IEEE 13th International Conference on Electronics and Information Technologies (ELIT)
Article number 194446, 2023, Pages 270–274

Bluetooth Low-Energy Beacon Resistance to Jamming Attack

Sokolov, V.[a], Skladannyi, P.[a], Astapenya, V.[a]

[a]Borys Grinchenko Kyiv University, Kyiv, Ukraine

Abstract

To assess the potential damage from jamming attacks on a Bluetooth Low-Energy (BLE) Beacon device, an experimental setup with a packet emitter, sniffer, and signal spectrum control at the receiving point was used. With less than 0.7% of successfully delivered packets, it is impossible to talk about the success of even non-critical equipment. From the ratio of single-error packets to lost packets rate, it can be seen that the tipping point occurs on the chart at minus 12 dBm for a 2 Mb/s baud rate. An increase in the level of the interference signal may be invisible to the user until a certain point when the number of errors in the system begins to increase like an avalanche. This results in an increase in lost packets and the generation of new traffic due to retransmissions. However the additional traffic is also subject to interference, so the useful data rate is reduced even more. It should be noted that for low transmission rates, the single-error packets to lost packets rate is constant. © 2023 IEEE.

Author keywords

AltBeacon; beacon; BLE; Bluetooth Low-Energy; Eddystone; iBeacon; jamming; PER

About this paper

https://ieeexplore.ieee.org/document/10310815

Online ISBN: 979-835038309-6
DOI: 10.1109/ELIT61488.2023.10310815
EID: 2-s2.0-85179520418

First Online: 10 November 2023
Original language: English
Publisher: IEEE Inc.