MASTER OF SCIENCE
IN
DEFENSE ANALYSIS

SOF TACTICAL INTRANET: LOW PROBABILITY OF DETECTION, LOW PROBABILITY OF EXPLOITATION COMMUNICATIONS FOR SPECIAL OPERATIONS FORCES, USING A COMMERCIAL-OFF-THE-SHELF WIRELESS LOCAL AREA NETWORK

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Certain National and Navy tasked Special Operations Forces (SOF) missions require the rapid dissemination of available information to multiple disparate platforms. Current commercially available technologies allow the transmission of such data using lightweight, man portable ground stations with airborne relay platforms. The nature of these missions requires low probability of detection (LPD) communications for deployed forces with sufficient bandwidth and range to allow for rapid exchange of time critical intelligence and communications without indigenous infrastructure and with minimal possibility of compromising the position and intentions of SOF. The small, highly transportable nature of wireless LAN components, combined with the spread spectrum nature of their transmissions makes them appropriate for such scenarios.

The objective of this thesis is to demonstrate the feasibility of currently available COTS equipment to perform beyond envisioned design parameters, allowing its use in military applications. This demonstration includes development of a wireless computer network as a conduit for communications between airborne and ground units. The thesis performs both ground and in-flight evaluations to determine component configurations, utilizing a Systems Engineering approach to achieve maximum range while meeting minimum throughout requirements.

DoD KEY TECHNOLOGY AREAS: Command, Control, and Communications, Other (Special Operations)

KEYWORDS: C3, C4I, Wireless LAN, Communications, Special Operations