Thesis Defense

Mobile Network Access Device for use with the DHS Advanced Container Security Systemby  
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ABSTRACT

With the aim of improving the security for shipping containers used in a global supply chain, the Department of Homeland Security is developing the technical requirements for an open Container Security System communications interface. The primary purpose of this system is to monitor the status of shipping containers equipped with electronic chain of custody devices, and channel this information to a secure data consolidation server. This application is intended to integrate with and extend the functionality of the Department of Homeland Security’s Advance Container Security System. By replicating most of the functionality provided by a Data Consolidation Server, a handheld unit can be used to provide users with a secure and convenient method to wirelessly monitor and control the status of the container security devices in the area. Once a user has obtained the necessary security keys to enable wireless communication with the security devices, the handheld unit will then join an existing IEEE 802.15.4 wireless network and permit the secure exchange of information between itself and the security devices.

This thesis presents a secure Handheld Network Access Device application using an off the shelf phone running the Android OS. This thesis also extends the phones wireless capability via a USB-to-XBee dongle to enable communications with secure locks using the IEEE 802.15.4 protocol.