

Department of Electrical and Information Engineering

**Master Thesis
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**Development and Performance Investigation
of a Measurement Set-Up for Spread Spectrum Data
Transmission**

Abstract

The use of wireless radio is increasing, particularly in the license-free 2.4GHz ISM shared band, leading many devices to interfere with each other. Spread spectrum systems are known for their interference rejection and anti-jamming features.

This research study discusses the implementation details to establish a bidirectional point-to-point frequency hopping spread spectrum (FHSS) wireless link using Atmel's ATR2406 transceiver and Freescale's HCS12 microcontroller. The implementation of the frequency shift keying (FSK) system was considered in the first phase of the development study. C programming language was used with the support of Image Craft's development tools to develop and embed control flow. The master slave communication flow was used where the slave is in the loop back mode. The evaluation of the performance parameters was done by the master for redirected packets of the slave. The investigation of system performance was done on the basis of performance parameters which are packet loss rate (PLR), bit error rate (BER), and packet delay (PD), and jitter of the packet delay. The system performances in the presence of different interferers (WLAN, Bluetooth and nanoNET) were considered.

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