

**Echodyne Corp.**  
**Application for Special Temporary Experimental Authority**

**ELS File No. 1531-EX-ST-2016**

**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), 5.53 (2015), Echodyne Corp. hereby respectfully seeks special temporary experimental authority **from November 17, 2016 to May 16, 2017** to operate in the 24.45-24.65 GHz band so that it may conduct supplemental tests of its prototype radar system that are designed to demonstrate the capabilities of its radar technology for maritime applications. Specifically, Echodyne seeks to perform tests on the ground and on the water within a 9 kilometer radius of a location in Seattle, Washington.

In support of this request, the following is shown:

**A. Purpose of Operation and Need for Experimental License:**

Echodyne Corp., headquartered in Bellevue, Washington, is researching and developing innovative uses of radar by creating high performance ultra-low cost, size, weight, and power electronically scanning radars. For example, its Metamaterial Electronically Scanning Array ("MESA") offers disruptive capabilities for existing radar applications and enables new categories of radars for unmanned aerial vehicles ("UAVs"), ships and other water vessels, robots, autonomous vehicles, and security.

Under its existing experimental authorization, Echodyne has tested its MESA-K-DEV radar development kit, and its MESA-DAA, which is an electronically scanned detect and avoid radar for small UAVs. The testing has allowed Echodyne to evaluate the performance of the development kit in various settings to support a range of use cases and will validate the performance of the DAA radar for airborne and ground-based radionavigation. Echodyne's previous tests have focused on aeronautical and ground services. The purpose of this STA request is to perform capability testing on maritime applications.

**B. Location of Proposed Additional Operation:**

Echodyne proposes to first test the radar on the ground to validate its detection of objects moving through its field of view, including boats and ships moving through its field of view. The radar will then be installed on a boat and tested on the water to validate its detection of boats, ships and objects onshore. Echodyne will conduct the tests at fixed locations and on mobile boat platforms within a 9 km radius of a location in Seattle, Washington (NAD83: 47° 37' 49" N, 122° 23' 29" W).

**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 are configured to operate at a peak maximum transmitter power output of 2W, and a peak maximum effective radiated power of 243W.

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 190MF3N. Other emission modes may be utilized, but in no event will the emissions extend beyond the frequency bands requested.

**4. Antenna Information**

The fixed transmitter antennas will not, under any circumstances, extend more than 6 meters above ground or a building. The mobile transmitter antennas will not extend more than 6 meters above the water. No antennas will be mounted in a fashion that will require approval under FAA and FCC rules and regulations.

**5. Equipment To Be Used**

Echodyne proposes to test its prototype MESA-K-DEV radar development kit and its DAA radar. It expects that it will be able to conduct its testing with a maximum of 12 units.

**D. Protection Against Causing Interference:**

Echodyne has conducted a search of the Commission's Universal Licensing System ("ULS") database and determined that there are no licensed operations in the 24.45-24.65 GHz band in the area of the proposed additional location. Nevertheless, Echodyne will conduct its tests in a manner to ensure against interference to any licensed or primary operations.

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. Bill Graves, 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 November 17, 2016 through May 16, 2017. The proposed operations will be limited in scope during the term of the authorization requested by this application. Echodyne will on average transmit for only 240 minutes over a period of 8 hours on not more than 3 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 is not seeking authority to perform a market study under this authorization. After the test is completed, Echodyne will recall and recover all devices that do not comply with FCC regulations.

Echodyne also 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 (2015), 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 equipment that will enhance the use of radar technologies.

**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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