



COMPLETE EMC/ENVIRONMENTAL TESTING AND CONSULTING

Thursday, June 19, 2008

Mr. Doug Young
STA Licensing (Experimental Licenses)
Office of Engineering & Technology
Federal Communications Commission
7435 Oakland Mills Road
Columbia, MD 21046

Subject: Rationale for Requesting STA

Mr. Young,

Elite Electronic Engineering, Inc. is requesting Special Temporary Authorization (STA) for the purpose of conducting an outdoor radiated radio frequency susceptibility test on a large agricultural vehicle. Elite has been subcontracted by the manufacturer of the vehicle to conduct the outdoor testing. To support our request for the STA, we have prepared this project description and summary of steps proposed to mitigate interference to local receivers.

1. Project Description

The agricultural vehicle is from a line of machinery developed to automate cotton harvesting. The cotton harvesting machine is very large and is fully equipped with electronic systems that control all aspects of the vehicle operations. The radiated susceptibility testing by Elite will determine the ability of the vehicle to operate safely in its electromagnetic environment without any change in state, function, or performance. The test will also determine if the machine will maintain a safe state while stopped (or during normal operation) without any uncommanded movements.

The vehicle manufacturer has specified testing to illuminate eight (8) critical locations on the vehicle where electronic subsystems and harnesses are mounted. The manufacturer has prescribed test levels and methodology from their corporate test specification. The rationale for their requirements takes into consideration the anticipated worst case RF vehicle environment plus a safety margin. Their corporate test requirements are also designed to envelope European and other international regulations for radiated immunity.

The manufacturer's requirements for radiated immunity state the test shall be conducted with an antenna positioned at a distance of 1 meter from the vehicle. The test amplitude is specified for 120V/m across the frequency band of 20MHz to 2,500MHz. The specific test frequencies are spaced logarithmically in 2% steps. The test will be performed with a 1kHz 80%AM modulation and as a continuous wave (CW) transmission. The test will be performed with a transmit dwell time of no longer than 2 seconds at any test frequency. The testing will occur between the hours of 7:00am to 8:00pm CST. The anticipated test dates are September 9th through September 13th 2008.



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2. Reason for Outdoor Testing

The evaluation of this particular cotton harvesting vehicle requires a chamber having a ceiling clearance height of 24ft tall. The agricultural vehicle manufacturer has indicated that their search of indoor EMC test facilities has resulted in finding no commercial test facilities (including Elite) which are able to fit the machine within their shielded chambers. Since this vehicle is not capable of being tested indoors, the only alternative is to perform the test outdoors and minimize the level of interference with neighboring transceivers.

Elite is an independent EMC testing laboratory and routinely conducts radiated susceptibility test for this agricultural equipment manufacturer as well as other manufacturers providing similar equipment. For this client as well as others, Elite conducts radio frequency susceptibility testing within the confined environment of its whole vehicle EMC test chamber. The Elite whole vehicle chamber is fully shielded and measures 100feet long by 35feet wide and 17.5feet tall with an access door 15.9feet tall and 16.5feet wide. Elite's chamber at 17.5feet tall is not sized high enough for testing this large cotton harvesting machine.

3. Steps Planned to Minimize Interference

Elite has planned the following steps to minimize the potential for interference with local receivers.

3.1. Remote Location

The site for the open area test has been selected in a rural sparsely populated area of Iowa approximately 6 miles north of the town of Kimballton Iowa. The site is owned and operated by Liberty Laboratories, a business that conducts calibration services for EMC antennas and other equipment. Liberty Laboratories and Elite have agreed on arrangements for the use of the property for the duration of the test.

3.2. Bowl Topography

The site provides advantages for conducting outdoor radio frequency immunity testing. The rolling hills surrounding the site extend 130 feet above the test location and create an earthen "bowl" structure. This site topography creates a very low RF ambient environment blocking radio frequency signals to the site. The hills will also naturally attenuate the stray electromagnetic waves generated by outdoor transmission and limit disruptive interference to other receivers.

3.3. Transmit Dwell Period

The radiated susceptibility testing procedure requires a dwell time of 2 seconds at each frequency. Given the short dwell period, any interference received will be short lived.

3.4. Duration to Complete All Testing is 2-3 Days

The anticipated duration for all testing is 2 to 3 days. Since the testing is planned for such a short span of time, there will not be an issue of long term interference.

Elite has filed an application for the STA on the FCC Experimental License System. We have provided the details requested for this test on the web site forms. If you have any other questions regarding our application, please contact me.

Elite Electronic Engineering, Inc.

Daniel E. Crowder
Sr. EMC Engineer