RADIATION SCIENCES INCORPORATED

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ACCREDITED

07 July 2003

Mr. Scott Touchton
VP Engineering
Perimeter Technologies, Inc.
730 Hemlock Road
Morgantown, PA 19543

Subj: FCC comments dated 1 July 2003 to S. Touchton from A. Leimer, FCC, reference RSI Report #2394E

Dear Mr. Touchton,

A. Comment #1, Antenna Description

The antenna used was an Antenna Research Associates, Model BBH-500/B, S/N 114. The BBH-500 is an active H-field receiving antenna for frequencies between 300Hz to 100MHz; with sensitivity levels varying from –26dBμA/m at 10KHz to –60dBμA/m at 100 MHz.

Attached are three pages from the BBH-500 technical manual providing the technical description and specifications of the Magnetic Antenna used.

B. Comment #2, 40dB factor

RSI used the 40dB factor called out in PART 15.31 (f) (2). This was discussed with Mr. Leimer on 3 July 2003.

If additional information is required please do not hesitate to contact me.

Regards,

Daniel J. Signore
President
Radiation Sciences Inc.

SECTION 1

GENERAL DESCRIPTION

The BBH-500 is an active, untuned, ferrite-loaded loop antenna designed to receive in a broad frequency range from 300 Hz to 100 MHz in two main bands, each having an independent r-f output terminal. A three-position switch determines whether the bands will be used one at a time or concurrently with two receivers. Single-band operation conserves battery power. The low-frequency band is covered in three sub-bands which are selected by another three-position switch.

The antenna provides state-of-the-art sensitivity for special purpose receiving applications and for the measurement of RFI and EMI signals, particularly those man-made noise sources having magnetic-field components. The active devices it employs have sufficient dynamic range to tolerate strong nearby signals such as AM and FM broadcast stations, TV stations, etc., without overload or the production of serious spurious signal products. The antenna is designed to be either atmospheric or galactic noise limited greater than 50% of the time over its entire frequency range of operation when used with a receiver having a Noise Figure lower than 4 dB.

The unit may be operated directly from AC power lines (using its internal power supply) or from its rechargeable batteries (internal). The BBH-500 is intended primarily for indoor or shielded room usage.

SECTION 2

TECHNICAL SPECIFICATIONS

2.1 ELECTRICAL

Frequency Range:	300 Hz to 100 MHz Band A ----- 300 Hz to 100 kHz Band B ----- 30kto 200 kHz Band C ----- 100 kHz to 2 MHz High Band -- 1Mto 100 MHz.
Directivity:	Bi-Directional in "H" plane, Omni-Directional in "E" plane.
Null Depth:	20 dB, Minimum.
Polarization:	The direction of polarization is specified uniquely by the direction in space which is orthogonal to the plane determined by both the axis of the ferrite rod and to the direction of arrival of the incident wave.
Sensitivity:	(Minimum Detectable Signal taken equal to noise level). Magnetic Field, varies from -26 dB (ref 1 μA/m) at 10 kHz to -60 dB (ref 1 μA/m) at 100 MHz. See Figure 5-3.
Dynamic Range:	Minimum 103 dB from noise level to 1 dB compression.
Antenna Factor:	See Figure 5-4.
Output Impedance:	50 ohms, Nominal.
Power Requirements:	(105-130)/(210-230) V ac, 50-60 Hz, 20 watts. Two rechargeable batteries are an integral part of this power supply and permit operation of the antenna for approximately 8 hours after a full, "over-night" charge.
Output Connectors:	BNC.
Circuitry:	Solid-State.
Calibration:	Detachable Calibration Loop Assembly provides 50 ohm input.

2.2 MECHANICAL

Dimensions:	25 inches wide x 9 inches high x 5 inches deep.
Weight:	21 lb (9.5 kg) net, 35 lb (15.8 kg) with carrying case.
Materials:	6061-T6 Aluminum, delrin, fiberglass, and ferrite.
Mounting:	Mounts on any ordinary tripod having 1/4-20 threaded stud.
Assembly:	Less than one minute.
Operating Temperature Range:	+20° to +130°F. Ambient.