Exhibit

Applicant seeks a two (2) year experimental license to measure radiation patterns of high gain antennas using drone technology. The results will be used to assist in qualifying antennas used for point-to-point links and assess sidelobe suppression techniques.

Correctly measuring the radiation pattern of a high gain antenna can be challenging as it must be done in the antenna's far field, often at 100 meters or more. Traditional outdoor testing in a horizontal plane introduces limitations such as ground and structural reflections causing errors due to multipath. Additional technical logistics and personnel safety issues are introduced when performing tower-based experiments.

Applicant wishes to use a drone as a faster, easier and safer way to make such measurements. The technique will place an antenna under test (AUT) on the ground, facing skywards and connected to a receiver. A GPS equipped drone, carrying a lightweight signal generator with a downward facing antenna, is flown directly above it. Slowly rotating the AUT from horizon to vertical to horizon (0 to 90 to 180 degrees of elevation) will record the antenna pattern of gain versus angle.

The experimentation will occur outdoors at the AT&T campus, 200 S. Laurel Ave, Middletown NJ 07748, centered at LAT 40.397454 degrees/LON -74.135606 degrees within an extent of 1 kilometer in radius about this point (see Figure 1: AT&T Campus, Middletown New Jersey).

The frequency bands requested are

a. 5.925 to 6.425 GHz
b. 6.525 to 6.875 GHz
c. 10.7 to 11.7 GHz
d. 17.7 to 19.7 GHz
e. 21.2 to 23.6 GHz
f. 24.8 to 25.3 GHz
g. 38.4 to 40.0 GHz

The drone will carry a continuous wave (CW) signal generator of less than +20dBm (100mW) output power and transmit through a downward facing tapered slot or horn antenna, maintaining overhead position at or below 120 meters above ground level (AGL). The CW signal will operate within one of the frequency bands listed above and periodically transmit station identification per 47 C.F.R. §5.115(a). The drone antenna will have a gain of +8dBi with a directional pattern as seen in Figure 2. If we take an envelope view of the antenna pattern looking down as in Figure 3, the radiated power density directly below will be less than -53 dBW/m^2 and less than -86 dBW/m^2 at the campus edge. Distance from the nearest airport facility is 20 km. The drone will be flown by one of an AT&T FAA certified drone pilots in compliance with FAA Part 107 drone regulations.

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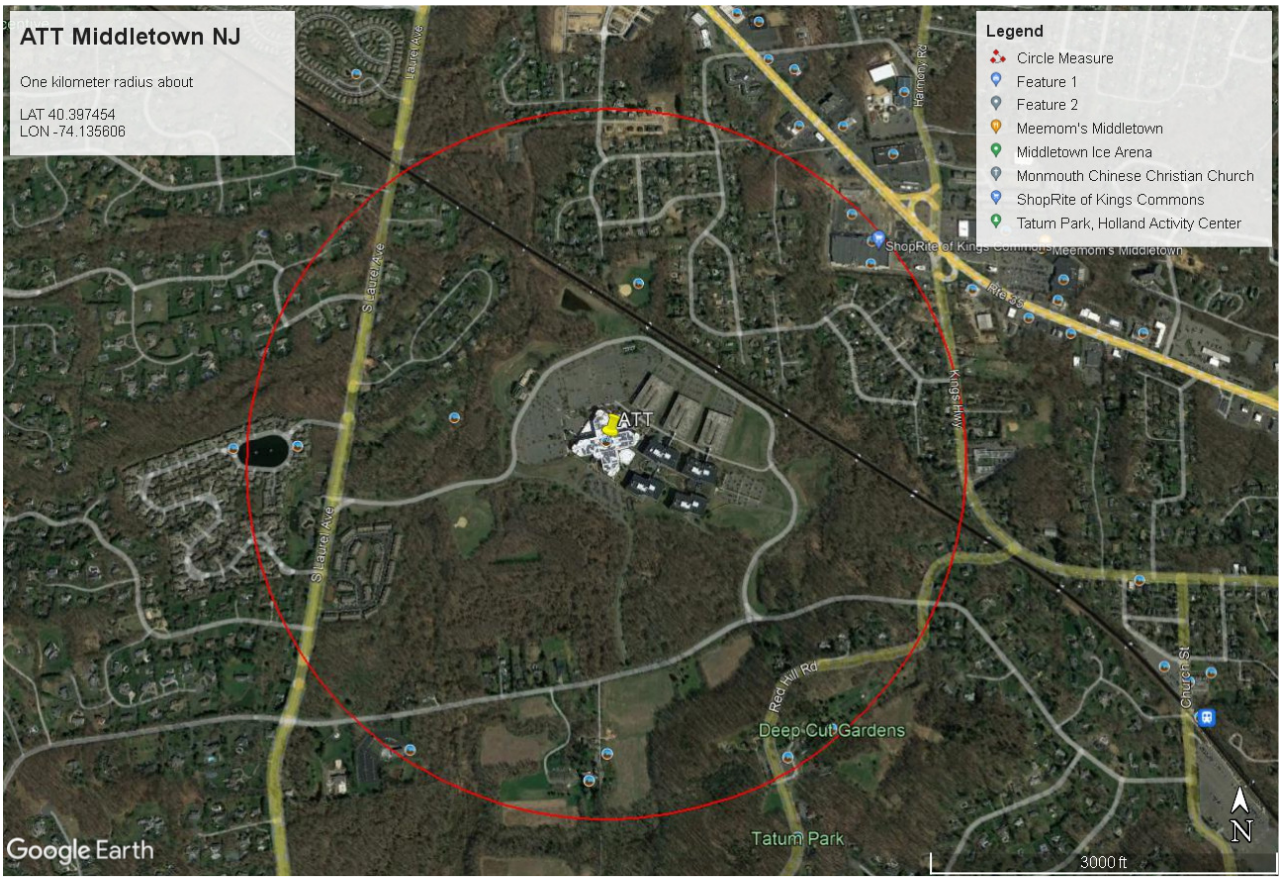

Figure 1: AT&T Campus, Middletown New Jersey

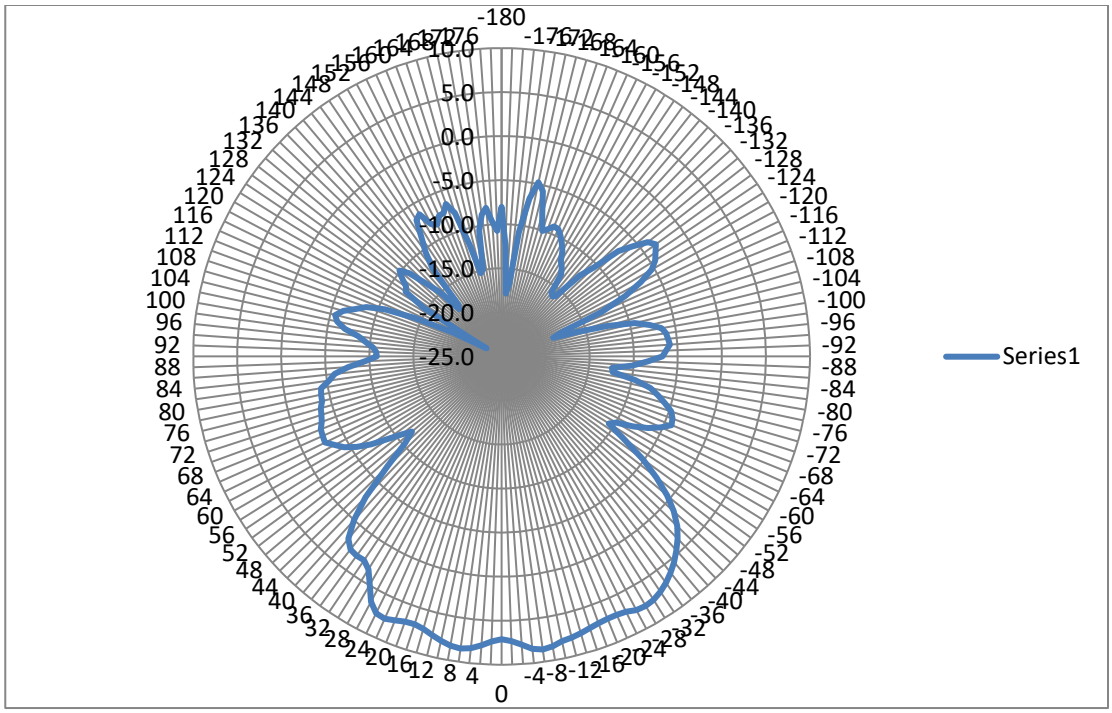

Figure 2: Drone Transmit Antenna Pattern, Gain (dBi) versus Angle (degrees), full 360 deg.

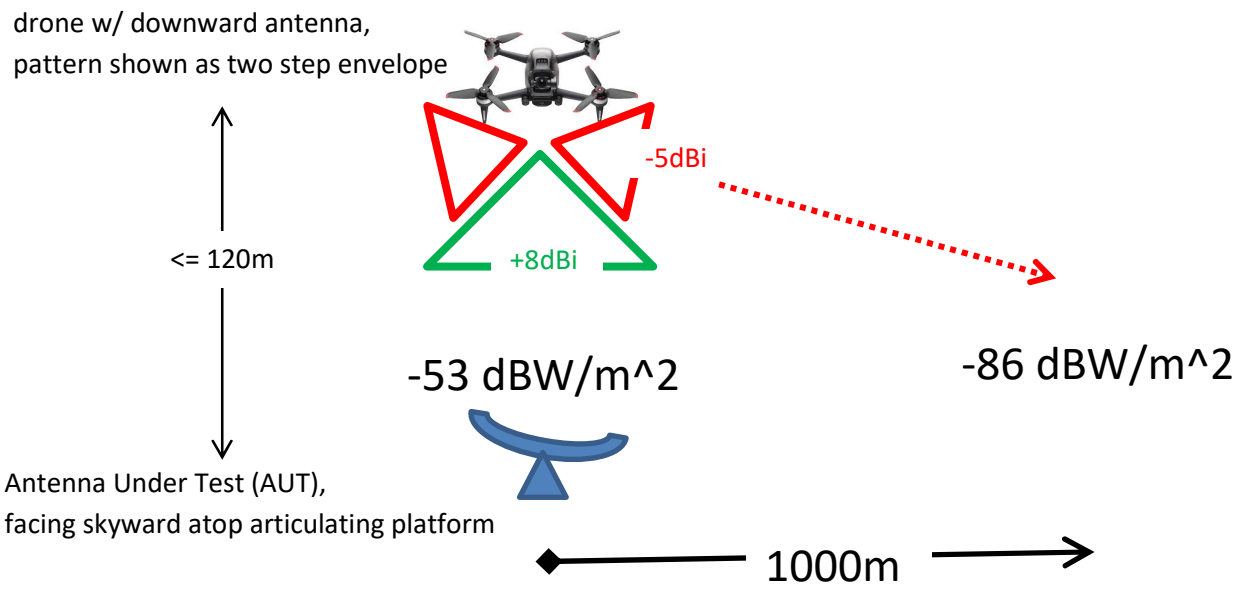

Figure 3: AT&T Campus Profile View (not to scale)