

L-3 Communications, CS-W
Special Temporary Authorization
Date: 04/16/2014
File No.: EL850301
STA File No.: 0427-EX-ST-2015
License: ??????

Application Background:

The purpose of this project is to ground test and experiment with point to point data links for application to mobile communications hotspots for military applications. This application is very similar to File No.: EL349667; STA File No.: 0419-EX-ST-2015. This new application does not have an airborne station and adds an E-band link to the discovery and LTE links. The discovery and LTE links use the same equipment identified in the referenced STA.

Concept of Operations:

There will be a total of 4 stations with 2 stations operating up to 3 different simultaneous links. All of these stations are ground based. The three links are referred to as the Discovery Link, LTE Link, and E-band Link. Figure 1 illustrates the concept of operations where the green arrow is the Discovery Link, the blue arrow is the LTE Link, and the black arrow is the E-band Link. The 4 stations are defined below with stations 1 and 3, and 2 and 4 being identical:

1. Station#1 and #3 will operate a discovery link, an LTE link, and an E-band link simultaneously and are ground based.
2. Station#2 and #4 will only operate an LTE link and is ground based. These stations are commercial off the shelf user equipment radios Samsung Galaxy S4 handsets and Samsung Galaxy tablets. Up to 5 radios will be operated in the vicinity of Station#2 and Station#4.

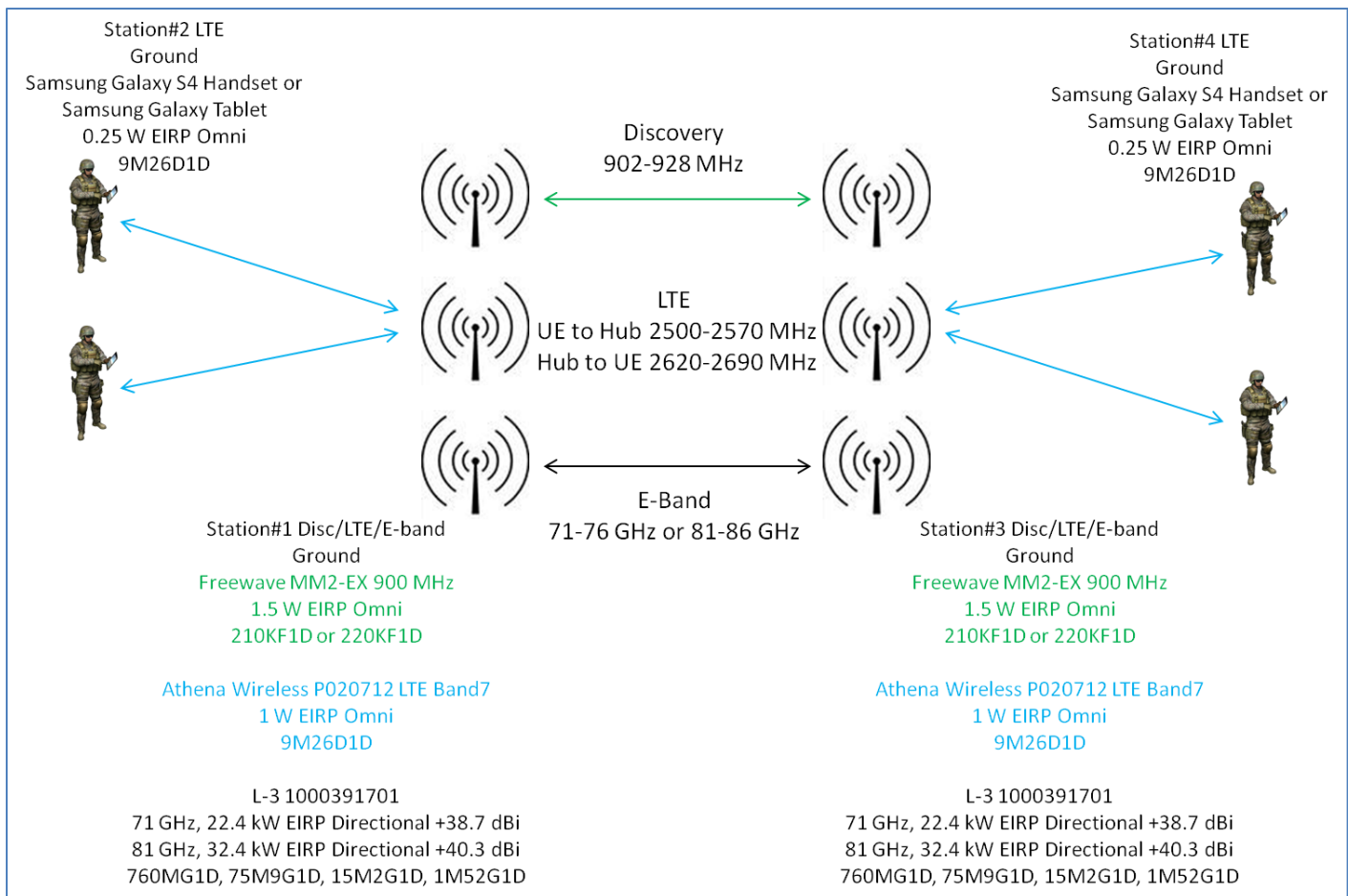


Figure 1 Concept of Operations

Spectrum Requirements:

The discovery link will operate in the unlicensed 900 MHz ISM band (902.2464-927.8208 MHz). The radio is a commercial off the shelf product (MM2-EX family) made by Freewave Inc. The radio uses a spread spectrum frequency hopping waveform. NTIA dd1494 forms are attached. The radio is connected to an omni antenna.

The LTE link will operate in the LTE Band 7 frequency range. Uplink is defined as from the user equipment to the base station (2500-2570 MHz) and the Downlink is defined as from the base station to the user equipment (2620-2690 MHz). The base station is a commercial off the shelf base station radio P020712 made by Athena Wireless. NTIA dd1494 forms are attached. The radio is connected to an omni antenna.

The E-band link will operate in either the 71-76 GHz or 81-86 GHz frequency bands. L-3 CS-W has an E-band license call sign WQQQ873, file number 0005647760 but this link has not been registered with the 3rd party database managers. The radio is an L-3 custom designed product for these bands. It uses S-OQPSK for the 2 higher data rates and DPSK for the 2 lower data rates. All waveforms use 7/8 LDPC FEC with root raised cosine filtering $\alpha=0.33$. The radio is connected to an axially displaced ellipse directional tracking antenna with 41 dBi gain, RHCP polarization, and 1.6° 3 dB beamwidth. NTIA dd1494 forms are attached.

Location of Testing:

The locations of the ground stations are shown in Figure 2. The red circles are the area of operation for Station#2 and #4 and are within 0.5 km of Station#1 and #3 respectively. There will be up to 5 radios in fixed locations within the area of operation.

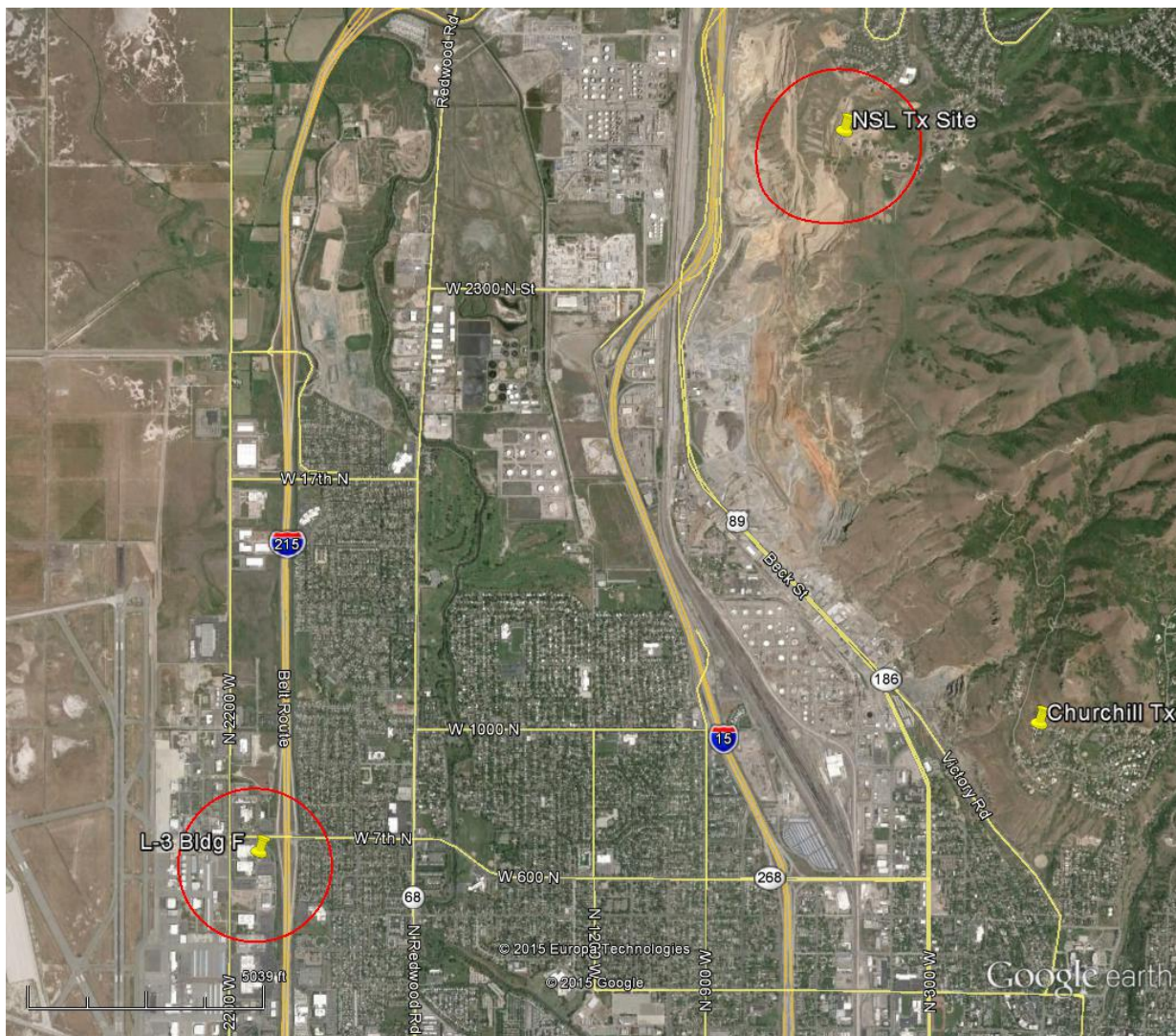


Figure 2 Location of Testing