

DESCRIPTION OF EXPERIMENT

Rockwell Collins is developing a DO-362 compliant CNPC radio for UAS operations. The radio, called CNPC-5000E, operates in the 5030 MHz to 5091 MHz band. This radio aims to comply with the requirements specified in DO-362 to enable UAS operations in commercial airspace. The radio outputs up to 1W and is designed to meet DO-362. In specific use cases, an external power amplifier may be used to reach the DO-362 MOPS limit of 10W average transmit power.

In support of validating the CNPC waveform and hardware, over-the-air testing is required. Multiple antenna configurations will be used to test for both the ground and airborne segments. The three modes of over-the-air testing currently being considered are the following:

- Lab testing: To be conducted using a CNPC-5000E located on lab benches in labs located at Rockwell Collins.
- Ground to ground testing: To be conducted by installing a CNPC-5000E in a 300-foot tower owned by Rockwell Collins and a mobile can equipped with various test equipment.
- Air to ground testing: To be conducted by installing a CNPC-5000E as a payload in a manned aircraft and communicating with a fixed ground station. The CNPC-5000E will not be used as the C2 link for these tests.

The final antenna choice will be subject to study and will be selected within the first six months of this effort. The antenna selection will involve overcoming environmental and platform constraints to ensure a sufficient range is achievable. The target range of operation is up to 69 nautical miles.

Ground testing will be based out of Cedar Rapids, Iowa. For ground-based mobile testing, a mobile van will drive to various waypoints near Cedar Rapids. Flight tests will be based out of the Cedar Rapids Airport (CID).

Current antennas being considered:

- Antenna 1: Directional ground antenna with 8 dB of gain
- Antenna 2: Omnidirectional fixed ground antenna with 2 dB of gain
- Antenna 3: Omnidirectional airborne antenna with 6.2 dB of gain