

ENGINEERING STATEMENT
IN REGARD TO MEASUREMENTS ON
LENTEK INTERNATIONAL
PB01 RECEIVER
FCC ID: PD4PB01R
Super-Regenerative Receiver

A. INTRODUCTION

Hyak Laboratories Inc. has been authorized by Lentek International to perform measurements on the PB01 receiver to determine compliance with FCC Rules, Part 15 Subpart B, Para. 15.109.

The PB01 is designed to operate as part of a pet security system. It operates at a nominal 315 MHz frequency. The receiver, constructed on an etched circuit card, is powered by a 9 volt battery, or external 177 Vac power module. (A transmitter, FCC ID: PC7PB01T, is a part of the system.)

B. DESCRIPTION OF MEASUREMENT FACILITIES

A description of the Hyak Laboratories Inc. radiation test facility is a matter of record with the FCC. The facility was accepted for radiation measurements on October 1, 1976, and is currently listed as an accepted site.

C. DESCRIPTION OF MEASUREMENT PROCEDURE: RADIATED MEASUREMENTS

Measurements of receiver radiation field strength were made using ANSI 63.4 (1992) as the test procedure. Measurements were made with 3 meter spacing between the receiver under test and the test equipment antenna. The antenna connected to the receiver under test was operated with its internal, integral antenna.

C. DESCRIPTION OF MEASUREMENT PROCEDURE: RADIATED MEASUREMENTS
(Continued)

The receiver under test was placed on a rotatable table approximately one meter in height.

Measurement of field strength was made through use of TEK 494P and Advantest R3361A spectrum analyzers in conjunction with a HP 8447D wide band, low noise preamp. Compliance Designs Bi-conical calibrated dipoles were used as the test antennas in the 25-1000 MHz range. Above 1 GHz the Tektronix 494P spectrum analyzer was used with a an EMC0 3115 calibrated horn antenna between 1 and 4 GHz.

For each spurious emission identified between 30 to 2000 MHz, the test sample was rotated for maximum pickup, the test antenna varied in elevation, and the test antenna polarization shifted between horizontal to vertical in order to maximize observed signals.

Spurious emissions within the 30 - 1000 MHz band were measured with the **receiver cohered and a peak-responding detector employed**. Above 1 GHz, the Tektronix 494P spectrum analyzer, a peak-responding instrument, with 1 MHz RBW, and no video filtering was used.

The measurement procedure included recording the worst-case field strength for receiving antenna polarization, test antenna height variation from 3 feet to 10 feet and test sample rotation.

The sample was measured in three orientation planes.

The spectrum was checked from 30 to 2000 MHz. All emissions not reported were more than 20 dB below the permitted level or below the applicable limits but obscured by ambient or instrumentation noise. Tabulation of the measurements are shown in Table 1.

The forbidden band frequencies of 15.205 were specifically searched.

D. REPORT OF RADIATED MEASUREMENTS

Table 1 lists the frequency and amplitude of all signals observed from 30 to 2000 MHz that were within 20 dB of the limits of FCC Rules.

TABLE 1
RADIATED SPURIOUS EMISSIONS
Measured at 3 meters
PART 15(B) PARA. 15.109

<u>Frequency To Which Tuned (MHz)</u>	<u>Frequency of Emission (MHz)</u>	<u>Meter Reading (dBm)</u>	<u>Antenna Factor (dB)</u>	<u>Field¹ Intensity uV/m @ 3m</u>	<u>FCC Limit uV/m @ 3m</u>	<u>dB to Limit</u>
315.000	311.600	-93.6	21.7	57	200	-11
315.000	628.200	-102.8	28.5	43	200	-13
315.000	942.300	-102.4	32.6	72	200	- 8.8
315.000	1256.400	-102.4	25.1	31*	500	-24
315.000	1570.500	-99.2	26.1	50*	500	-20
315.000	1884.600	-94.8	27.7	99	500	-14
315.000	2198.700	-96.0	28.8	98	500	-14
315.000	2512.800	-94.8	29.6	123	500	-12
315.000	2826.900	-94.8	30.4	135	500	-11
315.000	3141.000	-94.4	31.2	155	500	-10

Note 1: $\text{uV/m} = \text{Log} \frac{-1\text{dBu/m}}{20}$

dBu = dBm + antenna factor + 107

All other emissions were 20 dB or more below FCC limits or, for forbidden band, below ambient or instrumentation noise level.

Cohered, peak-detector

Measured in three planes of orientation.

RADIATED FIELD INTENSITY
FCC ID: PD4PB01R

TABLE 1

E. POWER LINE CONDUCTED MEASUREMENTS

Using a 50uH LISN, AC power line conducted radio frequency voltage was measured using an Advantest R3361A spectrum analyzer. Measurements were made from .45 to 30 MHz using CISPR quasi-peak detector with 9 kHz resolution bandwidth. Data in dBuV, are shown in Figures 1 and 2 for right and left LISN port respectively.

A 120 second scan time was used.

F. FORBIDDEN BAND MEASUREMENTS

All forbidden bands of 15.205 from 73 MHz to 2 GHz were searched and any signals above ambient noise or interference levels are shown in Table 1.

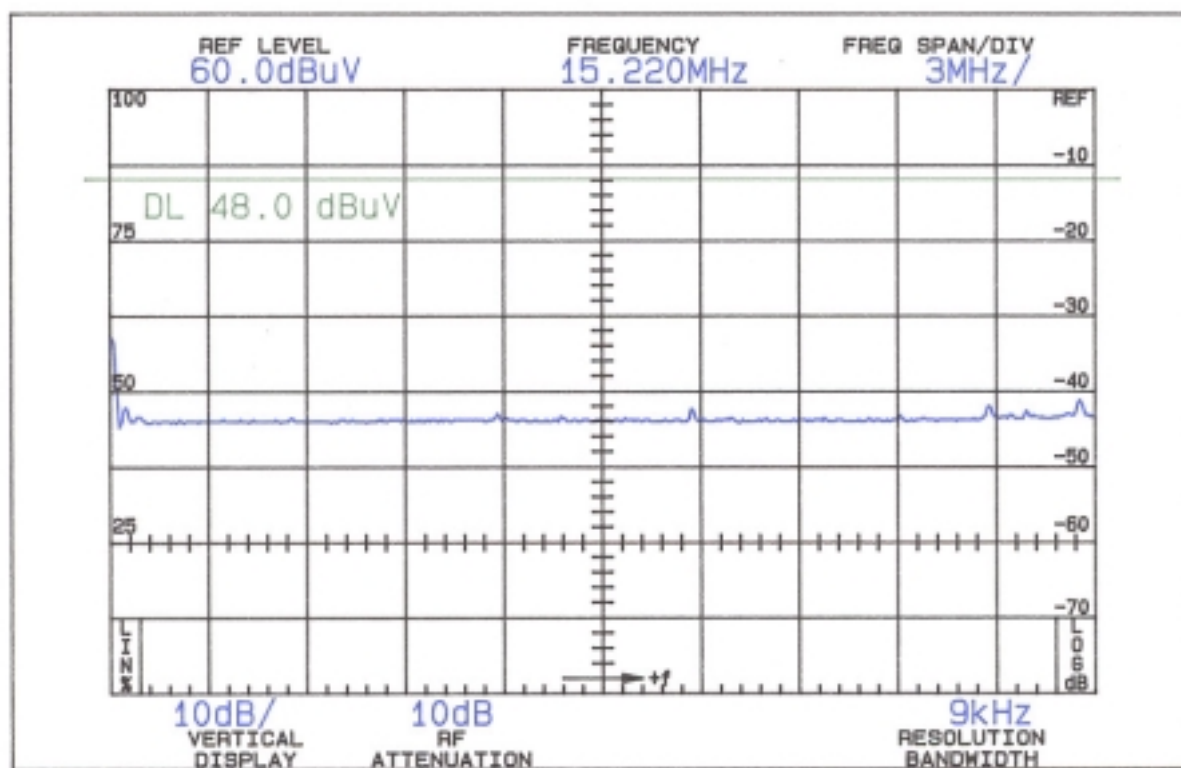
G. STATEMENT

Technical test data are from tests performed by me or under my supervision. My qualifications are a matter of record with the Federal Communications Commission. I personally attest to the accuracy of the test data submitted as a part of this engineering statement.

Rowland S. Johnson

Dated: November 9, 2000

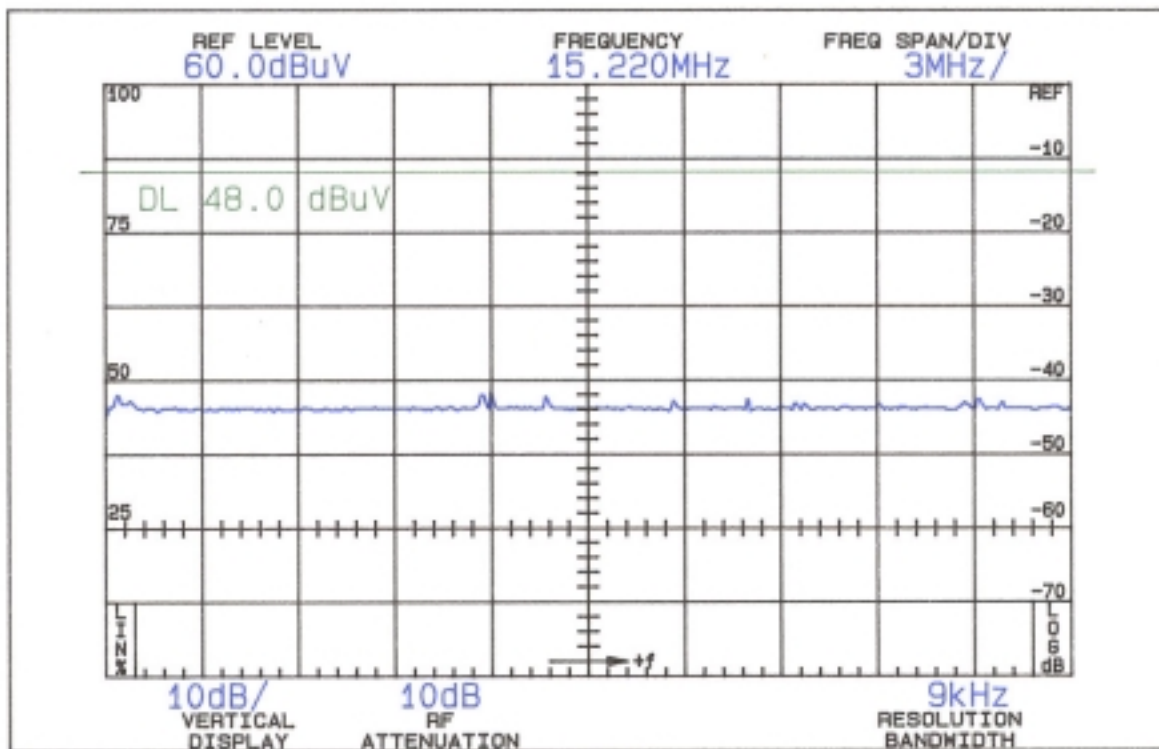
FIGURE 1



AC LINE CONDUCTED
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FIGURE 1 (RIGHT LISN)

FIGURE 2



AC LINE CONDUCTED
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FIGURE 2 (LEFT LISN)