

### **Application Background:**

The purpose of this experiment is to evaluate, validate, debug, and test the RF antenna pointing techniques and algorithms used on point-to-point data links for application to mobile communications used on military applications.

### **Concept of Operations:**

There will be 2 data link terminals simulating a digital data link with one terminal acting as the ground station and the other acting as the simulated airborne. The airborne terminal (Horn antenna in this case) will be used as a transmission source. It will broadcast a tone or a waveform to the ground antenna, that will be on a local motion table. The motion table antenna is used as a receive antenna and is the antenna under test. The airborne antenna will be fixed relative to the ground antenna, but the ground antenna may be under motion from the table to check performance.



14.85-15.35 GHz

The horn may vary but will be in a similar class and size.

### **Spectrum Requirements:**

The datalink will be operated using 14.5-15.35 GHz Ku-Band frequencies. Both bands will be used as transmit and receive frequencies. Previous authorizations identified Ku-band frequencies to be avoided. The following frequencies will be avoided for this experiment: 14400-14500 MHz, 14553.75 MHz, 14,578.75 MHz, 14,606.25 MHz, 14675 MHz, 14675 MHz, 15193.75 MHz, 15218.75 MHz, and 15246.25 MHz.

Multiple waveforms of varying data rate, modulation, and forward error correction may be utilized during this test. The largest necessary bandwidth for the waveforms used will be 9.66 MHz. The maximum transmit EIRP will be 1.9 watts with the power decreasing, depending on the combination of data rate and antenna type.

**Location of Equipment:**

The approximate locations of the motion table mounted ground stations are shown in Figure 2. There are 2 motion tables with one located between buildings E and the other next to building Z. The roof mounted terminal will be mounted on one of several different L3Harris buildings indicated as Bldg E, F, O, X, C, D, the Parking garage, or



the SATCOM building.

**Interference Mitigation:**

Interference Mitigation will be accomplished with the use of power control and antenna directivity. The ERP of the transmit antenna is intentionally being kept low to not interfere with other RF equipment. Stop buzzer point of contact has been identified and will be available in the case of possible interference and for interference resolution.