Request for Experimental License Exhibit
Purpose:

AT&T Laboratories wishes to conduct tests on multiple new radio systems with integrated adaptive antennas to evaluate the performance of a novel short distance microwave radio digital communications network. We hope to evaluate various performance characteristics of the system in a real world Rural/Suburban outdoor environment. Performance characteristics such as
data throughput, latency, error rates, availability and susceptibility to and generation of self and external interference will be investigated.

Radio Systems:

AT&T requests authority to test 5G radio systems. These radios will be installed and tested by AT&T Laboratories personnel using microwave radio and digital communications test equipment. Each radio unit weighs about 12 lbs. and is housed in a weatherproof outdoor enclosure approximately 14 (w) x 12 (h) x 5.24 (d) inches in size. Each radio unit consists of a transmitter, a receiver and an integrated adaptive beamforming antenna. The maximum transmitter power of radio unit will not exceed 47 dBm / 10 MHz EIRP in rural areas and 30dBm / 10MHz EIRP in Urban areas.

Antenna Systems:

Much of the experimentation will be centered around the evaluation of the integrated adaptive antenna system in a non-line-of-sight (NLOS) environment, so the exact antenna gains and beam widths to be realized are unknown at this time. However the maximum gain of any antenna deployed will not exceed 20 dBi. Furthermore the main lobe of any antenna deployed will be pointed approximately to the horizon plus or minus 10 degrees. The azimuthal orientation of the main lobe of the antenna may be arbitrary.

Equipment Deployment:

The radio units will be deployed at various outdoor locations around the Cumming, GA at 6985 Matt Highway, Cumming, GA 30028 (34.2999 latitude and -84.1923 Longitude), Cumming, GA at 2731 Atlanta Highway, Cumming, GA, 30040 (34.1536 latitude and -84.1858), and Atlanta, GA at 725 W Peachtree St NE, Atlanta, GA 30308 (33.7743 latitude and -84.38667 longitude).

The ground elevation around these locations varies from about 900 feet to 1200 feet above mean sea level. No more than 10 radio transmitters will be operated simultaneously. Radios will be mounted on rigid masts not exceeding a height of 54 meters (176 feet) above the ground level on an existing monopole structure, or on building rooftops no more than 2 meters (6.5 feet) above the roof. The roof level of the buildings at the Atlanta location is 8 stories (80 feet) above ground level. See the diagram in Figure 1 and 2 for a depiction of the tower and building deployment.

Spectrum Use:

The radio transmitters may occupy spectrum from 3550 MHz to 3700. Depending on how it is configured, each radio will use a digitally modulated 10 MHz, 20 MHz or 40 MHz channel in this band. Different transmitters may use the same or different channels as each other. The total transmit power of any transmitter will not exceed 32 dBm (1.6 Watts).

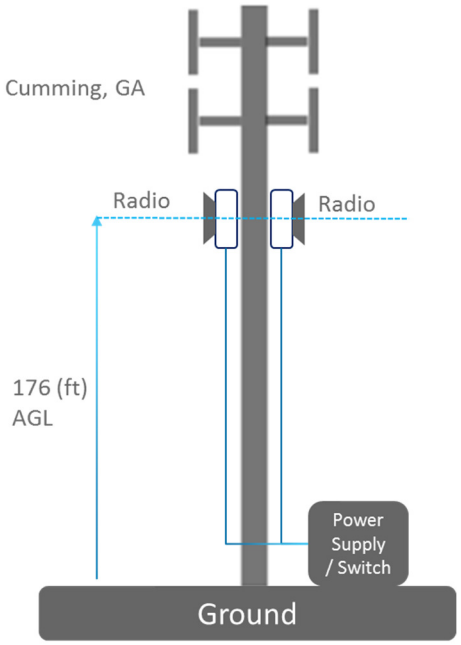

Figure 1 - Possible Radio Mount Cumming, GA

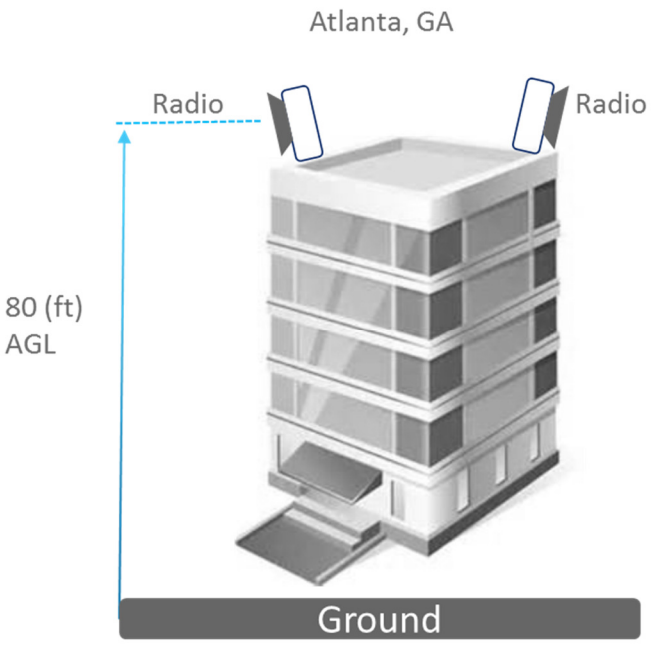

Figure 2 - Possible Radio Mount Atlanta, GA