

Description of Program of Research

Progress Rail Manufacturing Corporation (“PRMC”) is a major manufacturer of railway locomotives and associated equipment. As part of the manufacturing process, PRMC tests the new locomotives’ safety features prior to delivery to its customers. In order to complete this testing, PRMC must have access to both Wi-Fi and GPS signals inside its manufacturing facility.

Access to GPS and the customer’s Wi-Fi signal is necessary so that the locomotives can be tested and commissioned. The Wi-Fi and GPS transmitters communicate with the Auxiliary Cage Controller (“ACC”), which is a communications platform on the locomotive that communicates with the railroad’s back office. While a Wi-Fi signal is available, GPS is not because of the size and construction materials for the Muncie, Indiana facility. Because of the steel and concrete construction, GPS signals are not able to penetrate the building.

The communications system in the locomotive, including the ACC, is designed to provide Positive Train Control (“PTC”) as mandated by Congress. Legislation requires motor freight and commuter railroads to install new safety technology in order to prevent rail collisions such as the 2015 fatal collision in Philadelphia by slowing or halting trains when collisions or derailments are imminent. Essentially, PTC is signed to improve rail safety by minimizing the potential for human error. In order for PTC to work effectively, there needs to be effective location technology as well as communications technology which relays critical information between the locomotive and the railroad’s Network Operations Center. While some of this information can be transmitted over 220 MHz radio, GPS is necessary for determining the speed and location of the locomotive.

This Experimental Radio Service license application will support PRMC’s ability to test the GPS functionality in each locomotive before it is delivered to the end-user railroad in order to ensure that customer specifications are met. This testing is required in order to ensure that the locomotive’s communications systems are compatible with the Government’s PTC mandate as well as the railroad’s proprietary communications systems. As a result, this testing regimen will require the installation of a GPS repeater in PRMC’s Muncie, Indiana facility and the use of the frequency (GPS L1 – 1.57542 GHz). While it would be ideal for PRMC to be able to test equipment outdoors, it is not practicable due to the size of the locomotives and the difficulties associated with moving them from one location to another. By testing the locomotives indoors, PRMC is able to ensure that the testing is consistent from locomotive to locomotive since it is performed in a controlled environment.

Exhibit 1
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The system will utilize a fixed GPS Repeater.

Duration

A license term of five (5) years is requested since products are tested on an ongoing basis. The total operation time is expected to be 24 hours per day.

Frequencies

PRMC is proposing to utilize GPS L1 (1.57542 GHz)

Emission Designator

The Emission Designator is 20M0D7D

Power Levels

Testing will require the repeater to operate at 7 watts output power with 9 watts ERP.

Conclusion

Grant of the instant application in support of PRMC's experimentation will contribute to its ability to ensure the on-board PTC equipment, including the GPS receivers, function properly.