



Caterpillar Inc.

Cat Electronics
P. O. Box 610
Mossville, IL 61552-0610

4/13/2007

Steve Ellis, Chief Engineer
WQPT/W48CK
6600-34th Avenue
Moline, IL 61265-5899

Dear Mr. Ellis,

This letter follows-up on our earlier telephone conversation. On behalf of Caterpillar, Inc. ("Caterpillar"), this letter requests the consent of Black Hawk College, licensee of television station W48CK at Sterling, Illinois for Caterpillar to conduct short (less than 10 seconds), low power radiofrequency ("RF") immunity testing on frequencies within your station's channel of operation at Caterpillar's proving grounds near Washington, Illinois. It is expected that the proposed RF immunity testing would occur no more than ten times per year.

The technical details of Caterpillar's proposed RF immunity testing are set forth in the attached technical information pages. Some background information on Caterpillar's need to conduct this testing is provided below. We are asking for your concurrence because your station is the channel 48 authorization nearest to our Peoria proving grounds location.

Please review this letter and the attached technical information page. If Caterpillar's proposed testing is acceptable, please sign at the bottom of this letter where indicated and fax a copy to the undersigned.

Background: Caterpillar is a world-leading manufacturer of heavy construction equipment with corporate headquarters in Peoria, IL. During development, our products are subjected to extensive testing to ensure product quality and to demonstrate compliance with numerous international and domestic regulations and standards. In particular, RF immunity testing is required for product safety and to meet several European Union Directives. RF immunity testing involves subjecting a machine's control system electronics to an electromagnetic field to ensure that such fields do not affect the operation of the electronics and/or machine. This testing is very important due to the proliferation of wireless devices and services that could possibly interfere with Caterpillar's machine electronics.

In the past, it has been possible to perform the majority of this RF immunity testing indoors at the component or subsystem level. However, as machines have become more electrically complex, it is difficult or impossible to test certain subsystems apart from the machine. In these cases, machine-level RF immunity testing is required. In many cases, these machine level tests can be performed indoors in a shielded chamber. However, in a few cases, due to the size of some of our products, it is not always possible to find a chamber large enough in which to test the machine. The only practical way to test this subset of machines is to conduct the tests outdoors. This type of outdoor testing is viewed as an option of last resort, and as such, is conducted infrequently (several times per year at most).

Outdoor RF immunity testing consists of irradiating a machine with an electromagnetic field across a wide frequency range (typically 30 MHz to 2 GHz). Required field strengths range from 10 V/m to 100 V/m or more, depending on the standard in question. To produce the field, an antenna is placed in close proximity to the machine, with a signal generator and amplifier being used to produce the RF energy. The antenna utilized is typically a highly directional wideband log periodic antenna, which is pointed at the machine under test. Typical output power from the amplifier is less than .5 kW, depending on antenna efficiency at the frequency in question. Starting at the lowest frequency of interest, the signal generator is stepped through the frequency range in increments of several MHz, dwelling on any particular frequency for a duration of less than 10 seconds. The transmitted signal is either an unmodulated carrier or 80 percent AM modulated at 1 kHz.

Request: Caterpillar is in the process of obtaining an experimental license from the FCC for the purpose of conducting outdoor RF immunity testing at our two proving ground locations in the United States (near Green Valley AZ, and Peoria, IL). As an interim measure, Caterpillar has recently been granted a Special Temporary Authority (STA) by the FCC (callsign WC9XWS) to conduct the required testing at its two proving ground locations until such time as a grant of experimental license is obtained. This STA, however, excludes authorization to transmit on all frequencies used by FM radio and television facilities. To secure consent to operate on these broadcast frequencies, it was recommended that we coordinate locally with broadcast licensees to secure permission to conduct the RF immunity tests on these frequencies.

We believe that Caterpillar's RF immunity testing transmissions will not result in harmful interference to your station for the following reasons:

- The distance between your station and our proposed test location is such that the risk of harmful interference is minimal
- The proposed outdoor tests occur infrequently (once every several months at most)

- The dwell time at any particular frequency during testing is less than 10 seconds
- The power levels being transmitted during testing are low (.5 kW ERP max)
- The transmitting antenna will be in close proximity to ground level, which will greatly limit the range of the transmitted signal, and will be located in the center of Caterpillar property
- The transmitted signal will have a very narrow bandwidth (2 kHz max), which in itself reduces potential interference to television stations
- We propose to make these narrowband transmissions 2 kHz above the bottom of the channel edge, so as to further minimize interference potential to analog and digital TV stations
- Preliminary interference studies have shown that the probability of interference to the stations in question will be extremely low (see attached technical documentation)

Detailed technical information about our proposed operation, along with preliminary interference analysis, is attached.

If this request seems reasonable, we respectfully request that you sign at the bottom of this document where indicated and return a copy to the undersigned via facsimile and mail.

Thank you for your consideration. Please contact me if you have any questions about Caterpillar's proposed RF immunity testing.

Sincerely,

Andy Knitt
 Cat Electronics Advanced Engineering
 knitt_andrew_a@cat.com
 309-578-2724 Phone
 309-578-1383 Fax

REQUESTED CONSENT GRANTED:

By: _____
 Title: _____
 Date: _____

Technical Information

Caterpillar Station Parameters

Power Output: .5 kW ERP maximum (per FCC license). Actual power output is less in most cases

Modulation: Unmodulated Carrier and 1 kHz 80% AM (2 kHz bandwidth)

Antenna Height Above Ground: 2 meters maximum

Antenna Radiation Pattern: Omnidirectional below 200 MHz (biconical antenna), directional above 200 MHz (log periodic antenna)

Proposed Test Signal Frequency

The proposed test signal would be centered at a frequency 2 kHz above the bottom of the television channel edge, and have a maximum bandwidth of 2 kHz. This location was chosen to minimize potential interference to both analog and digital television stations. For analog NTSC stations, this frequency is well below the visual carrier frequency where there is very little energy being transmitted due to the vestigial sideband modulation scheme. For digital ATSC stations, this frequency is well within the roll-off of the channel mask where there is little energy, which should minimize any impact on a receiver's signal to noise ratio.

Figure 1 shows the spectrum of an analog NTSC television channel, along with the location of the proposed test signal. Figure 2 shows the spectrum of a digital ATSC television channel, along with the location of the proposed test signal.

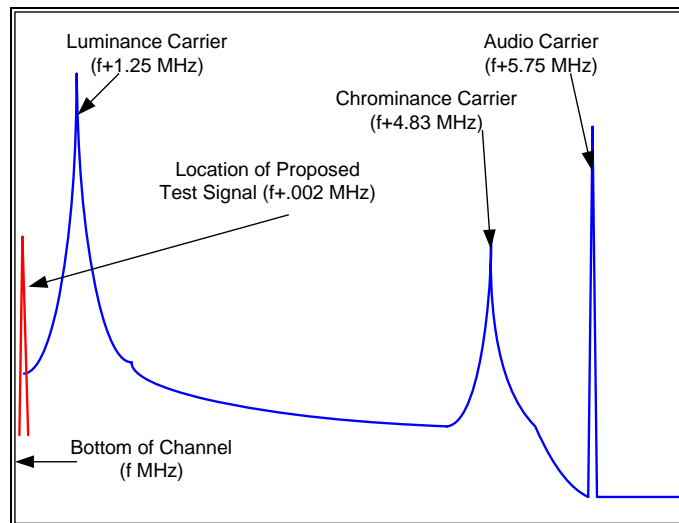


Fig. 1 – Location of Proposed Signal Relative to NTSC Channel Spectrum

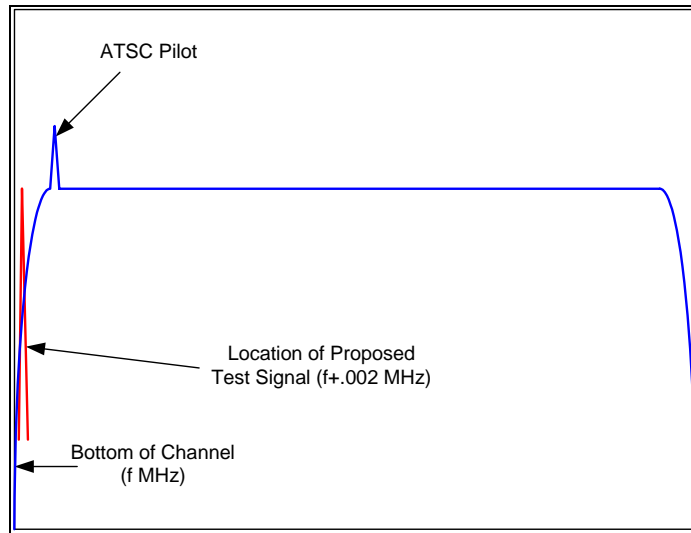


Fig. 2 – Location of Proposed Signal Relative to ATSC Channel Spectrum

Preliminary Interference Analysis for W48CK

The normal interference protection criteria (IPC) for two co-channel stations is 45 dB D/U. However, since the proposed test signal would not be co-channel, but would be at the extreme channel edge, the offset IPC value of 28 dB D/U is used for this analysis. This is a fairly conservative value, since the proposed test signal would be offset from the visual carrier frequency by over 1.2 MHz, which is much greater than the 20 kHz offset that the 28 dB criteria is based on. Lab tests have shown that a D/U ratio of up to -25 dBu may be acceptable with this frequency spacing. However, 28 dB will be used in order to ensure a worst-case analysis.

Figure 3 shows the results of a preliminary interference analysis that was performed using the Longley-Rice propagation model and W48CK channel 48 station parameters based on the information available in the FCC database. Yellow areas indicate the estimated Service Grade B coverage of W48CK channel 48 for 50% of locations, 50% of situations, 10% of the time. Red areas indicate estimated areas where the proposed test signal may be within 28 dB of the W48CK signal 10% of the time, assuming an omnidirectional test antenna (worst case). Note that there are no red shaded areas on the plot, indicating that there is no interference predicted to your station, even in a worst-case analysis.

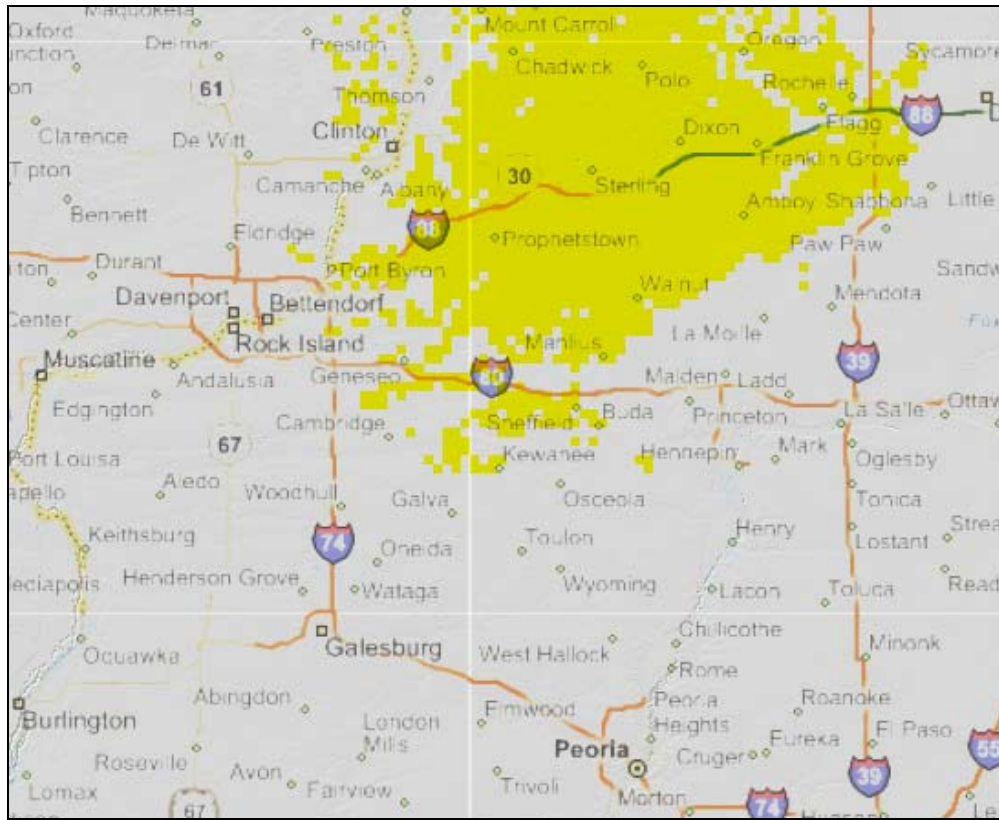


Fig. 3 – No Interference Predicted to W48CK

It should also be noted that test transmissions on your station’s frequency would be infrequent (tests normally take place every few months at most) and short in duration (ten seconds or less duration on any given frequency). These plots are intended to illustrate that interference to your viewers from the proposed test transmissions is highly unlikely.