

APPLICATION FOR EXPERIMENTAL AUTHORITY

Anduril Industries respectfully requests authority to operate 1 GPS retransmission systems at a fixed location near Bellevue, Washington

The system would use the frequency 1575.42 MHz. Experimental operation of the retransmitter would allow Anduril Industries to test the accuracy and capability of man carried defense hardware to receive and process location data crucial to location finding.

1. Company Background

Anduril Industries is a limited liability company specializing in defense technological innovation. Anduril Industries' address of record and Registration Number are as follows:

Anduril Industries

1400 Anduril

Costa Mesa, CA 92626

FRN: 0028824514

2. Station Location and Use

Anduril Industries will conduct the proposed testing at one site in Bellevue, Washington at coordinates 47° 36' 51.05" N, 122° 11' 38.96" W.

The system is a GPSRKL12G repeaters. All broadcasts will be mounted within fixed structures indoors. Anduril will post signs on doors to the test area notifying that, "GPS re-radiator is in use and the GPS information you receive may be in error."

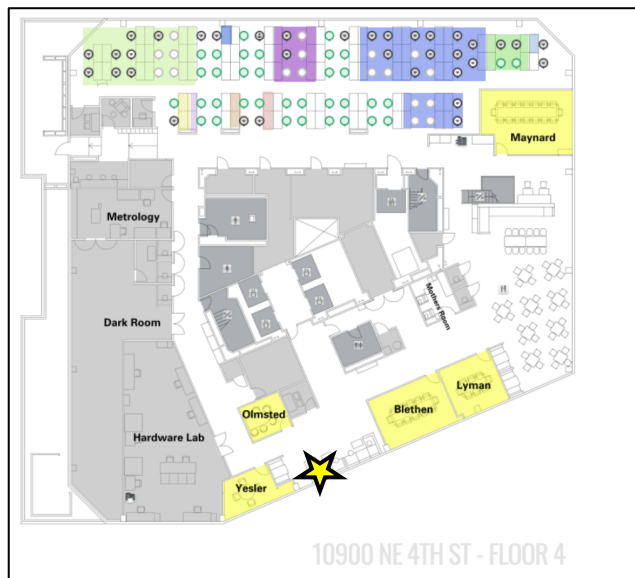


Figure 1 - Floor Plan with Star for Retransmitter Location

¹ See 47 C.F.R. § 5.115.

3. Frequencies

The retransmitter would operate at 1575.42 MHz. Anduril Industries will comply with any limitations applied to non-Federal users in this band pursuant to the FCC Table of Frequency Allocations located at 47 C.F.R. § 2.106. Anduril Industries will operate with the minimum necessary power to conduct its operations and will not exceed the power levels specified in this application and will operate with the emissions, modulation techniques, and frequency ranges specified in this application.

4. Safety

Anduril Industries will comply with FCC rules and regulations regarding the operation of transmitting antennas. All power levels will comply with the limits set forth in the FCC's rules, including those relating to human exposure to radiofrequency radiation. In addition, all personnel who will operate the equipment are knowledgeable as to the effects of radiofrequency energy and will have the ability to control their exposure.

5. Interference Protection

In all locations, Anduril Industries recognizes that the operation of any equipment under experimental authority must not cause harmful interference to authorized facilities. Anduril Industries also recognizes that its proposed operations may require coordination with existing licensees and users authorized on the requested frequencies. Anduril Industries will fully coordinate and operate on a non-interference, non-protected basis with anyone affected or reasonably likely to be affected. Should interference occur, Anduril Industries will take immediate steps to resolve the interference.

Per NTIA 8.3.28.f, we put forward the following analysis on potential interference and compliance with the propagation limits:

¹ See 47 C.F.R. § 5.115.

L1 Compliance Check — Free-Space Path Loss at 30 m

Given

- Received-power limit: $P_R = -140$ dBm/24 MHz at 30 m from the building
- Frequency (L1): $f = 1575.42$ MHz
- Distance, radiator to exterior wall: $d = 0$ m (worst case)
- Requested ERP: 19.2 pW

Step 1 — Convert ERP to EIRP (dBm)

$$P_{ERP} = 10 \log_{10}(19.2 \times 10^{-9} \text{ mW}) = -77.17 \text{ dBm}$$

$$P_{EIRP} = P_{ERP} + 2.15 \text{ dB} = -75.02 \text{ dBm}$$

Step 2 — Maximum permissible EIRP at $d = 0$

Per the FCC formula:

$$P_{TEST} = P_R + 20 \log_{10}(f) + 20 \log_{10}(30 + d) - 27.55$$

$$P_{TEST} = -140 + 20 \log_{10}(1575.42) + 20 \log_{10}(30) - 27.55$$

$$P_{TEST} = -140 + 63.948 + 29.542 - 27.55$$

$P_{TEST} = -74.06 \text{ dBm}$

Step 3 — Verify received power at 30 m

Free-space path loss at 30 m, 1575.42 MHz:

$$\text{FSPL} = 20 \log_{10}(30) + 20 \log_{10}(1575.42) - 27.55$$

$$\text{FSPL} = 29.542 + 63.948 - 27.55 = 65.94 \text{ dB}$$

Received power at 30 m:

$$P_{R,\text{actual}} = P_{EIRP} - \text{FSPL} = -75.02 - 65.94 = -140.96 \text{ dBm}$$

Step 4 — Compare to limit

$$P_{R,\text{actual}} = -140.96 \text{ dBm} \leq P_R = -140 \text{ dBm}$$

Margin: 0.96 dB below the -140 dBm/24 MHz threshold at $d = 0$.

Compliance is met at any physical separation $d \geq 0$; additional standoff only increases margin by $20 \log_{10}\left(\frac{30+d}{30}\right)$.

6. Restrictions on Operation

Anduril Industries recognizes that permission to operate under FCC experimental authority confers no long-term rights. Anduril Industries does not propose to market, sell, or lease equipment to end users or conduct a market trial in conjunction with these operations.

¹ See 47 C.F.R. § 5.115.

7. Request for Waiver of Station Identification Requirements

Anduril Industries requests a waiver of the station-identification requirements in section 5.115 of the Commission's rules.¹ Grant of the requested waiver will promote the public interest by allowing Anduril Industries to determine the most effective operating capabilities of the equipment as part of this operation.

8. Technical and "Stop Buzzer" Contact Information

If Anduril Industries must terminate operations due to any interference concerns, the technical and "stop buzzer" point of contact is as follows:

James Miller

Anduril Industries

1400 Anduril

Costa Mesa, California 92626

Telephone: (949) 827-4993

Email: spectrum@anduril.com

For these reasons, Anduril Industries respectfully requests approval of experimental authority.

¹ See 47 C.F.R. § 5.115.