Hyobeen Park), nayoung@itsoc.sejong.ac.kr (Nayoung Lee), jdancor@itsoc.sejong.ac.kr (Youngjun Jun), yjung@kau.ac.kr (Yunho Jung), seongjoo@sejong.ac.kr (Seongjoo Lee)

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