

Caterpillar, Inc.
Application No. 0077-EX-PL-2008
February 2008

Purpose of Application

Caterpillar hereby requests an experimental authorization to conduct outdoor electromagnetic compatibility (“EMC”) immunity testing on prototype models of new, large earth-moving machinery on three frequencies—275 MHz, 325 MHz and 375 MHz—at its Peoria Proving Grounds and Tucson Proving Grounds sites.

Caterpillar is required to conduct EMC testing on its prototype equipments across a large number of frequencies to ensure both product safety and compliance under different international regulatory schemes, including those of the European Union. Outdoor EMC testing supplements EMC immunity testing that is performed in an absorber-lined shielded enclosure. Because of the size of Caterpillar’s heavy machinery, testing of these prototypes in a shielded enclosure is practically impossible.

An earlier Caterpillar experimental application to conduct outdoor EMC testing on a large number of frequencies was granted effective December 7, 2007. *See* FCC File No. 0003-EX-PL-2007. However, despite a request in its application, Caterpillar’s experimental authorization did not include authority to conduct EMC testing on any frequency in the 275-375 MHz band.

Unfortunately, Caterpillar must conduct some EMC testing in the 275-325 MHz band to comply with international safety regulations. Unless it can certify compliance with the EMC compatibility requirements in these international safety regulations, Caterpillar will not be permitted to export any new products into the countries that rely on these regulations.

The instant application represents Caterpillar’s reasonable, good faith attempt to propose some testing in the 275-375 MHz band that will be acceptable to the Department of Defense. In this application, Caterpillar reduced the frequencies requested for testing to three: 275 MHz, 325 MHz and 375 MHz. It also modified its EMC testing procedures so that the testing on these frequencies will be from a single, fixed location.

The ERP of Caterpillar’s proposed EMC testing on these frequencies is 500 watts with emission designators 2K00A3E and 0H00N0N from an antenna less than 2 meters off the ground. Caterpillar notes that the Commission has previously approved, presumably with the DoD’s concurrence, similar EMC testing proposals on and around these frequencies. *See, e.g.*, FCC File No. 0025-EX-RR-2002, Experimental Radio Station Construction Permit and License, Wyle Laboratories, Inc. (granted effective Feb. 1, 2002) (allowing testing on 300 MHz and 350 MHz at 2,000 watts ERP with emission designators 100HA1A, 30K0P0N, and N0N).

As noted in Caterpillar’s earlier application, EMC immunity testing involves placing a transmitting antenna on or near the equipment under test and generating an RF signal with an RF signal generator and amplifier. The RF signal is directed to critical electronic components on

Caterpillar's large earth-moving equipment that could potentially be affected if operated in a high electromagnetic field environment.

Any potential interference will be mitigated by the use of fixed antennas mounted close (2 meters or less) to the ground and close (3 to 5 meters) to the equipment under test, which will greatly limit the range of the transmitted signal. In addition, Caterpillar typically conducts outdoor EMC testing on prototype equipment approximately 10 times per year and the dwell time on any single frequency during one of these tests is less than 10 seconds.

In addition, Caterpillar personnel will be present for all aspects of the investigation, testing will be coordinated with various public safety and government agencies in the area, and standards of good engineering practice will be followed, with applicable FCC rules available as a reference.

For all of these reasons, Caterpillar requests experimental authority so it can schedule and conduct EMC testing on 275 MHz, 325 MHz and 375 MHz. Given the importance of Caterpillar's prototype machines to maintaining and enhancing its global competitive position, Caterpillar submits that the requested experimental application is in the public interest and should be granted.