June 21, 2000

Federal Communications Commission
FCC Applications Processing Branch
Attn: Joe Dichoso

Subject: Preco Electronics Preview Radar PV2000, FCC ID OXZPV2000

Dear Mr. Dichoso;

In your latest communication with us ref:14446 dated 8JUN00 you requested:

1. Clarification that only the schematics were to be held confidential.

   - Please hold the schematics confidential. The block diagram and theory of operations are not confidential. Thank you for helping us clarify these confidentiality issues.

2. A response to item #2 of your FAX ref:14289 dated 26MAY00 asking for Data on the carrier, 5.8 GHz and the harmonics;

   - Enclosed you will find PV2000 FCC 15.249 Radiated Emission data and graphs running the device CW, in Continuous Mode, rather than pulse with data at the fundamental, attached CW1, and first harmonic,attached CW2.

Although Pulse Mode is the normal operation of this device we have included this CW information, as did Sentrol (FCC Identifier CGGAA2) in their application and subsiquent certification for the same frequency band and certification type of field disturbance sensor. This Continuous Mode data helps demonstrate that our device operates within Specification for both the Continuous Mode as well as Pulse (Modulated). Intertek Testing Services (ITS) concurs with this test method.

- Also included is the page from our ITS test report that contains the measured harmonic content of the carrier, the measurements on both sides of the carrier, and the harmonics through 40000 MHz. This was extracted from our original test report Please refer to original data submitted on test report # J99032486b, test date of 1/11/2000 for additional harmonics FCC 15.249 Radiated Emissions. I have included the same Sentrol FCC 15.249 Radiated Emmissions data for reference and comparison.
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3. In response to your request to provide any supporting measurement information:

   - ANSI C63.4 -1992) Appendix H4 note between step 11 and 12. instructs one to refer to the test equipment manufacturer for proper measuring correction factors when measuring pulses. We called Agilent Technologies Measurement support

group (formerly HP Test and Measurement) for spectrum analyzers to review the desensitization factor applicability. We were referred to Mr. Carlos Perez, a 31-year veteran Engineer specializing in spectrum analyzer measurements, as their "resident expert".

- In reference to HP Application Note 150-2 Spectrum Analysis Pulsed RF. On page 15 sentence 1, "There are several conditions which must be satisfied if equation (10) is to be valid." Mr. Perez stated that all four conditions must be satisfied for the Pulse Desensitization Chart (Figure 28) to be applicable. In particular, condition 4. Peak amplitude at the mixer of the analyzer must stay below the 1 dB compression point of the analyzer (typically between –10dBm and –5dBm).
- Our peak power at 5.8 Ghz in CW mode is less than –30 dBm.
- Mr. Perez continued to clarify by saying that when the application note was first written (1971), the spectrum analyzers at the time had no warning mechanism to alert an operator, that he/she was exceeding the input power level at the spectrum analyzer input causing the input mixer or amplifier to saturate. Mr. Perez explained that if in doubt, whether or not an operator is over-driving the analyzer, the operator should decrease the input power into the analyzer by 10 dB, and observe the change in the reading. If the signal displayed only drops 9 dB, then the analyzer has reached the 1 dB compression point. (This is partial saturation). If the displayed reading goes down 10 dB, then one knows that the input power level into the analyzer is in the linear range, and the measurements displayed do not require any addition correction factor to be applied, because the analyzer is not in compression or partial saturation.
- In reference to HP 150-2 Application Note, page 17, first paragraph, if we keep input signal levels at or below –10dBm (assuming this is the 1 dB compression point), we are the limited only by the sensitivity of the analyzer. This is the point that Mr. Perez was trying to emphasize. The last sentence of the application note says, "The new generation of HP spectrum analyzers offers exceptionally high sensitivities which allow measurements of extremely short RF pulses" This is the case now, and even then (1971), as long as you don't saturate the analyzer and you have sufficient display range (30 dB in our case).
- Mr. Perez is available as a resource to discuss the Application Note 150-2 interpretation with the FCC. His telephone number is (800) 452-4844.

4. Based upon the data taken by ITS, close review of when to apply desensitization, and prior decisions by the FCC, as demonstrated in Sentrol's certification CGGAA2, we do not believe the application of 26 dBm correction factor is appropriate in this case. Both Intertek Testing Services and HP's expert concur with this view.

The following materials are included in this response.

1. FCC15.249 Radiated Emissions, 1/11/2000,ITS #J99032486

2. FCC15.249 Radiated Emissions, 7/02/1998,ITS #J98018757, Sentrol CGGAA2 (REF only)
3. CW1.JPG Carrier in CW mode 5800 MHz
4. CW2.JPG Harmonic in CW mode 5800 MHz
5. FCCDATA.XLS CW data

Please contact us if you would like to discuss this matter further.

Respectfully,

Dale Hessing
Director of Engineering