

From: Mark Brennan

To: Doug Young

Date: September 24, 2018

Subject: Request for Info - File # 0178-EX-CM-2018

Message:

Revised GPS Repeater/Antenna configuration is all L1. Repeater 1 is the existing licensed repeater, however the antenna will be changed to L1-only (from L1/L2) and the power adjusted. This revised solution adds additional repeaters/antennas and applies differing power levels and directionality in some cases. The actual EIRP is less than max allowed in all cases.

Distance to nearest wall	Transmit ERP L1
1. 7.26 m	-76 dBm
2. 9.24 m	-79 dBm
3. 5.94 m	-78 dBm
4. 5.94 m	-78 dBm
5. 4.62 m	-78 dBm
6. 4.62 m	-78 dBm
7. 4.62 m	-78 dBm
8. 8.58 m	-77 dBm

Permissible EIRP	Actual EIRP	Actual less than Permissible
1. -72.2/60.6	-71.7/67.2	Yes
2. -71.7/67.2	-72.5/56.0	Yes
3. -72.5/56.4	-73.4/46.2	Yes
4. -72.5/56.4	-73.4/46.2	Yes
5. -72.8/52.3	-73.4/46.2	Yes
6. -72.8/52.3	-73.4/46.2	Yes
7. -72.8/52.3	-73.4/46.2	Yes
8. -71.9/64.9	-72.4/58.2	Yes

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 and telematics system 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 and telematics system testing under a variety of constraints and scenarios.

General Motors Research Corporation (GMRC), a wholly owned indirect subsidiary of GM, requests a two-year experimental license to repeat GPS signals to support the communications requirements for the crash testing of vehicles and telematics systems. The crash test facilities at Milford Proving Grounds are uniquely equipped to conduct verification testing of telematics systems. Although GMRC is currently operating a GPS re-radiator pursuant to Special Temporary Authority (STA), it would like to expand the testing to include vehicles for additional target jurisdictions and telematics systems.

The vehicle crash and telematics system testing at Milford Proving Grounds occurs indoors, and therefore the roof of the facility blocks GPS signals from reaching the test vehicles. GMRC has already acquired an experimental license to operate one GLI-Metro-G Unit by GPS Source inside the crash test building under the call sign WH2XXR. However, approval for seven (7) more GLI-Metro-G units is required to ensure coverage in the entire crash test facility and to successfully complete the required testing. In addition for the existing GLI-Metro-G Unit a change to the output power and elimination of the L2 band (frequency 1227.60 MHz) is proposed.

GPS signals will be received and re-transmitted into the building for purposes of type approval, which will allow GMRC to certify that vehicles comply with new crash safety regulations, and the testing of vehicle telematics systems. The attached emission calculations demonstrate that the GPS Source equipment complies with the Commission's emission limits for GPS re-radiators. Detailed descriptions of use and location data is available via email upon request.