

IT Department, Tucson, Arizona
Experimental License Application
File Number: 0302-EX-PL-2016

Overview and Explanation

The IT Department has been tasked with integrating a fleet management software with GPS which will be installed in various city emergency response vehicles. The IT Department is seeking this license to allow it to experiment with the positioning of the GPS antennas on those various vehicles as the vehicles are being configured with the server that hosts the fleet management system. The goal is to test various installations to optimize the positioning of the GPS receiver.

General compliance with NTIA section 8.3.28:

For any questions about this application, Alex Cortez, Conspec International, 520-309-5771 or acortez@conspecinternational.com.

Compliance with the Requirements of NTIA Manual Section 8.3.28

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

Yes.

- 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.**

Yes.

- 3. Approved application for frequency assignment will be entered in the GMF.**

Yes.

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

Yes.

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

The proposed installation will be inside the city facility at 300 S. Fire Central Pl.
Tucson, Arizona.

- 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.)**

Link Budget: The link budget for the L1 re-radiation is attached to this exhibit, and it shows the calculations applicable to this proposed installation of a GPS re-radiation system.

- 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.**

Yes.

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

Yes.

- 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 this device is:

Jeffery Seligman, Comms. Engineer
520.837.6051 (office)
Jeffrey.Seligman@tucsonaz.gov

Mr. Seligman can initiate shut off the GPS re-radiation system at any time.

IT Departament Repeater Budget Calculator March 30 2016

Change the values in the yellow
boxes to calculate required readings

-140 dBm at 100 feet from the building to
meet
NTIA regulations

Receive Ant Gain	Ant Cable Insertion Loss	Repeater Amp Gain	Repeater Ant Gain (Best Case)	Range in Feet	Repeated Signal Power @ Range In dBm	Total Signal Power @ Range in Watts
35	-13.2	30	3	100	-141.29	7.4e-18
GPS Carrier Frequency (MHz)		Free Space loss with Isotropic Antennas	Total System Gain	Range in Miles	Effective Radiated Power dBm	Effective Radiated Power (dBW)
1575		66.09	51.8	0.02	-77.35	-107.35
Avg Receive Power in dBm North America		Reference Dipole Gain	Transmitted Power (W)	Range in Kilometers	Effective Isotropic Radiated Power (dBm)	Effective Isotropic Radiated Power (dBW)
-130		2.15	9.2e-12	0.03	-75.20	-105.20
Typical value @ L1: -130.0 dBm @ L2: -127.5 dBm				Range in Meters 30.4800		Effective Radiated Power (W) 1.8e-11