

**Echodyne Corp.**  
**Application for Experimental Special Temporary Authority**  
**ELS File No. [\_\_\_\_-EX-ST-2018]**

**NARRATIVE STATEMENT**

Pursuant to Section 5.3(d) and (f) and Section 5.61 of the Federal Communications Commission's ("FCC") rules, 47 C.F.R. §§ 5.3(d), (f), 5.61, Echodyne Corp. hereby respectfully requests a special temporary authority ("STA") from February 21, 2018 to August 17, 2018 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 locations will enable the company to demonstrate the capabilities of its radar technology for navigation and security applications.

In support of this request, the following is shown:

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

Echodyne Corp., headquartered in Bellevue, Washington, is making high performance ultra-low cost, size, weight, and power electronically scanning radars based on its Metamaterial Electronically Scanning Array ("MESA").

Under other authorizations, Echodyne has tested its MESA-DAA, an electronically scanning detect and avoid (DAA) radar for small UAVs and other aircraft, and its MESA-SSR, a ground-based version of the same radar for use in navigation systems and security and surveillance (SSR) systems. This requested STA is to enable Echodyne and its partners to validate and improve the performance of the MESA-DAA and MESA-SSR radars, including as part of NASA's UAS Traffic Management Technology Capability Level 3 testing.

**B. Location of Proposed Operation:**

Echodyne proposes to test the radars on the ground and on airborne platforms within a specified area of operation. Any use of UAVs in testing will be done in accordance with FAA regulations. By this application, Echodyne seeks authority to conduct tests at the following locations:

<b>Location</b>	<b>Coordinates (NAD83)</b>	<b>Radius of Operation</b>
Chatanika, AK	65° 07' 34" -147° 28' 35"	25 km, altitudes up to 1500m AGL
Fairbanks, AK	64° 51' 34" -147° 51' 02"	25 km, altitudes up to 300m AGL
Lake Mathews, CA	33° 48' 14" -117° 22' 28"	4 km
Apple Valley, CA	34° 27' 08" -117° 06' 20"	4 km
Ryan, TX	30° 17' 07" -104° 34' 02"	9 km
Jacumba, CA	32° 37' 02" -116° 12' 25"	9 km

Note that the requested locations in Alaska are part of an FAA UAS test facility, and the requested location in Jacumba, CA is part of a Customs and Border Patrol pilot deployment site.

**C. Technical Specifications:**

**1. Frequencies Desired**

Echodyne 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.

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

**3. Modulation and Emissions**

Echodyne proposes to operate using 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. The mobile units on aircraft will operate at heights specified above under Section B.

**5. Equipment To Be Used**

Echodyne proposes to test its MESA-DAA and MESA-SSR radars. It expects that it will be able to conduct its testing with a maximum of 15 units.

**D. Protection Against Causing Interference:**

As noted above, Echodyne 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 ("ULS") 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, Echodyne will take immediate action to address the interference, including if necessary discontinuing its operations. The company has designated Mr. Jeff Finan, 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 February 21, 2018 to August 17, 2018. During that period, the proposed operations will be limited in scope. Echodyne will on average transmit for only 240 minutes over a period of 8 hours on not more than 5 days each week.

In summary, the analysis conducted by Echodyne indicates the proposed operation should not interfere with any licensed operation.

**E. Restrictions on Operation:**

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

In addition, Echodyne will advise entities using the equipment that permission to operate has been granted under experimental authority issued to Echodyne, that such operation is strictly temporary, and that the equipment may not cause harmful interference. Entities will also be advised in accordance with Section 2.803 of the Commission's rules, 47 C.F.R. §2.803, that any unapproved devices have not been authorized as required by the rules of the FCC.

**F. Public Interest:**

Grant of an authorization will permit Echodyne to develop innovative radar equipment that will enhance public safety.

**G. Contact Information:**

For questions about this application, please contact:

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For questions about the company or the testing, please contact:

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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:

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