

L-3 Communications, CS-W
Special Temporary Authorization
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Call Sign: zzzzzz

Application Background:

The purpose of this project is to ground and flight test with point-to-point data links for application to mobile communications for military applications.

Concept of Operations

There will be two (2) test stations operating a single bi-directional data link. The test stations are ground and airborne based. The aircraft is a Cessna 172 operating at approximately 3000 ft AGL. The links are referred to as the Forward or uplink (ground to air), and the Return or downlink (air to ground).

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

The test stations and associated data links are defined below:

- Station #1 will be ground based
- Station #2 will be airborne based

Spectrum Requirements

The data link used will operate in C-Band, between 4400–4940 MHz and in S-Band, between 2200–2290 MHz. The radio is an L-3 product designed for these bands. A single 2.5 Mbps data rate will be used, which uses QPSK modulation LDPC $\frac{1}{2}$ FEC, and root raised cosine filtering $\alpha=0.33$. The emission designator for this waveform is 3M36G1D.

The data link is comprised of the Air Net Rover radio part number 1000411673; one in an airborne application and one in a ground based application. The data link will operate in C-band (4.4-4.94 GHz) for the uplink and in S-band (2.2-2.29 GHz) for the downlink. The radios are both connected to omni antennas.

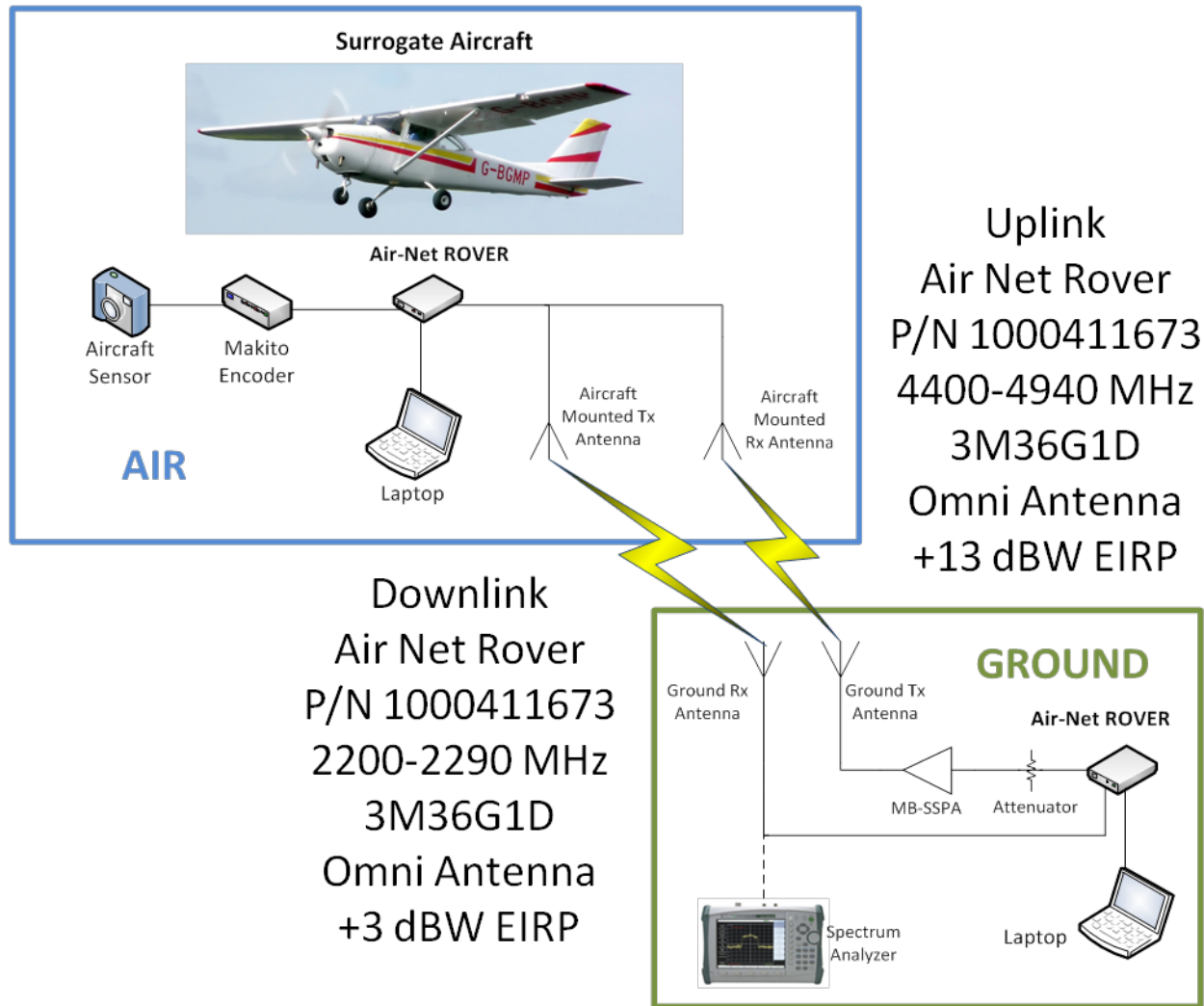


Figure 1: Datalink System Configuration

Ground & Flight Testing Summary

Location of Ground Equipment:

The approximate locations of the ground stations are shown in Figure 2.

- Ground station #1, approximate location:

Lat: N 40°47'1.46", Long: W 111°57'7.65", Alt 4269 feet (on the L-3 CSW campus located at 640 N. 2200 W. Salt Lake City, UT).

Location of Airborne Equipment:

The approximate location of the aircraft flight profile is shown in Figure 2. Typical altitude is 3000 ft AGL. Approximate waypoints are listed below:

WP1: (Lat: N 40°44'00", Long: W 111°53'00")
 WP2: (Lat: N 40°27'00", Long: W 111°53'00")
 WP3: (Lat: N 40°27'00", Long: W 111°47'39")
 WP4: (Lat: N 40°44'00", Long: W 111°47'39")

Racetrack center at Lat: N 40°35'30", Long: W 111°50'10")

Approximately 20 miles north to south length

Approximately 5 miles west to east width

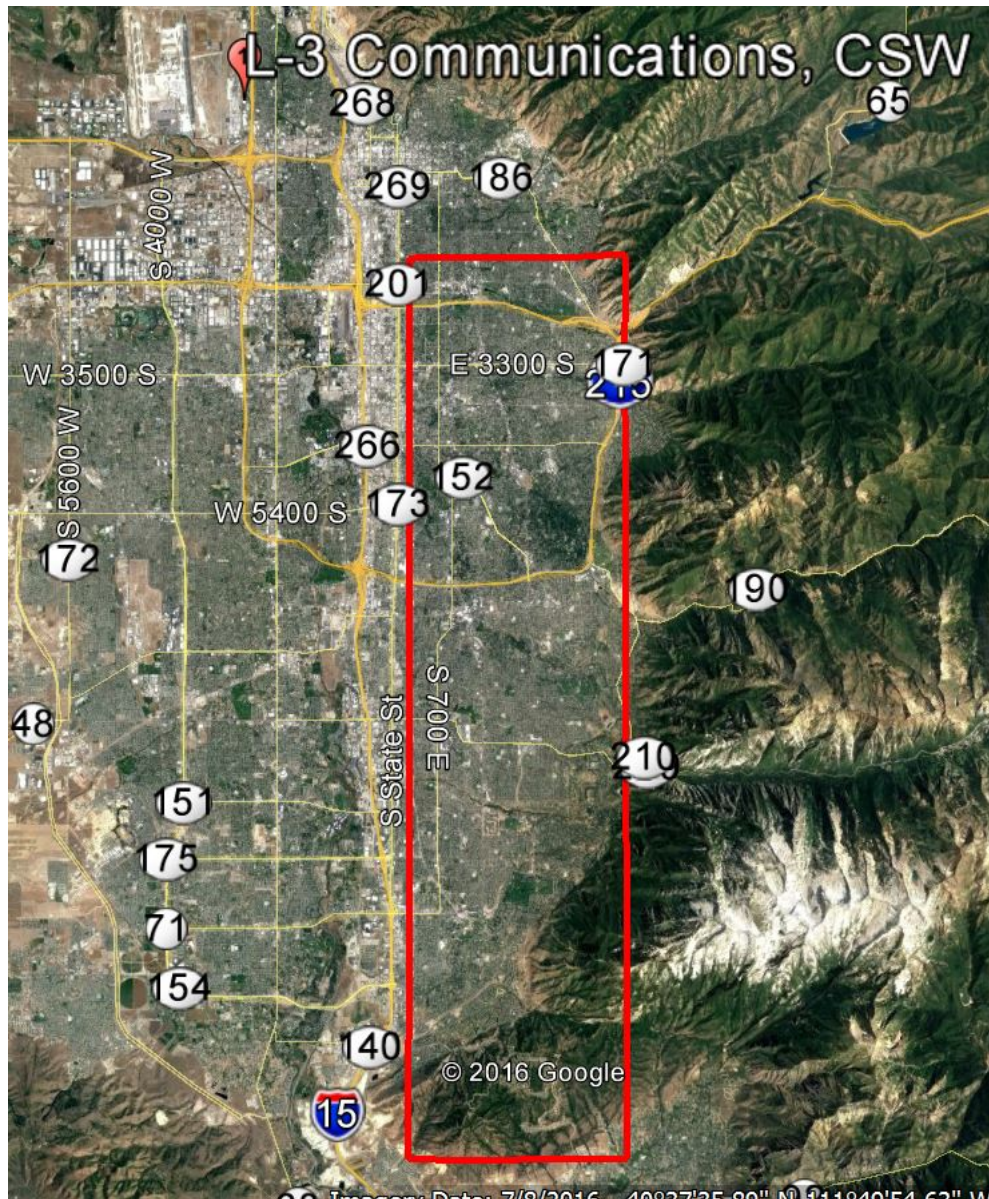


Figure 2: Location of Flight Test Equipment