### Exhibit 1 Reason for Special Temporary Authority and Description of Operations

The General Motors (GM) Milford Proving Grounds is a GM facility in Milford, Michigan. The campus is home to 4,000 GM Engineers and Technicians and has been the premier GM testing facility since 1924. Many types of validation testing, including vehicle crash testing, are conducted at the Milford Proving Grounds. Ever-changing crash safety regulations, and differences between such regulations from one jurisdiction to another, require GM to conduct vehicle crash testing under a variety of constraints and scenarios.

Special Temporary Authority (STA) with respect to repeating GPS signals is requested to support the communications requirements for the crash testing of vehicles. The crash test facilities at Milford Proving Grounds are uniquely equipped to conduct the testing for type approval that is required by new crash safety regulations in one of GM's target jurisdictions. This type approval testing is tentatively scheduled to begin April 27, 2015.

The crash testing at Milford Proving Grounds occurs indoors, and therefore the roof of the facility blocks GPS signals from reaching the test vehicles. GM requests authority to install a GLI-Metro-G Unit by GPS Source inside the crash test building in order to successfully complete the required testing. GPS signals will be received and re-transmitted into the building for the limited purpose of type approval, which will allow GM to certify its vehicles comply with new crash safety regulations. GPS Source previously received experimental license WD2XTF to operate its GPS equipment in the United States; GM is submitting the same emission calculations in support of this application.

FCC approval is requested in advance of April 27, 2015 so that GM may timely conduct testing related to the new regulation.

#### **Objectives**

GM seeks to accomplish the following objectives:

- 1. Transmission of GPS signals inside the crash testing building.
- 2. Conduct tests to certify that GM's vehicles satisfy the applicable crash safety regulations.
- 3. Test equipment implementation and troubleshoot problems in a controlled environment.

#### Contribution to Radio Art

Active crash notification reporting systems are under development and being deployed in the marketplace. This project is necessary to validate the effectiveness of the developed crash notification system. Such systems have the ability to immediately notify emergency personnel when a crash occurs, which saves time and helps prevent the loss of life in emergency situations.





Figure 2 – Inside MPG Crash Test Building Facing East



Figure 3 – Inside MPG Crash Test Building Facing South East



Figure 4 – Inside MPG Crash Test Building Facing South



Figure 5 – Inside MPG Crash Test Building Facing South West



Figure 6 – Inside MPG Crash Test Building Facing West



Figure 7 – Inside MPG Crash Test Building Facing North West



Figure 8 – Inside MPG Crash Test Building Facing North



Figure 9 – Inside MPG Crash Test Building Facing North East

# The following two pages discuss the proposed unit for handling the transmission of GPS and GLONASS





GLI-METRO-G

#### **KEY FEATURES**

- » Precise control over output signal level
- » High Frequency Selectivity -Passes GPS, GLONASS & GALILEO frequencies while rejecting other out-of-band signals.
- » Continuous Built-In-Testing (BIT)
- » Automatic Oscillation Detection
- » Perfect for aircraft hangars, manufacturing test cells, R&D facilities, any automated test environment or an anechoic chamber
- » Use for any GNSS retransmission application

#### **OPTIONS**

- » Waterproof
- » L1 Only vs. L1/L2 Filtering
- » Multiple Connector Types
- » Power Always ON or Power ON/OFF



**GLI-Metro-G** 

#### INTRODUCTION

The GLI-METRO-G is a GNSS\* smart amplifier, perfect for the commercial and public sector. When used in conjunction with an active GPS/GLONASS receive antenna, it will pass GPS+GLONASS signals inside a building, hangar or any structure where signal is not accessible. It can be used in an automated test environment or in a shielded room that needs GNSS signal.

GLI-METRO-G has the unique benefit of allowing selection for the power control between signals. A user can easily decide which signal output the GLI-METRO-G will use to control signal power: GPS+GLONASS, GLONASS only or GPS only. This reduces the need for multiple antennas, receive devices and multiple antenna runs, while lowering maintenance and installation costs.

#### AUTOMATIC SIGNAL LEVEL CONTROL

The GLI-METRO-G employs an automatic control to maintain the set output signal level, regardless of the uncertain loss or gain in the receive antenna cable network. Derived from high performance systems for military applications, this device allows precise determination over effective radiated power (ERP) levels, regardless of the uncertain loss or gain in the receive antenna cable network. It will automatically condition the signal and prevent changes in performance.

#### **BUILT-IN TROUBLESHOOTING**

The GLI-METRO-G will identify and isolate the following:

- Oscillation condition
- High gain
- Low gain
- Short/Open circuit
- Internal component failure
- Less than four satellites
- No satellites with adequate signal (call for complete list of conditions)

\*GLI-Metro-G offers support for present and future GNSS signals, including Galileo, ensuring operation with future devices.

www.gpssource.com





### **GLI-Metro-G**

#### **GLI-METRO-G 1X1**

#### **GLI-METRO-G OUTPUT PORTS**

» Number of ports

#### GLI-METRO-G ELECTRICAL SPECIFICATIONS

» Input/Output impedance 50Ω

» SWR all ports (typical)

2:1 Input: Output: 2:1

» Bandwidth

GPS & GLONASS L1 1560-1615 MHz GPS & GLONASS L1/L2 1170 - 1310 MHz

33 dB » Gain (nominal) » Gain Range 0-55dB » Gain flatness <3 dB » Noise figure <3 dB

110 VAC » AC input level 230VAC UK

230VAC European

» DC input level 16 - 28 VDC

» Active Antenna Output

Output 6.8V Power Supply

#### GLI-METRO-G PHYSICAL SPECIFICATIONS

» RF connectors

N (m, f)

SMA (m, f) TNC (m, f)

SMB (f)

SMC (f)

» RS232 serial connector DB9(F) DCE » Weight:

1x1 1.2 lbs (544.3 g)

» Size:

1x1 6.4" x 3.9" x 2.0"

(162.6 mm x 99 mm x 50.8 mm)

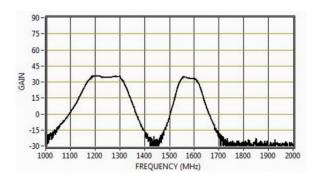
» Operating temperature -40 to +85°C

AS9100 & ISO 9001:2008 Certified Veteran Owned Small Business CCR Registered

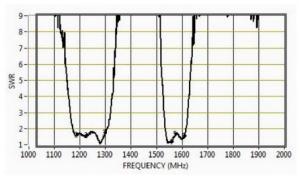
1RTJ5 CAGE: 883995677 DUNS:

334220, 334290, 334511, 541330, 541690 NAICS:

## **(** 3.9 in. / 99 (<del>\</del>



6.4 in. / 162.6 mm



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## 8.3.28 Use of Fixed Devices that Re-Radiate Signals Received from a GPS Antenna

- 8.3.28 Use of Fixed Devices That Re-Radiate Signals Received from the Global Positioning System Except as otherwise authorized under Part 7.14, federal agencies and departments may, under the following conditions, operate fixed devices that re-radiate signals received from the Global Positioning System (GPS).
- 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 applications 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.

#### YES

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.)

#### See attached.

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 remediation operation of the device under any condition.

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