

Capital Sciences, LLC
Application for Experimental Special Temporary Authority
ELS File No. [0522-EX-ST-2019]

NARRATIVE STATEMENT

Pursuant to Section 5.3(j) and Section 5.61 of the Federal Communications Commission's ("FCC") rules, Capital Sciences, LLC hereby respectfully requests a special temporary authority ("STA") from April 8, 2019 to October 8, 2019 to operate in the 24.45-24.65 GHz band to test a new radar developed by Echodyne Corp.

Grant of authority to test at the proposed location will enable Capital Sciences to validate the Software Interface and Performance of Echodyne's EchoGuard (MESA-SSR) radar as a ground-based radar for situational awareness of manned aircraft..

In support of this request, the following is shown:

A. Purpose of Operation and Need for Special Temporary Authority:

Echodyne Corp's EchoGuard radar is a high performance ultra-low cost, size, weight, and power electronically scanning radar. This requested STA is to enable Capital Sciences to validate the proper system integration of the EchoGuard radar with systems providing situational awareness to UAS operators. This operation will be for testing purposes only.

B. Location of Proposed Operation:

Capital Sciences proposes to test the radars on the ground within a specified area of operation. By this application, Capital Sciences seeks authority to conduct tests at the following location:

Location	Coordinates (NAD83)	Radius of Operation
Herndon, VA	38° 57' 20" -77° 23' 00"	25 km

C. Technical Specifications:

1. Frequencies Desired

Capital Sciences requests authorization to operate in the 24.45-24.65 GHz band.

2. Effective Radiated Power

The units to be deployed operate at a peak maximum transmitter power output of 4W, and a peak maximum effective radiated power of 486W.

Capital Sciences will reduce the actual powers to the minimum power needed for successful operation, based on set-up and testing at the proposed location. Operations will be conducted to comply with rules relating to human exposure to radiation.

3. Modulation and Emissions

The radar uses linear FM modulation. The primary emission designator is 190MFXN. Other emission modes may be utilized, but in no event will the emissions extend beyond the frequency bands requested.

4. Antenna Information

No antennas will be mounted in a fashion that will require approval under FAA and FCC rules and regulations.

5. Equipment To Be Used

The tests will be conducted with [2] EchoGuard (MESA-SSR) radar units to confirm successful integration of 2 sensors with overlapping coverage.

D. Protection Against Causing Interference:

As noted above, Capital Sciences has requested authority to operate in the 24.45-24.65 GHz band. It has conducted a search of the Commission's Universal Licensing System database and determined that there are no licensed operations in that spectrum.

In the event that it receives a complaint of harmful interference resulting from the proposed operation, Capital Sciences will take immediate action to address the interference, including if necessary discontinuing its operations. The company has designated David Stewart, whose contact information is provided below, to act as the "stop buzzer" for this purpose.

Furthermore, the length of the test period is short, extending only from April 8th, 2019 to October 8th, 2019. During that period, the proposed operations will be limited in scope. Capital Sciences will transmit for only limited times during this period for integration testing.

In summary, the proposed operation should not interfere with any licensed operation.

E. Restrictions on Operation:

Capital Sciences recognizes that the operation of any equipment under experimental authority must not cause harmful interference to authorized facilities. Should interference occur, Capital Sciences will take immediate steps to resolve the interference, including if necessary arranging for the discontinuance of operation.

In addition, Capital Sciences will advise entities using the equipment that permission to operate has been granted under experimental authority, that such operation is strictly temporary, and that the equipment may not cause harmful interference.

F. Public Interest:

Grant of an authorization will permit Capital Sciences to develop an innovative and safe approach to safely operating UAS in the FAA National Airspace System.

G. Contact Information:

For questions, please contact:

David Stewart
570 Herndon Parkway
Suite 500
Herndon, VA 20170
dstewart@capsci.com
(cell) 703-283-7083

In the unlikely event interference concerns should arise during the period of authorization requested by this application, please contact the company's "Stop Buzzer" identified below:

David Stewart
dstewart@capsci.com
(cell) 703-283-7083