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February 16, 2018

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

**Re: Notice of Ex Parte Presentation
WT Docket No. 17-352**

Dear Ms. Dortch:

On February 14th and 15th, representatives from Echodyne Corp. (“Echodyne”) conducted a series of meetings with various FCC offices and staff members to discuss their radar technology as well as the need for modest regulatory relief as described in Echodyne’s pending *Waiver Request* that is part of the above-referenced docket file.¹

Participating on behalf of Echodyne were Eben Frankenberg, Echodyne’s Founder and Chief Executive Officer, and Andrea Radosevich, its General Counsel. Accompanying Mr. Frankenberg and Ms. Radosevich were Nancy Victory and myself, both from DLA Piper LLC.

In separate meetings held on February 14th, the Echodyne team met with Rachael Bender, Wireless and International Advisor to FCC Chairman Ajit Pai, Erin McGrath, Legal Advisor for Commissioner Michael O’Rielly, Umair Javed, Legal Advisor for Commissioner Jessica Rosenworcel, and, finally, Dana Shaeffer, Charles Mathias, and Scot Stone of the Wireless Telecommunications Bureau. On February 15th, Echodyne met with Louis Peraertz, Senior Legal Advisor for Commissioner Clyburn, and Will Adams, Legal Advisor for Commissioner Carr. Note that Mr. Frankenberg did not participate in the February 15th meetings.

In each of these meetings, Echodyne discussed the ability of its transformative radar technology to address a variety of public safety needs at price points previously unattainable for radar-based security and navigation solutions. For example, the radar can be installed aboard small unmanned aircraft to provide collision avoidance capabilities during beyond visual line of sight flights (*i.e.*, Detect And Avoid technology). The radar can also be used for security around

¹ Wireless Telecommunications Bureau Seeks Comment On Echodyne Corporation Request For Waiver To Permit Licensing And Use Of Ground-Based 24.45-24.65 GHz Radar, DA 17-1190, December 11, 2017 (*Public Notice*). *See also*, Request by Echodyne Corp. for Waiver of Section 2.106 and Sections 87.471 and 87.475 of the Commission’s Rules (filed Oct. 27, 2017) (*Waiver Request*).



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sensitive campus environments such as utility plants, prisons, and athletic stadiums to monitor for unauthorized encroachment by drones or other types of vehicles. The radar is also being tested to assess its performance for monitoring activity along the U.S. borders.

In describing these various use cases, Echodyne noted the need for waiver to enable applications that are considered radiolocation services rather than radionavigation, which is the subject of the *Waiver Request*. The attached slides were used in each meeting and should therefore be associated with the above-referenced docket file.

This notice of *ex parte* presentation is submitted in accordance with Section 1.1206 of the Commission's rules. Please let me know if there are any questions about this submission.

Sincerely,

DLA Piper LLP (US)
Counsel for Echodyne Corp.

/s/ Michael A. Lewis

Michael A. Lewis
Senior Engineering Advisor

Attachment

CC: FCC Meeting Participants

ECHODYNE

Radar Vision Platform for the Autonomous Era

Solving the sensor problem for UAVs,
autonomous cars, and security applications
WT Docket No. 17-352



Echodyne Team



Eben Frankenberg
Founder & CEO



Tom Driscoll, Ph.D.
Founder & CTO



Jeff Finan
Business Dev



William Graves, Jr.
Products



John Hoffmann
Finance and Ops



Andrea Radosevich
General Counsel



60+ FTE
>50 Engineering



INVESTORS

Bill Gates



Echodyne's MESA radar is equally useful for Detect and Avoid
AND Security (including C-UAS)

AIRBORNE

Detect & Avoid



GROUND-BASED

Counter UAS



ECHODYNE

UAVs Need a Better Sensor Solution to Fly Beyond Line of Sight

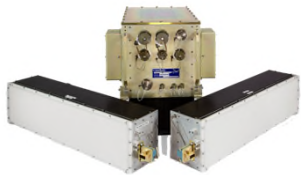
DAA radar is a **REQUIRED** sensor for large UAVs in **Class A** airspace



MESA-DAA delivers **EQUIVALENT** scaled-down radar performance for **small-med UAVs**



AESA



Cost \$100,000s
Size of 8 six packs
Weight 10s lbs
Power 100s watts
12km range for Cessna

MESA



\$10,000s (1/50th)
Kindle sized
1.5lbs (1/33rd)
35w (1/14th)
2-3km (1/4th)

3D Perimeter Security Systems Needed to Protect Against New Threats

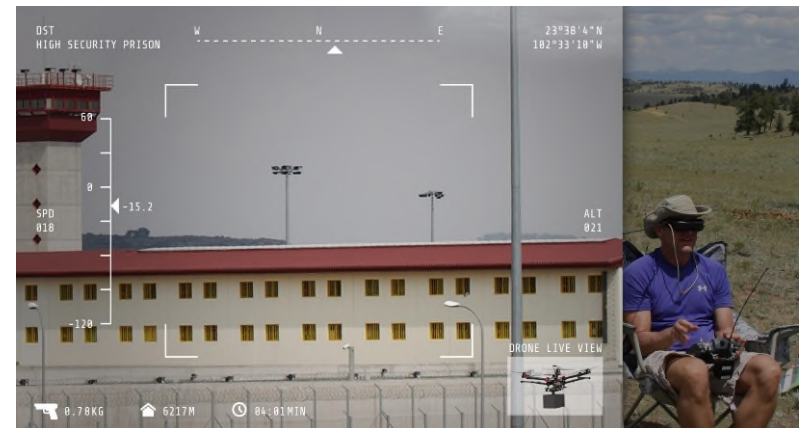
\$500 Drones are Disrupting a \$400B Security Market



Drones do not care about fences



Drone crashes in front of White House (January 2015)



Smugglers use drones to fly contraband into prisons

MESA-DAA | Airborne Detect and Avoid Radar for UAVs



>2km



>750m



>200m



MESA-SSR | Security and Surveillance Radar



>750m



>1.5km



>3km



Need for Waiver

- 24.45-24.65 GHz is allocated for aeronautical radionavigation (airborne and ground-based)
 - Existing allocation covers MESA-DAA airborne detect and avoid radar
 - Equipment authorization pending
 - Existing allocation covers MESA-SSR ground radar when used for GBDAA
 - Echodyne plans to submit application for equipment authorization
- Echodyne would like to use the identical MESA-SSR radar for Security/cUAS uses
 - Echodyne has submitted a waiver request to the FCC to allow Security/cUAS uses of the radar in this same frequency band

Need for Waiver – Affected FCC Rules

- Section 2.106 – Table of Allocations
 - Shared Gov't/Non-Gov't Allocation
 - Co-Primary Radionavigation and Inter-Satellite Service
 - Footnote 5.533 (ISS shall not claim protection from airport radionav stations)
- Subpart Q of Part 87 (Stations in the Radiodetermination Service)
 - Section 80.471 (Scope of Service)
 - (a) Transmission by radionavigation land stations must be limited to aeronautical navigation, including obstruction warning.
 - Section 87.475 (Frequencies)
 - (b)(14) 24,250-25,250, 32,300-33,400 MHz: In these bands, land-based radionavigation aids are permitted where they operate with airborne radionavigation devices.

Public Interest

- Grant of the waiver will allow customers to use the MESA-SSR radar to enhance public safety and protect critical infrastructure and assets
 - Federal and non-Federal Users have an immediate market need for the radar: Border Patrol, prisons, stadiums, amusement parks, etc.
 - Counter UAS is an aviation-related use that is consistent with the underlying purpose of the existing aeronautical radionavigation allocation
- Utilizes a spectrum band that currently lies fallow
- MESA-DAA and MESA-SSR are two versions of a single radar and can safely share the 24.45-24.65 GHz band without interference

Any questions?