

Request for Special Temporary Authority

I. Introduction

By the instant application (“Application”), Dynetics, Inc. (“Dynetics”) requests that the Commission grant Special Temporary Authority (“STA”) to permit Dynetics to operate the facilities (the “Facilities”) specified in the instant application from March 1, 2018 to September 1, 2018.

II. Purpose and Nature of the Operation

Dynetics, headquartered in Huntsville, Alabama, delivers high-quality, high-value engineering, scientific, and information technology (IT) solutions to customers within the U.S. government and a range of other market segments. Dynetics provides complete lifecycle analysis, engineering, and hardware, to support customer missions.

An experimental STA is requested to conduct ground-based transmissions as part of the testing of the wireless two-way data link for the Gremlins Air Vehicle prototype UAS. This activity is necessary to support the AFRL Gremlins Phase II contract for initial testing of the Gremlins system. The applicable contract information is as follows:

Agency: Air Force Research Labs (AFRL)
Contract No: FA8650-16-C-7618
Government POC: Mr. Juan Martinez, 937.713.6652, juan.martinez.22@us.af.mil

Waiver of the Station ID rules set forth at Section 5.115 is respectfully requested.

Operations are required on a temporary-fixed basis at and around Huntsville, AL (Antenna 1) and on a temporary-fixed basis at and around Phoenix Mesa Gateway Airport in Mesa, AZ (Antenna 2). Operations at the two locations will not occur at the same. Operations in Mesa, AZ will be at the Phoenix Mesa Gateway Airport: 33°18'15.42"N, 111°39'30.53"W; 5835 S Sossaman Rd, Mesa, AZ 85212. When operating at the airport, operations will be coordinated with the airport authority.

A. Power Levels and Directionality

All stations have the same performance specifications including modulating schemes, bandwidth, and transmitter power, 8 Watts. The stations at both Huntsville, AL and Mesa, AZ will use a directional antenna with a gain of 16 dBi. Thus the ERP of the ground stations will be a maximum of 320 Watts, mean (average). The radiation pattern of the ground station antennas is 91-degrees in azimuth and 8 degrees in elevation. The radiation pattern of the antennas will be pointed arbitrarily in azimuth, depending on the tests being conducted.

Width of beam in degrees at the half power point:	91-degrees in azimuth 8 degrees in elevation
Orientation in horizontal plane:	Arbitrary
Orientation in vertical plane:	Level with horizon

B. Equipment and Technical Specifications

The wireless two-way data link, Long Range Data Link (LRDL) Software Radio developed by Aeronix, has a multi-carrier orthogonal frequency division multiplexing (OFDM) transmission. The transmitter output power is 8 W Average at BPSK for OFDM. The LRDL will utilize two occupied bandwidths of 3.5 and 7 MHz. The two emission designators identified represent these two maximum emission bandwidths. The LRDL may use BPSK, QPSK, QAM16, or QAM64 subcarrier modulations, configured as follows:

BPSK 1/2@ 3.5MHz
 BPSK 1/2 @ 7MHz
 QPSK 1/2 @ 3.5 MHz
 QPSK 1/2 @ 7 MHz
 QPSK 3/4 @ 7 MHz
 QAM16 3/4 @3.5 MHz
 QAM16 3/4 @7MHz
 QAM64 2/3 @7MHz

The digital datalink can operate on channels of 1-MHz spacing within the frequency range requested. The requested action frequency range represents the maximum usable emission bandwidth when operated on the lowest and highest available channels.

III. Interference Mitigation

Dynetics is well aware of its obligations under Part 5 of the Commission's rules to avoid interference to co-channel licensees in non-experimental services, and will take all steps to ensure compliance with this obligation.

Dynetics understands that FAA (or other government stakeholders) may restrict radiation to certain azimuth and/or elevation sectors in order to ensure that the proposed Facilities do not pose a threat of interference to adjacent emitters. Accordingly, this is to confirm that Dynetics stands ready to work with the FAA to identify any reasonably necessary restrictions for the system.

IV. Stop Buzzer

Dynetics advises that the following will be available by wireless telephone and will act as “stop buzzers” if any issues regarding interference arise during testing:

Primary: Chris Statler (256-503-9283)

Secondary: Samuel Petersen (573-578-7748)

For the foregoing reasons, Dynetics respectfully submits that approval of this Application is in the public interest, convenience and necessity.