

BLE 検証アプリ開発から学ぶ無線通信技術

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要旨：

道路課金向けの車載器開発プロジェクトにて、ミドルウェアの Bluetooth Low Energy（以降、BLE と略す）機能の評価や検証を行うための iPhone アプリケーションを開発した。本論文では、無線通信技術の一つである BLE 技術と従来の Bluetooth 技術の区別や特徴、通信プロトコルを説明する。また、開発時に直面した技術課題や当時の対策を踏まえ、ペアリングを行うための認証情報の選定やセキュリティ通信の実現において考慮すべき事項、通信プロトコルに対する理解を深め、パケット解析を加速させるための BLE プロトコルアナライザ活用の利点などを論じる。

キーワード：無線通信技術、Bluetooth、BLE、プロトコルアナライザ

Wireless Communication Technology Learned From BLE Verification Application Development

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Abstract:

When I was in the project which developed on-board device for road tolling, I developed an iPhone application for evaluating and verifying the Bluetooth Low Energy function of middleware. In this article, I would like to explain the characteristics of BLE technology which is one of the wireless communication technologies and the differences from classic Bluetooth technology and as well as the communication protocol. Then I would like to introduce the technical issues faced during development and the countermeasures at that time. Based on these, I would like to discuss what should be considered while choosing authentication information for pairing and the security communication implementation, and the advantages of using BLE protocol analyzer to increase the efficiency of packet analysis.

Keyword: Wireless communication technology, Bluetooth, BLE, Protocol analyzer