

## Northrop Grumman Systems Corporation

Northrop Grumman Systems Corporation submits this application for experimental Special Temporary Authority (STA) for the purpose of conducting tests and evaluation under U.S. Government contract W56KGY-20-D-0012.

### Antenna information

Airborne mobile:  
L3 Communications 9.5-inch parabolic dish  
Antenna gain: 26 dBi  
Polarization: RHCP  
Beamwidth: 7 degrees

Fixed Base:  
L3 Communications 48-inch parabolic dish  
Antenna gain: 44 dBi  
Polarization: RHCP  
Beamwidth: est. 3 degrees

### Waveform Information (Both airborne and fixed)

Pulse widths: variable, from 40 usec to 102 usec  
PRF(s): variable, from 500 Hz to 3,000 Hz

### Description of Tests and Evaluations

This request is to permit operation of a TCDL in support of radar experimentation from a fixed ground station with an uplink to a local airborne platform. Data regarding the separate radar system will be transmitted between the aircraft and the ground station.

The TCDL antenna on the aircraft is mechanically steered to a fixed point on the ground by a GPS algorithm. When the aircraft is in the proper heading, the control software points the antenna to the desired location and enables RF transmission. If the antenna cannot achieve the required pointing, RF transmission is disabled. The fixed ground station has a beam tracking algorithm that enables it to lock onto and determine the source of the desired signal, and maintains pointing at the airborne platform. If lock is obtained, the ground station is enabled for RF transmission. If lock on the airborne transmitter is lost, the ground station disables RF transmissions.

