Testing Description

The project aims to measure the propagation characteristics of millimeter wave (mmWave) signal with 1 GHz RF bandwidth. We are planning to conduct wireless propagation measurements around NYU Tandon School of Engineering, Brooklyn NY, at 28, 38, 60, and 73 GHz with a power level less than 10 dBm with 30 dB horn antennas, like what we did in the past few years (Summer 2013, Spring 2014, Spring 2015, Fall 2015, and Summer 2016). The aim of the our research is to conduct wireless propagation measurements to study the characteristics of the wireless channels at millimeter wave which could be used for 5G or future 6G communications.

The output power from our transmitter is less than 10 mW. Millimeter wave radiation is nonionizing since the photon energy is not nearly sufficient (more than four orders of magnitude weaker than ionizing radiation levels) to release an electron from an atom or a molecule. So it is safe and has negligible biological effects of humans and animals.

The equipment of our measurements include one transmitter cart, one receiver cart, one mast of 4 meter, and one tripod of 1.5 meter. So we'd like to use the electrical outlets to get power for our equipment. The transmitter and the receiver carts will consume less than 600 W each. Please find the following photos which shows the equipment:

The receiver cart and tripod

The receiver cart and tripod

The transmitter cart and 4-m mast

The transmitter cart and 4-m mast

During the measurements, at least one person will stay at the transmitter cart and one person will stay at the receiver cart, so the equipment will not be left unattended. While conducting the measurements, all the cables will be well placed and covered with conduit ramps, cones, and tape, so there will be no tripping hazard. Firstly, the transmitter will point to a certain direction and the receiver will sweep 360 degrees in azimuth and record the measurements. Then, the transmitter will point to another direction and receiver repeat the sweep until all the information of the channels are recorded.