

**L3HARRIS TECHNOLOGIES, INC.
EXPERIMENTAL LICENSE REQUEST
FILE NO. 0986-EX-CN-2019
NOVEMBER 2019**

L3Harris Technologies, Inc. ("L3Harris") hereby submits the following showing under FCC File No. 0986-EX-CN-2019 in compliance with Section 8.3.28 of the NTIA Manual.

8.3.28 Use of Fixed Devices That Re-Radiate Signals Received From the Global Positioning System

8.3.28 - 1. Individual authorization is for indoor use only, and is required for each device at a specific site.

L3Harris confirms that the authorization will be used for indoor use only. As noted within the experimental license request, the installation will occur at the L3Harris Jefferson Road facility located at the coordinates of NL 43-05-20, WL 077-35-20

8.3.28 - 2. Applications for frequency assignment should be applied for as an XT station class with a note indicating the device is to be used as an "Experimental RNSS Test Equipment for the purpose of testing GPS receivers" and describing how the device will be used.

L3Harris concurs the XT station class and the device will be used as "Experimental RNSS Test Equipment for the purpose of testing GPS receivers". The installation of a GPS repeater will retransmit the GPS signal within the L3Harris facility to allow for the testing and experimentation indoors for: 1)continued exploration of utilizing GPS technologies within their devices to provide innovative applications and continue to provide safe products, and 2)Further design, development and enhancement of existing GPS applications to provide greater efficiency and more effective means of utilizing GPS derived information.

8.3.28 - 3. Approved applications for frequency assignment will be entered in the GMF.

L3Harris will assist in any way necessary to have the approved application entered into the GMF.

8.3.28 - 4. The maximum length of the assignment will be two years, with possible renewal.

L3Harris is seeking a twenty-four month license term.

8.3.28 - 5. The area of potential interference to GPS reception (e.g., military or contractor facility) has to be under the control of the user.

L3Harris confirms that the area of potential interference to GPS reception will be under its control at all times. As previously noted, the GPS repeater will be placed in the L3Harris Jefferson Road facility located Rochester, NY at the coordinates of NL 43-05-20, WL 077-35-20

8.3.28 - 6. The maximum equivalent isotropically radiated power (EIRP) must be such that the calculated emissions are no greater than -140 dBm/24 MHz as received by an isotropic antenna at a distance of 100 feet (30 meters) from the building where the test is being conducted. The calculations showing compliance with this requirement must be provided with the application for frequency assignment and should be based on free space propagation with no allowance for additional attenuation (e.g., building attenuation.)

Location: L3Harris facility- 1350 Jefferson Road, Rochester, NY 14623
Coordinates of NL 43-05-20, WL 077-35-20

<u>GPS Re-radiator</u>	<u>EIRP Equivalent dBm</u>
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70 pico-watts	-72 dBm
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Calculation of loss for free space propagation using ITU model:

Using the simplified equation for path loss in free space:

$$L \text{ (dB)} = 20\log(f) + N \log(d) - 27.54$$

Where:

N is the distance power loss coefficient = 20

d (Distance in meters from the source to 30 meters away from the building) = 38

f = 1575.24 MHz

L=Free space path loss in dB

$$\begin{aligned} L(\text{dB}) &= 20\log(1575.24) & + 20\log(38) & - 27.54 \\ &= 63.95 & + 31.6 & - 27.54 \\ &= 68.01 \text{ dB} \end{aligned}$$

The re-radiated GPS signal at 100 feet (30 meters) from the building will be:

$$\begin{aligned} S \text{ (dBm)} &= \text{GPS Re-radiator Power (EIRP) dBm} - \text{Free space path loss (dB)} \\ &= -72 \text{ dBm} - 68.01 \text{ dB} \\ &= -140.01 \text{ dBm (-140 dBm maximum permitted)} \end{aligned}$$

8.3.28 - 7. GPS users in the area of potential interference to GPS reception must be notified that GPS information may be impacted for periods of time.

L3Harris confirms that it will provide advance notification to GPS users in the area that GPS information may be impacted for periods of time during testing.

8.3.28 - 8. The use is limited to activity for the purpose of testing RNSS equipment/systems.

L3Harris concurs use will be limited to activity for the purpose of testing RNSS equipment/systems.

8.3.28 - 9. A "Stop Buzzer" point of contact for the authorized device must be identified and available at all times during GPS re-radiation operation of the device under any condition.

The Stop Buzzer point of contact for the authorized device will be Vance Kannapel, Systems Engineer for L3Harris, tele# 585-742-9122, e-mail: Vance.Kannapel@L3Harris.com. Mr. Kannapel will be available at all times during GPS re-radiation operation of the device under any condition.