

NARRATIVE STATEMENT

Pursuant to Section 5.61 of the Commission's rules, 47 C.F.R. §5.61 (2015), FlightScan Corporation (FlightScan) hereby respectfully requests experimental authority for a twelve month period commencing February 1, 2017, to use discrete frequencies within the bands 433.2125 MHz to 434.4625 MHz and 5030-5091 MHz.. FlightScan seeks such authority to enable flight operations that are intended to evaluate its proof-of-concept to operate a Remotely Piloted Aircraft System (RPAS) that provides precise photogrammetry in direct support of bulk electrical power transmission networks.

Grant of this application would also allow FlightScan to expand upon the authority it obtained under a special temporary authorization (STA) granted under File No. 0168-EX-ST-2016, call sign WJ9XKW. That STA permitted the company to conduct initial proof-of-concept testing in Orange and Brevard counties of Florida near Wedgefield between Orlando and Titusville, and grant of this application would duplicate and replace that prior authority.

FlightScan is also fully aware of its need to secure FAA approval for all flights of unmanned aircraft for civil applications. No flights of unmanned aircraft will be conducted without proper FAA authority and approval. In fact, FlightScan already has been coordinating with FAA personnel. Its key contact is Mr. Dara Albouyeh, who has been coordinating with FlightScan personnel in connection with its FAA certification activities. In addition, FlightScan has been coordinating with Mr. Kevin Hall, its FAA contact out of Long Beach, CA. For the FCC staff's convenience, their contact information is provided below:

Mr. Dara Albouyeh
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FAA LA ACO
Long Beach, CA
(562) 627-5222

Mr. Kevin Hull
Manager FAA LA Aircraft Certification
Office (ACO)
Long Beach, CA
(562) 627-5202

The following additional information is provided in support of this request:

1) Applicant

FlightScan Corporation
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(FRN: 0024674616)

2) Need for authorization

FlightScan seeks experimental authority to expand its authority to evaluate the functionality and reliability of certain unmanned aircraft that will monitor and inspect utility powerlines and other similar critical infrastructure. FlightScan intends to demonstrate the feasibility and safety of an RPAS for beyond-line-of-sight flights. The experimental license is needed

for the operation of ground control facilities that provide command and control data to the aircraft while in flight. Experimental authority for downlink channels is also needed to test the functionality and reliability of return transmissions.

3) Purpose of Operation

FlightScan proposes to conduct research into the performance and reliability of RPAS to provide continuous, routine inspection of critical and strategic infrastructure using a highly sophisticated, technically advanced RPAS equipped with the latest imaging sensor technologies to accomplish the network monitoring. FlightScan will follow a precise mission plan that includes close interaction with a participating electrical utility to provide precise data concerning the health and reliability of its electrical transmission network. Employing sophisticated Safety Management Systems procedures, FlightScan's mission is grounded in safety: safety for the public on the ground, safety for the stakeholder, and safety for those in the air. FlightScan intends to demonstrate that its operational concept represents the safest, most cost effective and reliable method for monitoring and supporting the nation's electrical power grid.

FlightScan does not seek authority to conduct market studies or provide for-profit communications services under the requested experimental authority. The participants in the research are principals or employees of the company or participating utility personnel and will be advised that: (a) the operations are being conducted under an experimental authority issued to FlightScan, (b) FlightScan is responsible for the experimental activities, (c) all operations are being conducted on a non-interference basis, and (d) after the test is completed, FlightScan will retrieve and recover all devices that do not comply with FCC regulations. FlightScan understands that the FCC may specify these as well as other conditions on its authorization.

4) Spectrum Requested

The primary link between the ground control station and the RPAS will occupy the 5030-5091 MHz band. This band has been allocated for unmanned aircraft use but it not yet available for licensing under FCC rules. This spectrum would support both ground-to-air and air-to-ground links. FlightScan seeks flexibility to operate its 25 MHz signal across the band to maximize operational performance and minimize the potential for interference.

A secondary link in the UHF band would provide redundancy for the ground-to-air command and control link. This link would operate within 433.2125 MHz to 434.4625 MHz. The secondary control link would occupy 25 kHz within that band. FlightScan seeks flexibility to select the most appropriate channel within this band during the course of the experiment to maximize operational performance and minimize the potential for interference.

In the event that FlightScan receives a complaint of harmful interference resulting from the proposed operation, it will take immediate action to address the interference, including if necessary discontinuing its operations. The company has designated David Morton, VP of Operations and Safety, to act as the “stop buzzer” for this purpose. His contact information is also provided below.

Notwithstanding the precautions it will take, FlightScan does not expect harmful interference to occur. The requested 5 GHz frequencies are mostly unoccupied at this time and have been proposed for the use described in this test. Further, operations will be limited in scope and duration – flights will typically last for only 180 minutes a day (which includes ground setup and programming) and be repeated only about least three times per week. FlightScan will also coordinate with the appropriate FAA Air Traffic control facility and publish a NOTAM and a flight Plan prior to every flight. It will also coordinate its flight missions with any other user the Commission deems necessary.

5) Technical Specifications

a. 5 GHz Temporary Fixed Ground Control Stations

- i. Transmitter Power Output (TPO): 8 Watts
- ii. Effective Radiated Power (ERP): 315 Watts
- iii. Emission: 25M0F7W
- iv. Frequencies: Within 5030-5091 MHz
- v. Antenna: BMS Model Number BMA-9034, high gain panel antenna that provides 25dBi gain
- vi. Overall Height of Antenna(s) Above Ground. 80 feet or less.

b. 5 GHz Mobile Stations.

- i. TPO: 8 Watts
- ii. ERP: maximum of 25 Watts
- iii. Emission: 500K0F7W
- iv. Frequencies: Within 5030-5091 MHz
- v. Antenna: The airborne transmitter in the RPAS operates with 8W transmitter power output which can be supplied to one of two antennas onboard the aircraft, a 4.5dBi omni antenna and a 10.5dBi horn in the nose of the aircraft. After losses in the diplexer assembly and in cables, the total power into the antenna results in approximately 3.6W. The 4.5dBi omni antenna yields an equivalent isotropic radiated power (EIRP) of 10W, while the 10.5dBi horn antenna yields an EIRP of 39.8W or 6W and 25W ERP, respectively.

c. 433 MHz Temporary Fixed Ground Control Stations.

- i. TPO: 1 Watt
- ii. ERP: 2 Watts
- iii. Emission: 25K0F1D
- iv. Frequencies: Within 433.2125 MHz to 434.4625 MHz
- v. Antenna: The transmitter employs a 4dBi vertically polarized antenna

Notes: Other emission modes other than specified above under subsections (a) through (c) may be utilized, but in no event will the emissions extend beyond the frequency bands requested. All power levels will comply with the limits set forth in the FCC's rules, including those relating to human exposure to radiation.

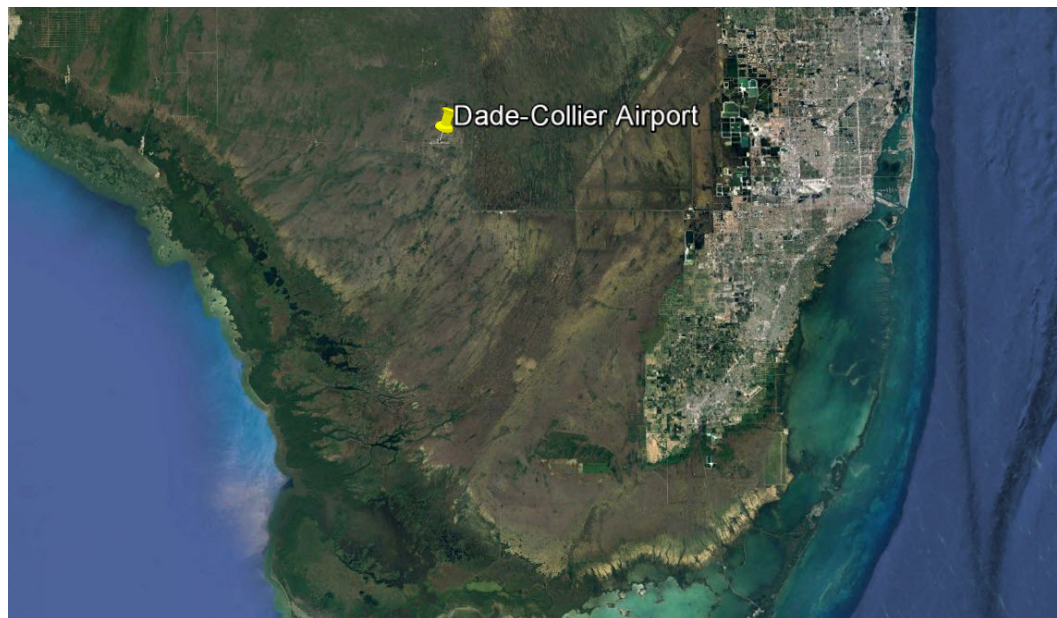
d. Proposed Operating Locations

Subject to the FAA's approval, FlightScan's proof-of-concept mission profile will track along a narrow electrical power line right-of-way located within Orange County, Florida and Brevard County, Florida near Wedgefield between Orlando and Titusville. The illustration below represents FlightScan's operational area under this proposed license. The experiment will survey an approximately 42 kilometer transmission line segment for the Orlando Utility Commission, a Florida-based electric utility company. The yellow line represents the actual transmission line location and depicts the overall route of flight. Thus, the operations will occur within a narrow portion of an area defined in the accompanying application as "a 21 kilometer radius of the center coordinates (in NAD 83 Datum): 28°30'14"N; 80°58'46"W."

The operating area for the ground control station and aircraft will be within the right-of-way for the transmission line segment, which is located in a rural area in central Florida between Orlando and Titusville Florida. There is no population exposure within the right-of-way but the flight segment crosses over two highways (Florida Turnpike and Interstate 95). The operating area is nearly flat with little elevation variance. The average height of the terrain is approximately 22 meters above mean sea level.



In addition, FlightScan seeks permission to conduct initial testing of the equipment to be used during the evaluation within a 5 kilometer radius of Dade-Collier Airport (center coordinates in NAD 83 Datum: 25°51'49"N; 80°53'53"W), a remote airport located in the Everglades area of Florida, as shown in the image below. Such testing will be conducted under the supervision of FAA personnel. Specifically, FlightScan seeks to conduct initial tests of the airborne and ground control station transceiver assemblies integrated within an RPAS – an RPAS that has been in production for several years for use in regions outside of the United States. Such initial testing is necessary before FlightScan conducts tests as described above in central Florida between Orlando and Titusville Florida.



e. Equipment To Be Used

FlightScan proposes to deploy only one ground control station and one airborne transmitter located aboard a single unmanned aircraft. FlightScan will limit the power, area of operation, and transmitting times of these units to the minimum necessary to evaluate the equipment. FlightScan does not propose to supply station identification as set forth in Section 5.115 of the Commission's Rules.

As noted above, the equipment includes airborne and ground control station transceiver assemblies that have been in production for several years for use in regions outside of the United States. As detailed in Section 5, the systems each include 8W TPO transmitter/receiver assemblies including diplexers, cables, and antenna assemblies. The airborne data terminal uses an RF switch to select either a 10dBi horn antenna or a 4.5dBi omnidirectional antenna. The ground control station system uses the same transmitter/receiver system connected to a

multi-element 26dBi tracking antenna system. The ground control station antenna is typically mounted on a tripod or on an elevated mast.

6) Restrictions on Operation

As described above, FlightScan does not propose to market, sell, or lease any prototype equipment to end users. All transmitting equipment will remain in FlightScan's possession and control during the experimentation and demonstration. If any different treatment becomes necessary during the course of its experimentation and demonstrations, FlightScan will seek separate and additional authority from the agency.

Also as noted above, FlightScan recognizes that the operation of any unapproved or unlicensed devices under experimentation must not cause harmful interference to authorized facilities. Should interference occur, it will immediately take reasonable steps to resolve the interference, including if necessary discontinuing operation. To that end, the company will advise persons operating the equipment that permission to use the equipment has been granted under experimental authority issued to FlightScan, is strictly temporary and may be canceled at any time. The company will also advise operators of the condition that the equipment may not cause harmful interference.

7) Public Interest

FlightScan submits that issuance of experimental authority is in the public interest, convenience, and necessity. Grant of this application will permit FlightScan to research beyond line-of-sight flights designed to observe and protect the nation's critical infrastructure assets.

8) Contact Information

a. Company Contact and Stop Buzzer

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