

L3 Technologies, BCS
Special Temporary Authorization
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Call Sign: zzzzzz

Application Background:

The purpose of this flight test is to evaluate in a dynamic flight environment an air to ground radio link for military applications.

Concept of Operations

The test will consist of two (2) test nodes operating a single bi-directional data link. One test node will be airborne and one test node will be ground based. The airborne node will be a Cessna 208B Caravan aircraft operating at 9,500 to 12,500 MSL over the east side of the Salt Lake Valley. The ground node will be at a fixed location on the roof of a building located in Salt Lake City. The links are referred to as the uplink (ground to air), and the downlink (air to ground).

Figure 1 illustrates the concept of operations for ground-to-airborne testing where the lightning bolts represents the datalink. Testing will include ground checks, airborne-to-ground tests, and ground-to-airborne tests.

L3 Technologies is aware from previous STA applications that there are existing frequency assignments in the 14.5-14.83 and 15.15-15.35 GHz bands. L3T will deconflict with Hill Air Force Base 729 ACS and Utah Air National Guard 109 ACS units that have Tropo Satellite Support Radios operating at 14553.75, 14578.75, 14606.25, 14675.00, 15193.75, 15218.75, and 15246.25 GHz before any L3T flight tests.

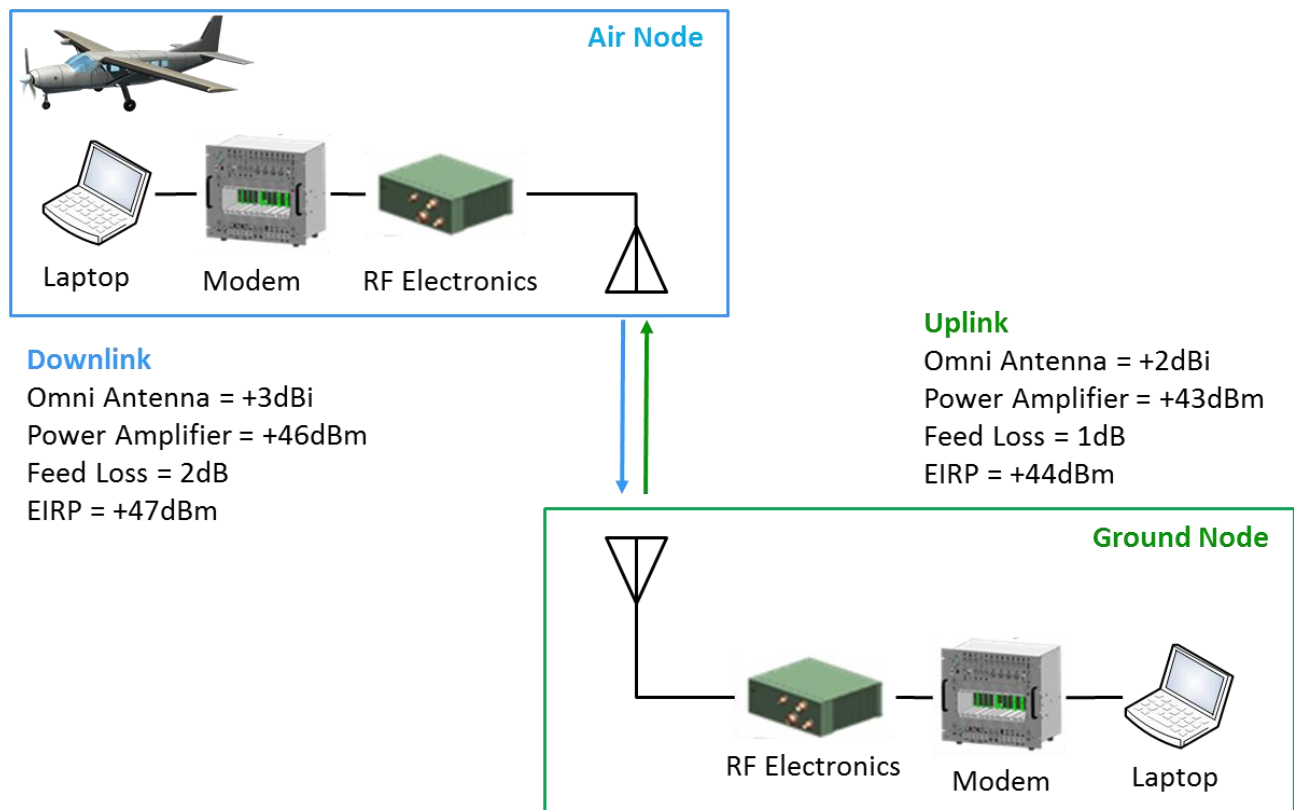


Figure 1: Datalink System Configuration

Spectrum Requirements

The data link used will operate in two portions of Ku-Band. One band will be between 14.4 to 14.83 GHz and the other band will be between 15.15 to 15.35 GHz. The data link radio equipment is an LT3 product designed to operate within these bands. The uplink and downlink will both be a single 136 Mcps (Mega-chip per second) PSK modulated waveform with a roll off factor of 1.3. The waveform will utilize root raised cosine filtering with $\alpha = 0.3$. The emission designator for this waveform is 177M0G1D.

Both the airborne and ground link will utilize omni antennas with gains of 3 dBi. The power amplifier on the airborne node will have a maximum power output of +46 dBm. The power amplifier on the ground node will have a maximum power output of +43 dBm.

Ground node location:

The ground node will be located on the roof of building E on the L3T campus in Salt Lake City. The location of the L3T campus is 640 North and 2200 West in Salt Lake City as shown in Figure 2 below. The specific location of the ground node is:

- Latitude: N 40°47'1.46", Longitude: W 111°57'7.65"

Airborne node locations:

The airborne node will be flying a north-south racetrack pattern over the east side of Salt Lake City adjacent to the Class B airspace associated with KSLC. The racetrack pattern is approximately 30 nm in length north to south and 4.4 nm in width from east to west. The aircraft's altitude will vary from 9,500 to 12,500 ft. MSL. The aircraft's flight profile is shown in Figure 2 below, the approximate racetrack waypoints are:

North West Waypoint = Latitude: N 40°47'1.5", Longitude: W 111°54'38.7"

North East Waypoint = Latitude: N 40°47'1.5", Longitude: W 111°48'52.5"

South East Waypoint = Latitude: N 40°17'6.3", Longitude: W 111°48'52.5"

South West Waypoint = Latitude: N 40°17'6.3", Longitude: W 111°54'38.7"

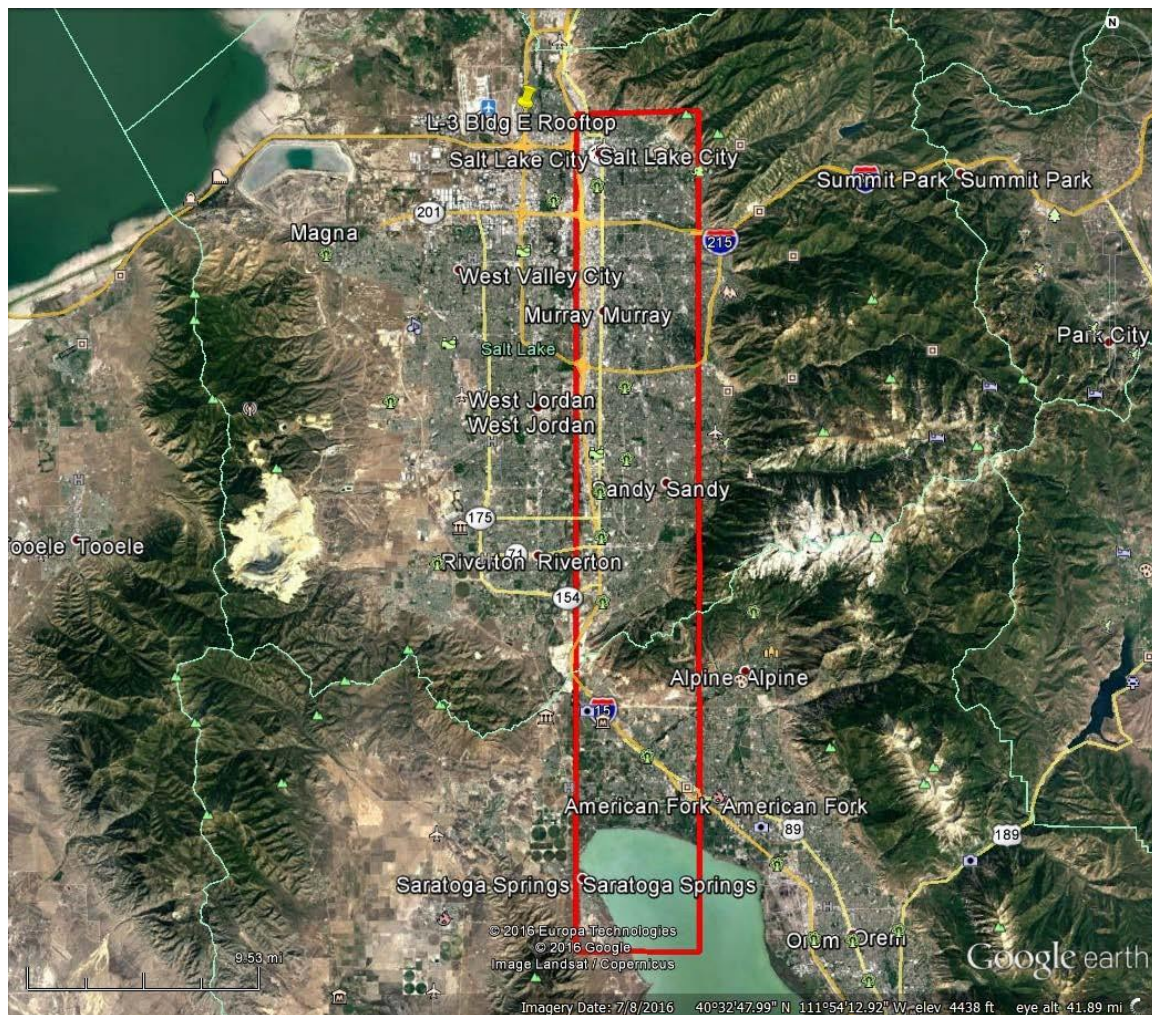


Figure 2: Overhead View of Flight Test Ground and Airborne Node Locations