Description of Program of Research

Caterpillar of Delaware, In. ("CAT") is a major manufacturer of diesel motors, heavy construction equipment as well as mining and specialty equipment. Testing of new products and product improvements is conducted at CAT's Peoria, Illinois, Washington, Illinois and Green Valley, Arizona proving grounds. CAT has developed heavy equipment that rely on computer modules as well as equipment that is designed to work autonomously on a Wi-MAX system in mining operations. Additionally, CAT has other equipment under development that can make use of Wi-MAX and other wireless technologies and frequency bands. As part of this development, CAT is seeking to test its equipment by utilizing LTE on spectrum that would otherwise be commercially available to end-users

The purpose of using computer modules and LTE devices in its heavy equipment and motors is to ensure that these devices operate efficiently and properly. Additionally, for those devices that are radio controlled, the purpose is to protect personnel from injury or death by automating the operation of equipment in extremely hazardous environments, such as certain mining applications.

This Experimental Radio Service license application will allow CAT to test prototype equipment in order to determine the propagation and performance characteristics of a variety of wireless devices and systems to be used by CAT's machines. This evaluation will include an assessment of the functionality of the devices and systems and their ability to operate under varying conditions. It is important to note that CAT does not propose to market, sell or lease unapproved equipment to end users or conduct a market study in conjunction with this test. If any different treatment becomes necessary during the course of this experimentation, CAT will seek any market study authority from the Commission.

While it would be ideal for CAT to be able to test its devices in a shielded enclosure, this is not practical due to the size of some of CAT's products. The license requested herein will permit CAT to make the necessary testing of its products that cannot be feasibly tested in a shielded environment in order to ensure product safety, quality and regulatory compliance.

Duration

A license term of five (5) years is requested, since products are tested on an ongoing (although very intermittent) basis. Total operation time on any one frequency block is

not expected to exceed 160 hours per month initially. Such testing will only be done during normal business hours and will likely decrease over time.

Emission Designators

CAT is proposing use of the following emission designators:

5M00D7W 10M0F9W 10M0W7W 10M0W9W 18M0W9W 20M0F9W
20M0W9W 25M0W9W 30M0W9W 40M0W9W

CAT notes that during the course of its experimentation, it might have a need to use other emission modes and modulation techniques. Should other emission modes and modulation techniques be used, the emissions will not extend beyond the frequency bands requested in the application.

Stop Buzzer Contact Information

Aaron F. Gunkel, Senior Systems Analyst for CAT, is the technical contact for this request. Mr. Gunkel will be responsible for the operations to be conducted and, in accordance with Rule Section 5.308, will be the "Stop Buzzer" point of contact that is available at all times during the operation of each experiment conducted under the requested license in the event that operations must be terminated due to interference concerns. Mr. Gunkel can be reached at 309-434-7843 or by e-mail at Gunkel_Aaron_F@cat.com.

Compliance with Human Exposure Limits

CAT certifies that it will operate its experimental facilities in full compliance with IEEE C95.1 – 1991, "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz." All personnel who operate the equipment are knowledgeable as to the effects of RF energy and will have the ability to control their exposure.

Conclusion

Grant of the instant application in support of CAT's experimentation will contribute to CAT's ability to develop safer heavy construction equipment and machines by ensuring that on-board computers and RF devices will not interfere or cause interference to other devices and machines or malfunction due to interference from other RF devices.