

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 to modify its existing experimental license issued under call sign WI2XKY to operate in the 24.45-24.65 GHz band so that it may conduct tests of its developmental radar technologies at additional locations. Grant of this authority will enhance the company's ability to demonstrate the capabilities of its radar technology and to test detect and avoid ("DAA") radar technology for small unmanned aerial vehicles ("UAVs").

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 UAVs, robots, autonomous vehicles, and security.

Under its existing authorization, Echodyne has tested its MESA-K-DEV radar development kit, and its MESA-DAA, which is an electronically DAA radar for small UAVs. The testing has allowed Echodyne to evaluate the performance of the development kit and DAA radar in various settings.

This requested modification to Echodyne's existing experimental license is to enable continued product evaluation tests at locations selected by corporate and government entities interested in Echodyne's technology.

B. Location of Proposed Additional Operation:

Echodyne has tested the radars on the ground to validate detection of objects moving through the field of view, including small UAVs flying through the field of view. The radars have also been deployed to test their performance on remote-piloted small UAVs and on manned helicopter or fixed wing aircraft. All tests involving UAVs are duly authorized by the FAA. By this modification application, Echodyne seeks authority to conduct ground-based and airborne tests at the following additional locations:

Location	Coordinates (NAD83)	Radius of Operation
Arlington, WA	48° 9' 36" 122° 10' 8"	50 km
Cle Elum, WA	47° 13' 28" 121° 2' 15"	75 km
San Diego, CA	32° 33' 27" 116° 51' 58"	5 km
Sinton, TX	28° 02' 21" 97° 32' 33"	2 km
Hampton, VA	37° 5' 45" 76° 23' 7"	2 km
Elberon, VA	37° 2' 38" 76° 46' 6"	2 km
Virginia Beach, VA	36° 40' 41" 76° 1' 39"	2 km
Fort A.P. Hill, VA	38° 5' 44" 77° 15' 57"	2 km
Warrenton, VA	38° 44' 51" 77° 40' 37"	1 km
Williamsburg, VA	37° 18' 49" 76° 38' 15"	2 km
Las Cruces Airport, NM	32° 17' 36" 106° 54' 57"	10 km
Las Cruces Jornada Range, NM	32° 35' 48" 106° 44' 25"	10 km
Torrance, CA	33° 50' 34" 118° 18' 46"	1 km
Long Beach, CA	33° 49' 27" 118° 05' 16"	1 km
Judith Gap, MT	46° 40' 42" 109° 45' 10"	60 km
Grand Forks, ND - Hillsboro	47° 21' 34" 97° 03' 37"	10 km
Grand Forks, ND - CATV	47° 42' 04" 97° 18' 04"	10 km
Boise, ID	43° 13' 38" 116° 45' 59"	3 km
Florence, AZ	33° 09' 41" 111° 17' 46"	10 km

Note that the requested locations at Swinton, TX; Las Cruces, NM; and Grand Forks, ND are part of FAA UAS test facilities, and the requested locations at Hampton, VA; Elberon, VA; Virginia Beach, VA; Fort A.P. Hill, VA; and Williamsburg, VA are part of NASA test facilities.

Also, the requested location at San Diego, CA is selected for the purpose of fulfilling the requirements of a contract with the Department of Homeland Security for enhancing border security under DHS OTA HSHQDC-17-9-00008.

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 base station transmitter antennas will not, under any circumstances, extend more than 6 meters above ground or a building. No antennas will be mounted in a fashion that will require approval under FAA and FCC rules and regulations. The mobile units on UAVs and manned aircraft will operate at heights specified above under Section B.

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 35 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 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 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 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 (2015), that any unapproved devices have not been authorized as required by the rules of the FCC.

F. Public Interest:

Echodyne submits that grant of its request to modify its existing license in the public interest, convenience, and necessity. 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:

Michael Lewis
Senior Engineering Advisor
DLA Piper LLP
500 Eighth Street, N.W.
Washington, DC 20004
Telephone: (202) 799-4042
Facsimile: (202) 799-5007
michael.a.lewis@dlapiper.com

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

Andrea Radosevich
General Counsel
Echodyne Corp.
2380 116th Ave NE
Bellevue, WA 98004
(206) 399-9793
andrea@echodyne.com

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:

Bill Graves
Echodyne Corp.
2380 116th Ave NE
Bellevue, WA 98004
(813) 758-6256
bill@echodyne.com

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