

Zoox, Inc.
Application for Minor Modification of
Experimental Radio License – Call Sign WM2XMR
ELS File No. 0211-EX-CM-2024

DESCRIPTION OF APPLICATION FOR MINOR MODIFICATION
AND PUBLIC INTEREST STATEMENT

Pursuant to Section 5.3 (a) & (j), Section 5.51 and Section 5.53 of the Federal Communications Commission (“FCC”) rules, 47 C.F.R. §§ 5.3 (a) & (j), 5.51, 5.53, Zoox, Inc. respectfully requests a minor modification of its existing experimental radio license issued under call sign WM2XMR to operate GPS re-radiators on channel 1575.42 MHz at its assembly and manufacturing facilities for purposes of testing the performance, functionality and safety of autonomous vehicle technology prior to real-world operation.

Specifically, Zoox seeks permission only to operate indoors up to three additional devices and relocate another device at its premises currently authorized under its license and, if acceptable to the agency, make similar, minor changes to its operations when needed to enhance its research and development activities. It is not seeking to operate at a new facility, with different equipment, or with different technical parameters. Thus, Zoox is not seeking a modification that will result in a change in the technical specifications listed on the fact of its license; the only modification Zoox proposes to make is to the item on FCC Form 442 that requires the applicant to specify the number of devices to be employed. Specifically, Zoox has filed an application, pending under ELS File No. 0211-EX-CM-2024 that revises Item 10 of FCC Form 442 identifying the transmitting equipment to be deployed at each location currently authorized under its license from 2 to 5 devices (either a Model RK-304 or RK-306 manufactured by Unicon Technologies, Inc.).

Moreover, the power levels of associated with the proposed additional devices will be at or below the threshold required under the FCC’s rules, and as shown in the Attachment A, will operate consistently with the guidelines in NTIA Manual Section 8.3.28 (Use of Fixed Devices That Re-Radiate Signals Received From the Global Positioning System). Notably, the devices to be deployed will be the same devices that were previously specified in the application for its underlying license. In addition, the relative distances of any device to the closest exterior wall will be maintained at a distance that is equal to or better than the values Zoox provided in connection with the application underlying its original license (*e.g.*, at least 15 feet).

In support of its request, the following is shown:

1) Applicant's Background, Address and FRN:

Zoox, Inc. is a leading developer of intelligent vehicles and autonomous vehicle technologies, with headquarters in Foster City, California and assembly and manufacturing facilities in the San Francisco Bay area. Its corporate address and FCC registration number are:

Zoox, Inc.; FRN: 0031688708
1149 Chess Drive
Foster City, CA 94404

2) Need for Modification of Experimental License:

Zoox is currently evaluating vehicles capable of performing at SAE Level 5 automation. As a result, no drivers are present at any time during control and operation of the vehicles in any domain. To satisfy safety precautions, the vehicles acquire GPS information in connection with their operation. Thus, receiving GPS signals is necessary to conduct evaluations of the performance, functionality, and safety of Zoox's autonomous vehicle technologies prior to real-world application.

Because assembly and manufacturing activities are performed indoors at Zoox's facilities, however, the vehicles are unable to receive GPS signals reliably, if at all. Furthermore, changes in space constraints and testing requirements may occasionally require minor relocations of existing hardware and/or addition of new hardware for proper coverage. Therefore, Zoox respectfully seeks authority to operate GPS re-radiators installed indoors at Zoox's facilities to provide the vehicles with such GPS signals.

Zoox submits that grant of the requested modification of its experimental license is in the public interest, as it would allow Zoox to improve its research and development of autonomous vehicle technologies to meet the needs and requirements of users.

3) Location of Operations:

The proposed operations will occur at the company's assembly and manufacturing facilities at the sites listed below:

Assembly Facility:
1149 Chess Dr.
Foster City, CA 94404
37° 34' 7.22" N; -122° 16' 22.74" W (NAD83)

Manufacturing Facility:
47548 Kato Rd
Freemont, CA 94537
37° 28' 24.27", -121° 55' 44.48" W (NAD83)

4) FCC Station Codes:

The FCC radio service code and station class code for the proposed operations are “XT” and “FX,” respectively.

5) Frequencies Desired:

As noted in Section 2 above, Zoox seeks to evaluate the characteristics of autonomous vehicles. In order to do so, it must re-radiate a GPS signal on 1575.42 MHz. Zoox recognizes that the use of certain frequencies will require coordination through the Interdepartment Radio Advisory Committee (“IRAC”), and it is amendable to coordinating with Federal government personnel prior to commencing any transmissions.

6) Power Level:

Zoox will operate with the minimum necessary power to conduct its tests, and in no event will it exceed the levels set out in the accompanying FCC Form 442 or in the tables provided under Attachment A. Specifically, the maximum equivalent isotropically radiated power (“EIRP”) will 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 where the operations are being conducted.

Link budgets showing compliance with this requirement is provided in the tables under Attachment A and are based on free space propagation. Additional attenuation will occur given the concrete construction of the walls of the buildings at Zoox’s facilities.

7) Equipment To Be Used:

With the proposed use of not more than 3 additional devices at each of its existing locations, Zoox proposes to operate not more than 5 devices at each location. Specifically, it proposes to deploy either Unicon Technologies, Inc. Model RK-304 or Model RK-306 devices under the authority requested. A product sheet for the Model RK-304 (supplied by San Jose Technology, Inc.) is provided under Attachment A. The Model RK-306 also supports operation on channel 1602 MHz, but Zoox does not seek authority to operate on 1602 MHz and will not operate on that channel.

8) Type of Emission, Modulation Technique, and Bandwidth Required:

The primary emission designator for the proposed operations is 2M46G3D, as indicated on the accompanying FCC Form 442. Other emission modes and modulation techniques may be utilized, but in no event will the emissions extend beyond the limits associated with the above-referenced emission.

Zoox does not propose to supply station identification as set forth in Section 5.115 of the Commission's Rules, 47 C.F.R. § 5.115.

9) Antenna Information and Compliance with Human Exposure Limits:

Zoox will comply with all Federal Aviation Administration (“FAA”) and FCC rules and regulations regarding the installation and operation of antennas and their support structures. The receive antennas to be deployed under the authority requested in this application will not extend more than six meters above a building, and the buildings are less than 200 feet in height.

The re-radiating antennas will be mounted inside the buildings identified in Section 3.

10) Restrictions on Operation:

GPS users in the areas of potential interference to GPS reception will be notified that GPS information may be impacted during testing. In addition, Zoox has already posted signs on the doors of its buildings advising that, "GPS re-radiator in use and the GPS information you receive may be in error."

Zoox also recognizes that its modification application, if granted, would be subject to the special conditions that are currently listed on its license. In particular, it understands that permission to operate as proposed would be granted under an experimental authority issued by the Federal Communications Commission, would be strictly temporary, and may be cancelled by the FCC at any time. In addition, Zoox understands that its operation must not cause harmful interference; it does not expect interference to occur, however.

11) Interference Protection/Stop Buzzer Contact Information:

As noted above, GPS users in the areas of potential interference to GPS reception will be advised that GPS information may be impacted during testing.

Moreover, Zoox understands that it may be required to discontinue its operations immediately, if any interference occurs. In that regard, Zoox advises the Commission that Mr. Angelo Llanos is the technical contact overseeing the operations of the GPS re-radiators. He will be responsible for their operation and will serve as the “stop buzzer” in the event that GPS re-transmissions must be terminated because of any interference concerns. Mr. Llanos can be reached at 707-567-9140, email angelo@zoox.com

12) Application Contact Information:

Company Contact:

Vincent Spinella-Mamo
Senior Counsel IP & Technology
1149 Chess Dr.
Foster City, CA 94404
Telephone: (650) 542-9669
Email: vincent@zoox.com

“Stop Buzzer” Contact:

Angelo Llanos
Wireless Engineer, 707-567-9140,
1149 Chess Dr.
Foster City, CA 94404
Telephone: (707) 569-9140
Email: angelo@zoox.com

Legal Contacts:

Scott Delacourt
Kurt DeSoto
Wiley Rein LLP
2050 M Street, N.W.
Washington, DC 20036
Telephone: (202) 719-7000
Facsimile: (202) 719-7049
Email: sdelacourt@wiley.law
Email: kdesoto@wiley.law

ATTACHMENT A

Compliance with NTIA Manual, Section 8.3.28

This Attachment seeks to address and confirm each item from (a) through (i) of National Telecommunications and Information Administration, *Manual of Regulations and Procedures for Federal Radio Frequency Management (Redbook)*, January 2021 Edition Chapter 8, Section 8.3.28 (Use of Fixed Devices That Re-Radiate Signals Received From the Global Positioning System). For the FCC staff's convenience, excerpted below are the relevant provisions from Section 8.3.28 with the confirmation shown bolded in blue text.

8.3.28 Use of Fixed Devices That Re-Radiate Signals Received From the GPS

Except as otherwise authorized under Section 7.14, federal agencies and departments may, under the following conditions, operate fixed devices that re-radiate signals received from the GPS.

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

CONFIRMATION: The proposed operation is for indoor use only and is requested for each device at the following two separate locations:

<u>Assembly Facility:</u> 1149 Chess Dr. Foster City, CA 94404 37° 34' 7.22" N; -122° 16' 22.74" W (NAD83)	<u>Manufacturing Facility:</u> 47548 Kato Rd Freemont, CA 94537 37° 28' 24.27", -121° 55' 44.48" W (NAD83)
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- b. 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.

CONFIRMATION: Zoux, Inc., has applied for an XT station class and seeks modification of its authorization indicating that the device is to be used as experimental RNSS Test Equipment for the purpose of testing prototype devices that contain GPS receivers. Specifically, Zoux seeks to deploy additional devices or reconfigure existing devices to test the performance, functionality, and safety of autonomous vehicle technology prior to real-world operation. GPS receivers are integral components of this technology and the deployment of limited GPS re-radiation capabilities as described in its application are essential to the completion of such testing. In other words, receiving the reradiated GPS signal is an integral and required component of the testing.

- c. Approved applications for frequency assignment will be entered in the [Government Master File] GMF.

CONFIRMATION: Zoox, Inc., assumes the FCC and NTIA will enter this information into the GMF.

d. The maximum length of the assignment will be two years, with possible renewal.

CONFIRMATION: Zoox, Inc., seeks modification of its authorization that will run for a remaining period of not more than a two-year period.

e. The area of potential interference to GPS reception (e.g., military or contractor facility) has to be under the control of the user. Areas beyond the range for potential interference are protected by the maximum power calculation described in f. below, and thus no further record notes are required for frequency assignments.

CONFIRMATION: The proposed operation will occur at facilities under the control of Zoox, Inc. Specifically, Zoox seeks modification of its authorization to operate additional or reconfigured devices at its assembly plant located in Foster City, CA and its manufacturing facility at Fremont, CA, as described in greater detail under Item a above.

f. The EIRP must be such that the 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 calculation for maximum EIRP shall be based on free space propagation with no allowance for additional attenuation (e.g., building attenuation) as shown below.

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

Where: P_{Tmax} is the maximum permissible EIRP in dBm

P_R is the power received at 30 meters from the building (i.e. -140 dBm/24 MHz)

f is frequency in MHz (i.e. 1575.42 for L1, 1227.60 for L2, 1176.45 for L5)

d is the distance between the radiator and the closest exterior wall of the building in meters.

P_{Tmax} can then be converted to picowatts by using the formula: $P_{Tmax(pW)} = 10 \left(\frac{P_{Tmax}}{10} + 9 \right)$

Applications requesting power greater than the P_{Tmax} calculated at $d = 0$ meters (i.e. 39.3 pW for L1, 23.8 pW for L2, and 21.9 pW for L5) must provide the distance from the transmit antenna to the nearest exterior wall so that reviewing agencies can determine if the requested power meets the maximum EIRP described above.

CONFIRMATION: The proposed operation will meet the power limitations specified above. Attached are the power calculations for each proposed device that will be operated by Zoox, Inc. Specifically, Zoox proposes to operate devices certified by Umicron Technologies, Inc. under either under Model RK-304 or under Model RK-306 The configuration of the devices at its location at Fremont, CA, is shown in the attached graphic. The configuration of the devices at its location at Foster City were supplied with the application underlying its original license.

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

CONFIRMATION: GPS users in the area of potential interference to GPS reception must be notified that GPS information may be impacted for periods of time. The proposed operation will meet the power limitations specified above.

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

CONFIRMATION: As noted in Item b above, Zook will limit its activity for the purpose of testing prototype devices that contain RNSS equipment/systems. Specifically, Zook seeks to test the performance, functionality, and safety of autonomous vehicle technology prior to real-world operation. GPS receivers are integral components of this technology and the deployment of limited GPS re-radiation capabilities as described in its application are essential to the completion of such testing. In other words, receiving the reradiated GPS signal is an integral and required component of the testing.

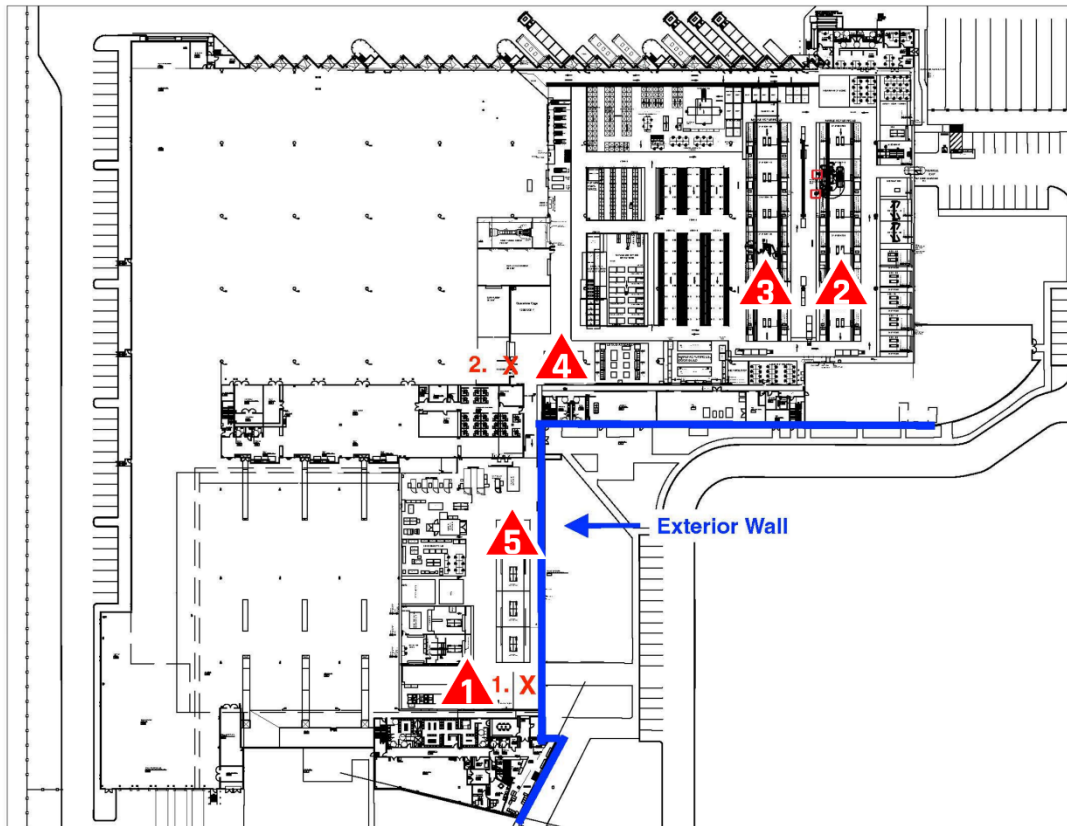
- i. A "Stop Buzzer" point of contact for the authorized device must be identified and available at all times during GPS re-radiator operations.

CONFIRMATION: As noted in the narrative to its underlying application, Zook has identified a "Stop Buzzer" point of contact for the authorized devices who be available at all times during GPS re-radiator operations. Specifically, that person, and his contact information, are provided below:

**Angelo Llanos
Wireless Engineer
1149 Chess Drive
Foster City, CA 94404
Telephone: (707) 569-9140
Email: angelo@zook.com**

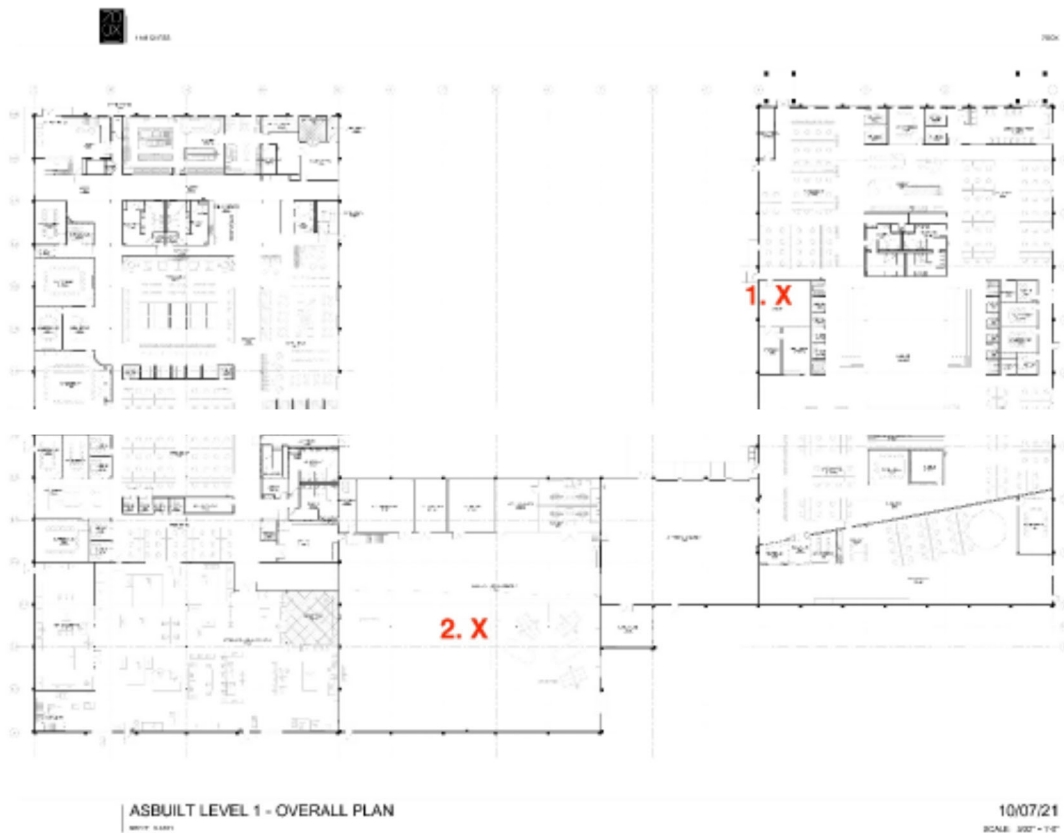
Revised Floor Plan for Location No. 2: Fremont, CA

As discussed above, Zoux, Inc, seeks a minor modification of its existing license. It seeks permission only to operate indoors up to three additional devices and relocate another device at its premises currently authorized under its license and, if acceptable to the agency, make similar, minor changes to its operations when needed to enhance its research and development activities. For location No. 2 on its license, it seeks to deploy additional devices at locations identified by triangles "3", "4", and "5." In addition, it proposes to move the repeater located at 2.X (as authorized under the original application) to the location indicated by triangle "2".



Floor Plan for Location No. 1: Foster City, CA

As explained above, Zox, Inc. seeks permission to operate indoors up to three additional devices at its premises currently authorized under its license as Location No. 2 at Fremont, CA, and, if acceptable to the agency, make similar, minor changes to its operations when needed to enhance its research and development activities. Zox currently operates only two devices at Location No. 1 as authorized under its existing license, as shown in the graphic below. Grant of this modification application, if acceptable to the agency, would allow Zox to make similar, minor changes to its operations at Location No. 1 when needed to enhance its research and development activities. It understands (and commit) that such changes must meet the conditions that apply to its existing operations, in particular the threshold required under the FCC's rules the guidelines in NTIA Manual Section 8.3.28 (Use of Fixed Devices That Re-Radiate Signals Received From the Global Positioning System).



Budget Link Calculations

National Telecommunications and Information Administration, *Manual of Regulations and Procedures for Federal Radio Frequency Management (Redbook)*, Chapter 8, Section 8.3.28 establishes requirements for “fixed devices that re-radiate signals received from the Global Positioning System (GPS)” and states that the “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 in the tables below represent the architecture of Zoox’s proposed GPS re-radiation configuration and signal power levels for each device and each site. These calculations show that Zoox will not re-radiate GPS signals with an EIRP greater than -140dBm/24 MHz at 100 feet from the re-radiation source. Additional attenuation will occur given the construction of the walls of the buildings at Zoox’s facilities.

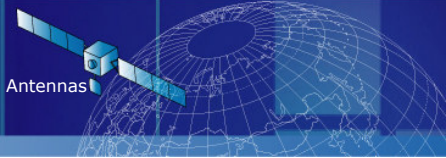
Foster City, CA – Location No. 1 – Model RK-304		
	Individual element	Cumulative total (dBm)
GPS signal received power from GPS spacecraft (dBm)	-130	-130
Receive Antenna pattern gain (dBi, @Zenith)	5	-125
Receive Antenna amplifier gain (dB)	27	-98
Transmission line loss to re-radiator antenna (dB, estimated-RG-58 40M cable loss)	-20	-118
In-line attenuator (dB)	-4	-128
Re-radiator amplifier (dB, LNA Gain)	43	-79
Re-radiator antenna gain average (dB)	4	-75
$PT_{max} = PR + 20 \log_{10} f + 20 \log_{10}(30 + d) - 27.55$ (dB)	-66	-141

Foster City, CA – Location No. 1 – Model RK-306		
	Individual element	Cumulative total (dBm)
GPS signal received power from GPS spacecraft (dBm)	-130	-130
Receive Antenna pattern gain (dBi, @Zenith)	4	-126
Receive Antenna amplifier gain (dB)	27	-99
Transmission line loss to re-radiator antenna (dB, estimated-RG-58 40M cable loss)	-20	-119
In-line attenuator (dB)	-4	-123
Re-radiator amplifier (dB, LNA Gain)	43	-80
Re-radiator antenna gain average (dB)	4	-76
$P_{Tmax} = P_R + 20 \log_{10} f + 20 \log_{10}(30 + d) - 27.55$ (dB)	-66	-142

Freemont, CA – Location No. 2 – Model RK-304		
	Individual element	Cumulative total (dBm)
GPS signal received power from GPS spacecraft (dBm)	-130	-130
Receive Antenna pattern gain (dBi, @Zenith)	5	-125
Receive Antenna amplifier gain (dB)	27	-98
Transmission line loss to re-radiator antenna (dB, estimated-RG-58 40M cable loss)	-20	-118
In-line attenuator (dB)	-4	-128
Re-radiator amplifier (dB, LNA Gain)	43	-79
Re-radiator antenna gain average (dB)	4	-75
$PT_{max} = PR + 20 \log_{10} f + 20 \log_{10}(30 + d) - 27.55$ (dB)	-66	-141

Freemont, CA – Location No. 2 – Model RK-306		
	Individual element	Cumulative total (dBm)
GPS signal received power from GPS spacecraft (dBm)	-130	-130
Receive Antenna pattern gain (dBi, @Zenith)	4	-126
Receive Antenna amplifier gain (dB)	27	-99
Transmission line loss to re-radiator antenna (dB, estimated-RG-58 40M cable loss)	-20	-119
In-line attenuator (dB)	-4	-123
Re-radiator amplifier (dB, LNA Gain)	43	-80
Re-radiator antenna gain average (dB)	4	-76
$P_{Tmax} = P_R + 20 \log_{10} f + 20 \log_{10}(30 + d) - 27.55$ (dB)	-66	-142

Technical Specification for Model RK-304 Device

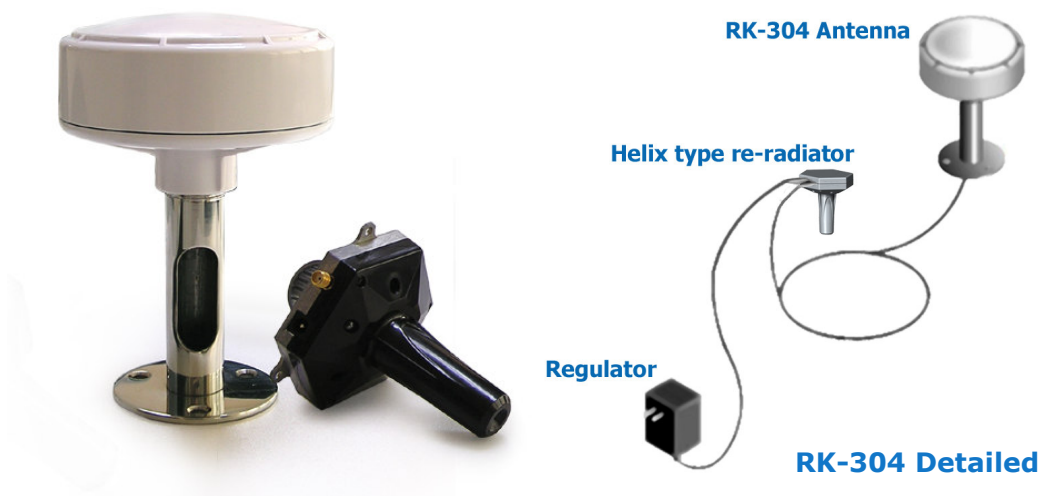


GPS L1 Signal Re-radiating for Indoor Satellites Signal Reception

MODEL: RK-304

Connector-free antenna solution for handheld GPS receivers/ with up to 30-meter re-radiating range!

©2008 San Jose Technology, Inc. All specifications subject to change without notice.



RK-304 is a complete GPS L1 band signal re-radiating system with dual antennas to re-transmit real-time GPS satellite outdoor reception to an indoor environment. The system kits include a high gain external GPS antenna, a precisely calibrated amplifier circuit with Helix type re-radiator, and a built-in power supply regulator. The Helix type re-radiator allows multiple GPS receivers perform on-the-fly receiver performance within a closed environment, while the main GPS antenna is located on an unmanned outdoor location. GPS L1 signal is a 1575.42 MHz frequency along with a 1.023Mbps Bi-Phase Shift Keying (BPSK) modulated spreading code. The input signal power at the receiving antenna is approximately 130dBm (spreading over 2 MHz), so the desire signal is below the thermal noise floor. The whole system is designed as PNP (Plug-and-Play) hardware and it can be installed either temporarily or permanently to a secured location by using whether dashboard suction cup or screws.

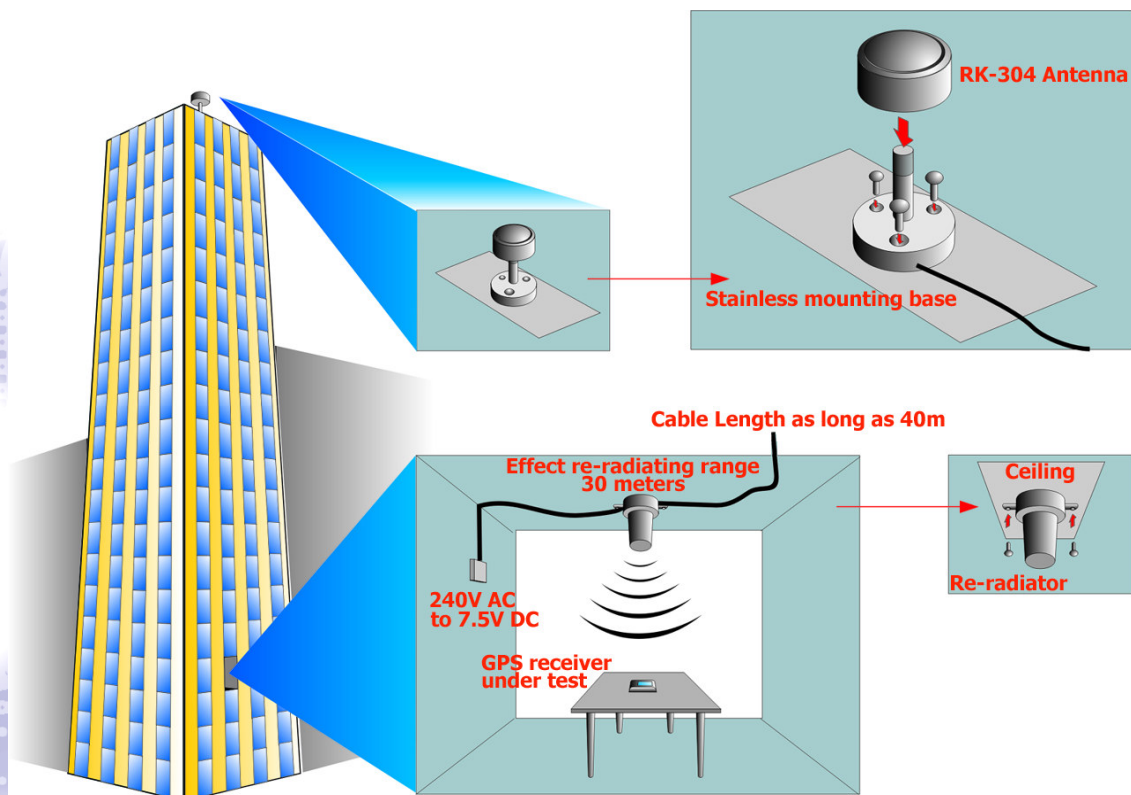
Wherever in lab/building/underground garage, RK-304 guarantees to bring and re-radiate GPS signal that meets your requirement.

Features

- Compact size/low cost/high performance
- Polycarbonate radome with fully waterproof at IP66 rating
- Permanently screw mount/dashboard suction cups
- One external re-radiator for multiple, different GPS receivers
- Real-time GPS satellites outdoor reception to an indoor environment
- Cable length as long as 40m RF cable
- Idea for GPS lab/GPS retail store/GPS production line/ GPS repair service
- Re-radiating range as long as 30m

Applications

- GPS Labs
- GPS Retail Stores
- GPS Production Line
- GPS Repair Service
- GPS Signal Reception in Underground Garage



RK-304 Interconnection Diagram

Installation

1. Locate and mount the RK-304 external antenna on the center roof of building horizontally with the best visibility of the sky.
2. Locate and mount the RK-304 helix type re-radiator to the ceiling with its cylinder facing and against the center of the testing bench.
3. Connect the RK-304 external antenna to helix type re-radiator with 40m RG58 A/U RF cable.
4. Power up the system by plugging the AC 115V (240V) to DC 9V adapter

NOTE: The helix type re-radiator has to be located/mounted inside the building with adequate isolation from the RK-304 external antenna to avoid interference.

Specifications

General Description	Professional GPS re-radiating system		
Physical Construction	Construction: Polycarbonate radome enclosure, cast die at the bottom, sealed with weatherproof rubber.		
	Dimensions: Antenna: 4.5" in diameter & 2.9" in height Helix type re-radiator: 37mm (L) x 35mm (W) x 71mm (H) Regulator: 65mm (L) x 32mm (W) x 43mm (H)		
	Cable Length: 40m RG-58 A/U		
	Standard Connector: Antenna: TNC Jack, re-radiator: SMA Jack		
	Weight: Antenna: 237g Helix type re-radiator: 48g Regulator: 85g		
	Standard Mounting: Stainless bracket mount		
	Color: Antenna: White Helix type re-radiator: Black Regulator: Black		
	Performance Specification	External Antenna	Polarization: R.H.C.P.
			Absolute Gain @ Zenith: +5 dBi typically
Gain @ 10° Elevation: -5 dBi typically			
General: L1 frequency, 1575.42 MHz +/-1.023 MHz			
Gain: 27 dB typically			
Bandwidth: 2 MHz min.			
Noise Figure: 2.0 max.			
Axial Ratio: 3dB max.			
Out of Band Attenuation: 20 dB min. @ Fo +/- 50Mhz			
VSWR: 2.0 max.			
Output Impedance: 50 ohm			
Helix Type Re-radiator	Re-radiating Range: 5-10m		
Electrical Specification	Supply Voltage: 100~240V AC to 7.5V DC Regulator		
	Power Consumption: 48mA (+/- 5%) @ 7.5V DC		
Environmental Specification	Operating Temperature: -30° to +85° C		
	Storage Temperature: -40° to +90° C		
	Operating Humidity: 95% RH, non-condensing		

(*PS: The specification is subject to change without prior notice)

Technical Specification for Model RK-306 Device

The Model RK-306 also supports operation on channel 1602 MHz, but Zoox does not seek authority to operate on 1602 MHz and will not operate on that channel.



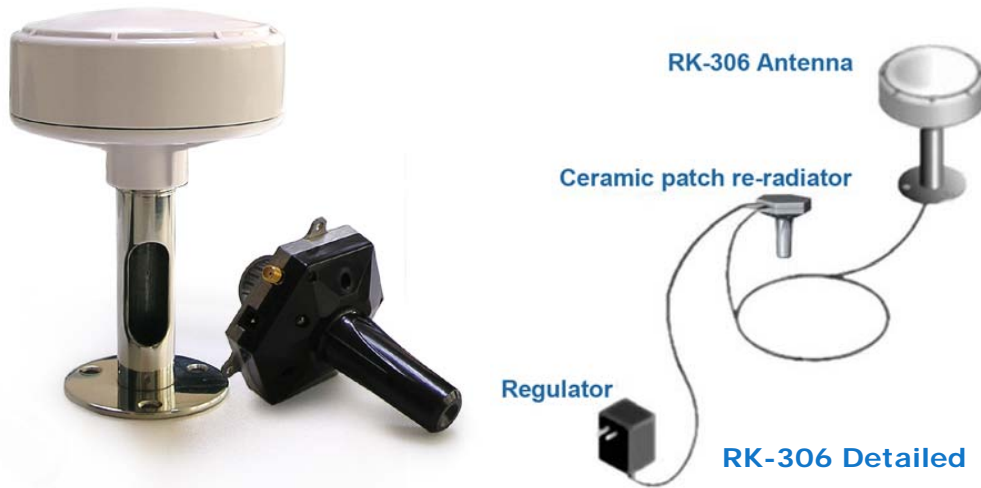
GPS/GLONASS Signal Re-radiating for Indoor Satellites Signal Reception

MODEL: RK-306

WI-RD-D-049 V1.1

Connector-free antenna solution for handheld GPS/GLONASS receivers/ with up to 30-meter re-radiating range!

© San Jose Technology, Inc. All specifications subject to change without notice.



RK-306 is a complete GPS/GLONASS band signal re-radiating system with dual antennas to re-transmit real-time GPS/GLONASS satellite outdoor reception to an indoor environment. The system kits include a high gain external GPS/GLONASS antenna, a precisely calibrated amplifier circuit with ceramic patch re-radiator, and a built-in power supply regulator. The ceramic patch re-radiator allows multiple GPS/GLONASS receivers perform on-the-fly receiver performance within a closed environment, while the main GPS/GLONASS antenna is located on an unmanned outdoor location. The satellites signal power level at the receiving antenna is approximately -130dBm (spreading over 2 MHz), so the desire signal is below the thermal noise floor. The whole system is designed as PNP (Plug-and-Play) hardware and it can be installed either

temporarily or permanently to a secured location by using whether dashboard suction cup or screws.

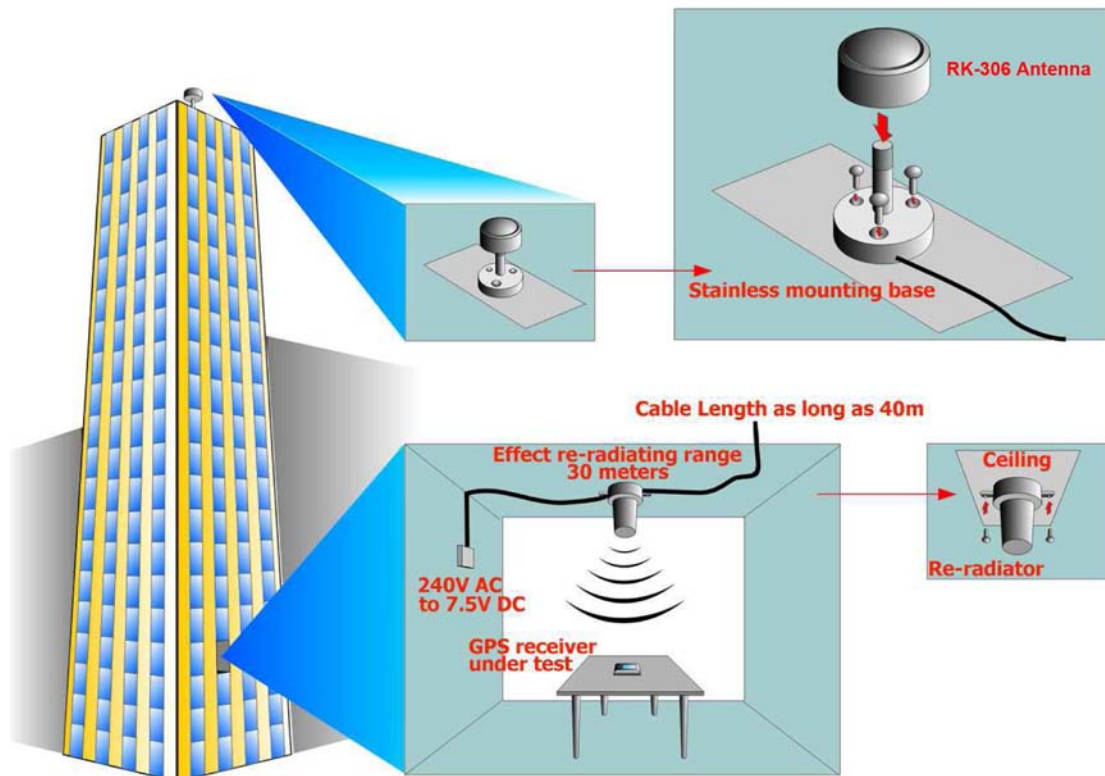
Wherever in lab/building/underground garage, RK-306 guarantees to bring and re-radiate GPS/GLONASS signal that meets your requirement.

Features

- Compact size/low cost/high performance
- Polycarbonate radome with fully waterproof at IP66 rating
- Permanently screw mount/dashboard suction cups
- One external re-radiator for multiple, different GPS/GLONASS receivers
- Real-time GPS/GLONASS satellites outdoor reception to an indoor environment
- Cable length as long as 40m RF cable
- Idea for GPS/GLONASS lab/ GPS/GLONASS retail store/ GPS/GLONASS production line/ GPS/GLONASS repair service
- Re-radiating range as long as 30m

Applications

- GPS/GLONASS Labs
- GPS/GLONASS Retail Stores
- GPS/GLONASS Production Line
- GPS/GLONASS Repair Service
- GPS/GLONASS Signal Reception in Underground Garage



RK-306 Interconnection Diagram

Installation

1. Locate and mount the RK-306 external antenna on the center roof of building horizontally with the best visibility of the sky.
2. Locate and mount the RK-306 Ceramic type re-radiator to the ceiling with its cylinder facing and against the center of the testing bench.
3. Connect the RK-306 external antenna to Ceramic type re-radiator with 40m RG58 A/U RF cable.
4. Power up the system by plugging the AC 115V (240V) to DC 7.5V adapter

Specifications

General Description	Professional GPS/GLONASS re-radiating system	
Physical Construction	Construction: Polycarbonate radome enclosure, cast die at the bottom, sealed with weatherproof rubber.	
	Dimensions: Antenna: 4.5" in diameter & 2.9" in height Ceramic patch re-radiator: 85mm (L) x 80mm (W) x 88mm (H) Regulator: 65mm (L) x 32mm (W) x 43mm (H)	
	Cable Length: 40m RG-58 A/U	
	Standard Connector: Antenna: TNC Jack, re-radiator: SMA Jack	
	Weight: Antenna: 210g Ceramic patch re-radiator: 181g Regulator: 85g	
	Standard Mounting: Stainless bracket mount	
	Performance Specification	External Antenna
Absolute Gain @ Zenith: +4 dBiC typically		
Gain @ 10° Elevation: -5 dBi typically		
GPS frequency: 1575.42 MHz ± 10 MHz GLONASS frequency: 1602 MHz ± 8 MHz		
Gain: 27 dB typically		
Bandwidth: 50 MHz min @ -10dB		
Noise Figure: 2.0 max.		
Axial Ratio: 3dB max.		
Out of Band Attenuation: 20 dB min. @ Fo +/- 50MHz		
VSWR: 2.0 max.		
Output Impedance: 50 ohm		
	Ceramic patch Re-radiator	Re-radiating Range: 30m
Electrical Specification	Supply Voltage: 100~240V AC to 7.5V DC Regulator	
	Power Consumption: 48mA (+/- 10%) @ 7.5V DC	
Environmental Specification	Operating Temperature: -30°C to +80°C	
	Storage Temperature: -40°C to +85°C	
	Operating Humidity: 95% RH, non-condensing	

(*PS: The specification is subject to change without prior notice)