

JHU APL RSSI Experiment

- **Background:** This Special Temporary Authority (STA) License Application covers research initiated under the contract HQ003419D0006.
- **Experiment Description:** The Johns Hopkins University Applied Physics Laboratory (JHU APL) is a University Affiliated Research Center (UARC) that conducts basic research for the United States Government (USG). JHU APL is under contract to conduct a RF over the air (OTA) experiment for the Department of Defense (DoD). During the experiment, JHU APL will transmit from ground based RF equipment to an instrumented OTA aircraft. A principal scientific objective of the experiment is to measure receive signal strength indicator (RSSI) voltage levels at the experiment's Intermediate Frequency (IF) conversion state as a function of aircraft system dynamics, environmental conditions and ground based equipment configuration settings; primarily at ranges between 25 - 50 nautical miles (NM) from the ground based equipment (GBE) to the instrumented OTA aircraft and at flight levels between 4500 – 11500 feet mean sea level (MSL). The instrumented OTA aircraft consists of an L-band blade antenna (UB Corp AO120) and Contractor Furnished Equipment (CFE) electronics. The GBE consists of commercial off the shelf (COTS) antenna/positioner/controller suite, COTS amplifier (Ophir 500S1) and CFE electronics. The GBE will be installed at a fixed site in Chambersburg, Pennsylvania (N 39 59 20, W 77 40 56). The experiments general area of flight operations will be in the Hagerstown VOR (HGR/240/100) clockwise through HGR 330/100, HGR 060/100 back to HGR. The experiment will occur over a two week duration during the requested license period and between the hours of 0800 – 1700 with RF radiation occurring for no more than 30 minutes per hour. JHU APL will operate on a not to interfere basis and can deconflict with FAA radar sites and operations as required. Cease buzzer procedures and operations are regularly employed by JHU APL personnel for FCC OTA experiments and the JHU APL POC is Dr Robert Schmid (240-228-6653). Follow on experiments, if funded by the DoD, are anticipated to include the evaluation of different modulation schemes.
- **Emission Information:**
 - 1337.545 MHz +/- 7.5 MHz (Unmodulated carrier, no information transmitted)
 - 0.9 W Max Tx Power (0.9 W average), 90 W Max ERP (90 W average)
 - 1366.72 MHz +/- 7.5 MHz (Unmodulated carrier, no information transmitted)
 - 0.9 W Max Tx Power (0.9 W average), 90 W Max ERP (90 W average)
 - 1384 MHz (Unmodulated carrier, no information transmitted)
 - 0.9 W Max Tx Power (0.9 W average), 90 W Max ERP (90 W average)
- **FCC License Request:** 5/1/2021 – 9/30/2021

Ground Dish Antenna

- Number of units: 1
- Manufacturer: ARA
- Model Number: C0958-800
- Polarization: Horizontal
- 3-dB Beamwidth: 13 deg Az/EI

