

RETLIF TESTING LABORATORIES  
TEST REPORT R-4525N  
February 21, 2006

FCC COMPLIANCE TEST REPORT  
ON

SECURE CARE PRODUCTS, INC.  
HOMEWATCH EXIT PANEL TRANSCEIVER  
FCC ID: KNKHW433

<b>APPLICANT</b> Secure Care Products, Inc. 39 Chenell Drive Concord, NH 03301	<b>MANUFACTURER</b>  SAME
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TEST SPECIFICATION: FCC Rules and Regulations Part 15, Subpart C, Para. 15.231

TEST PROCEDURE: ANSI C63.4:2003

**TEST SAMPLE DESCRIPTION:**

BRANDNAME: HomeWATCH

MODEL: A02350900

TYPE: Wandering Alarm System

POWER REQUIREMENTS: 12VDC via external AC/DC Power Supply

FREQUENCY OF OPERATION: 433.92MHz

TYPE OF TRANSMISSION: On/Off Keyed Pulse Recognition Codes

FCC ID: KNKHW433

**TESTS PERFORMED:**

15.231 (b) Spurious Emissions (30MHz to 4.4GHz)

15.231 (b) Field Strength of Fundamental

15.231 (c) Occupied Bandwidth, 0.25% of Fundamental Frequency

Duty Cycle Determination

15.207 (a) Conducted Emissions (.15 to 30MHz)

**TEST SAMPLE OPERATION:**

The EUT is dc powered via an external 120VAC/DC wall mount power supply and uses a PCB trace antenna. The device is automatically activated to signal an alarm condition when a monitored individual exits the home through a monitored door. The device transmits a 433.92MHz alarm signal for the pendency of the alarm condition. Operation of the EUT complies with the parameters required in Part 15, Subpart C, Section 15.231 (a) (4) and with the general requirements of 15.231. For testing purposes only the EUT was configured to continuously transmit.

## TEST SAMPLE / TEST PROGRAM

- The device is employed for RC purposes during emergencies involving safety of life and when activated will transmit for the pendency of the alarm condition.
- The fundamental field strength at 433.92MHz did not exceed 10,996  $\mu\text{V}/\text{M}$  (Average) at a test distance of 3 meters.
- The peak value of fundamental emissions did not exceed a peak field strength limit corresponding to 20dB above the maximum permitted average limit.
- The field strength of harmonic and spurious emissions did not exceed 1099 $\mu\text{V}/\text{M}$  as specified in 15.231 (b) for a fundamental frequency of 433.92MHz.
- The device operates at a single frequency of 433.92MHz The bandwidth of emissions did not exceed 0.25% of the operating frequency as specified in 15.231 (c) and was determined as follows:

Fundamental Frequency	=	433.92MHz
0.25% of Center Frequency	=	1.0848MHz
1.0848 divided by 2	=	0.542MHz
Bandwidth Range	=	Fundamental Frequency + and - 0.542MHz
433.92MHz - 0.542MHz	=	433.378MHz
433.92MHz + 0.542MHz	=	434.462MHz
<b>Bandwidth Range</b>	=	<b>433.378MHz - 434.462MHz</b>

- Conducted Emissions did not exceed the limits specified in 15.207 (a).

## DETERMINATION OF FIELD STRENGTH LIMITS

The field strength limits shown below were calculated as instructed in Section 15.231 (b).

### Fundamental Frequency: 433.92MHz

Where F is the frequency in MHz, the formula for calculating the maximum permitted fundamental field strength for the band 260-470MHz,  $\mu\text{V/m}$  at 3 meters is as follows:

$$\begin{aligned} 41.6667(F) - 7083.3333 &= \text{Field Strength Limit } (\mu\text{V/m}) \\ 41.6667 \times 433.92 &= 18,080 \\ 18,080 - 7083.3333 &= 10,996 \\ \text{Field Strength Limit} &= 10,996 \mu\text{V/m} = 80.8\text{dBuV/M} \end{aligned}$$

The maximum permitted unwanted emission level is 20dB below the maximum permitted fundamental level which equals  $1099 \mu\text{V/m} = 60.8\text{dBuV/M}$ .

## DETERMINATION OF DUTY CYCLE

The transmitter controls were adjusted to maximize the transmitted duty cycle. The analyzer was set for a frequency span of 0Hz. The sweep time was then adjusted in order to display one full pulse train. The pulse train was observed and the number and width of the pulses and the period of the train was determined. As the pulse train period (cycle time) was more than 100msec in duration the worst case duty cycle was determined by measuring/calculating the sum of the pulse widths "on time duration" within the 100msec period with the highest average value. The on times were determined as follows:

The individual pulse widths within the pulse train were measured and summed in order to obtain the total "on time" within the train.

### Fundamental Frequency: 433.92MHz

$$\begin{aligned} \text{Transmitter On Time} &= 2.87 \text{ milliseconds} \\ \text{Transmitter Cycle Time} &= 100 \text{ milliseconds} \\ \text{Transmitter Duty Cycle} &= 2.87\% \\ \text{On Time divided by Cycle Time} &= \text{Duty Cycle Factor} \\ 4.04 \text{ divided by } 100 &= 0.0287 \\ 0.0287 \text{ converted to dB } (\text{LOG}_{10} .0287) \times 20 &= -30.84\text{dB} \\ \text{Duty Cycle Factor} &= \text{-30.84dB} \end{aligned}$$

Duty Cycle Factor Determination Plots are included with this application as a separate attachment.

## Test Methods

### 15.231 (b) Fundamental & Spurious Radiated Emissions

The test sample was placed on a 80cm high wooden test stand which was located 3 meters from the test antenna on an FCC listed open area test site. Emissions from the EUT were maximized by rotating the test sample and adjusting the test sample orientation and antenna polarization. The maximized peak field strength of each emission was measured and recorded and compared to the limit specified in 15.35 (b) (peak limit corresponds to 20dB above the maximum permitted average limit). The duty cycle factor was applied to the peak readings in order to determine the average field strength of the emissions for comparison to the specified average limits.

**Test Results:** The maximum peak field strength of the fundamental frequency was 93.17dBuV/M which met the peak limit of 100.83dBuV. The maximum average field strength was 62.33dBuV which met the specified average limit of 80.83dBuV. No harmonic/spurious frequencies were observed.

### 15.231 (c) Occupied Bandwidth

The test sample was placed on a test bench with nominal AC power applied and configured to transmit its normal modulated signal. The spectrum analyzers resolution bandwidth, sweep rate and span were adjusted for the frequency being measured. The upper and lower frequency points corresponding to levels 20dB down from the peak of the modulated carrier frequency were used to determine the occupied bandwidth.

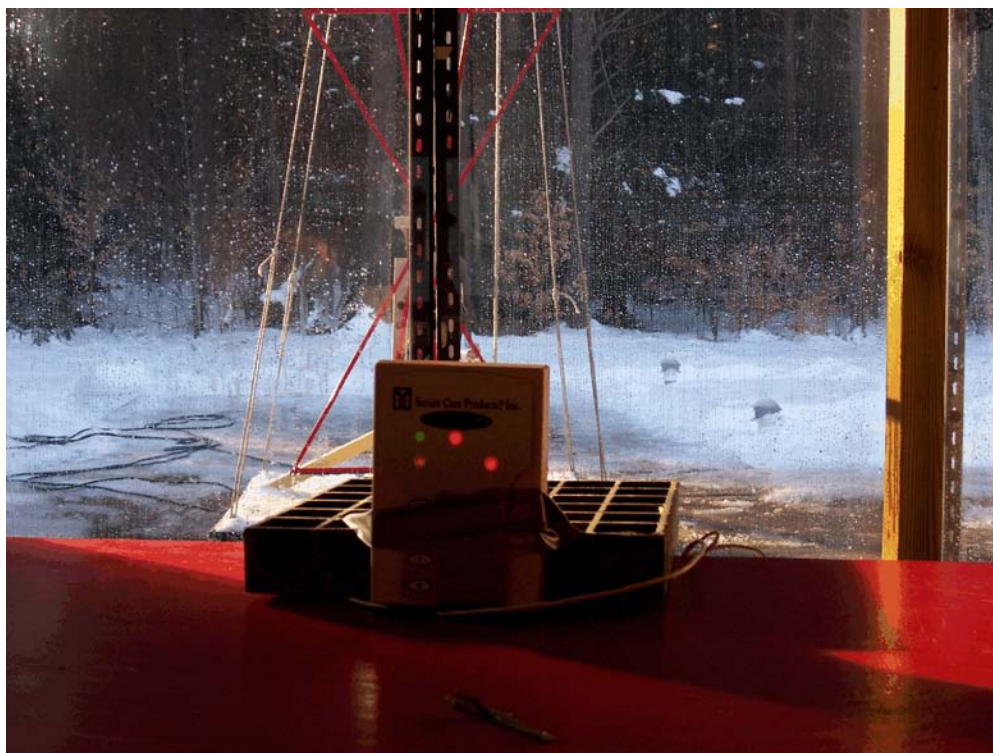
**Test Results:** The bandwidth of the emission was less than 0.25% (1.0848MHz) of the center frequency and met the requirements of 15.231 (c).

### 15.207 (a) AC Line Conducted Emissions

The test sample was placed on a 0.8m high wooden test stand above the floor of the test area (ground plane). The rear of the test sample was aligned flush with the rear of the test stand. The test stand was situated such that the test sample was located 0.4m from all other grounded surfaces. The power cord of the test sample was connected to an artificial mains network (LISN). The spectrum analyzer was connected to the RF port of the LISN and peak/quasipeak and average measurements were taken in the frequency range of 150kHz to 30MHz on each the hot and neutral leads.

**Test Results:** The AC line conducted emissions met the limit specified in 15.207 (a).

RADIATED EMISSIONS SETUP PHOTOGRAPHS



OCCUPIED BANDWIDTH & DUTY CYCLE SETUP PHOTOGRAPH



CONDUCTED EMISSIONS SETUP PHOTOGRAPH



# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

<b>Test Method:</b>	Fundamental Field Strength									
<b>Customer:</b>	Secure Care Products, Inc.				<b>Job No.</b>		R-4525N			
<b>Test Sample:</b>	Home WATCH Exit Panel Transceiver									
<b>Model No.:</b>	A02350900				<b>Serial No.</b>		N/A			
<b>Test Specification:</b>	FCC Part 15, Subpart C Paragraph: 15.231(b)									
<b>Operating Mode:</b>	Receiving signal, alarm Sounding, transmitting at 433.92 MHz.									
<b>Technician:</b>	T. Hannemann				<b>Date:</b>		December 21, 2005			
<b>Notes:</b>	Test Distance: 3 Meters Detector: Quasi-Peak<1000 MHz      Average>1000 MHz									

Transmit Frequency	Antenna/EUT Position	Uncorrected Reading	Correction Factor	Corrected Peak	Duty Cycle Correction	Corrected Reading	Average Limit At 3 Meters	Converted Reading	Limit at 3 Meters
MHz	Polarization/Axis	dBuV	dB	dBuV/m	dB	dBuV/m	dBuV	uV/m	uV/m
433.92	H/X	62.70	25.61	93.17	-30.84	62.33	80.83	1307.61	10996.81



# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

<b>Test Method:</b>	Spurious Radiated Emissions 30 MHz to 4400 MHz		
<b>Customer:</b>	Secure Care Products, Inc.	<b>Job No.:</b>	R-4525N
<b>Test Sample:</b>	Home WATCH Exit Panel Transceiver		
<b>Model No.:</b>	A02350900	<b>Serial No.:</b>	N/A
<b>Test Specification:</b>	FCC Part 15, Subpart C Paragraph: 15.231(b)		
<b>Operating Mode:</b>	Receiving signal, alarm Sounding, transmitting at 433.92 MHz.		
<b>Technician:</b>	T. Hannemann	<b>Date:</b>	December 21, 2005
<b>Notes:</b>	Fundamental Frequency 433.92 MHz		

Harmonic Frequency	Antenna/EUT Position	Uncorrected Reading	Correction Factor	Corrected Peak	Duty Cycle Correction	Corrected Reading			Limit at 3 Meters
MHz	Polarization/Axis	dBuV	dB	dBuV/m	dB	dBuV/m			uV/m
867.84	-	-	-	-	-	-			1099.68
1301.76	-	-	-	-	-	-			500.0
1735.68	-	-	-	-	-	-			1099.68
2169.60	-	-	-	-	-	-			1099.68
2603.52	-	-	-	-	-	-			1099.68
3037.44	-	-	-	-	-	-			1099.68
3471.36	-	-	-	-	-	-			1099.68
3905.28	-	-	-	-	-	-			500.00
4339.20	-	-	-	-	-	-			500.00

No harmonic frequencies were observed above the noise floor of the test equipment which was a minimum of 10 dB below the limit.

# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

Test Method:

Duty Cycle Plots

Customer:

Secure Care Products, Inc.

Test Sample:

Home WATCH Exit Panel Transceiver

Job No.:

R-4525N

Model No.:

A02350900

Serial No.:

N/A

Technician:

T. Hanemann

Test Specification:

FCC Part 15, Subpart C

15.231(b)

Date:

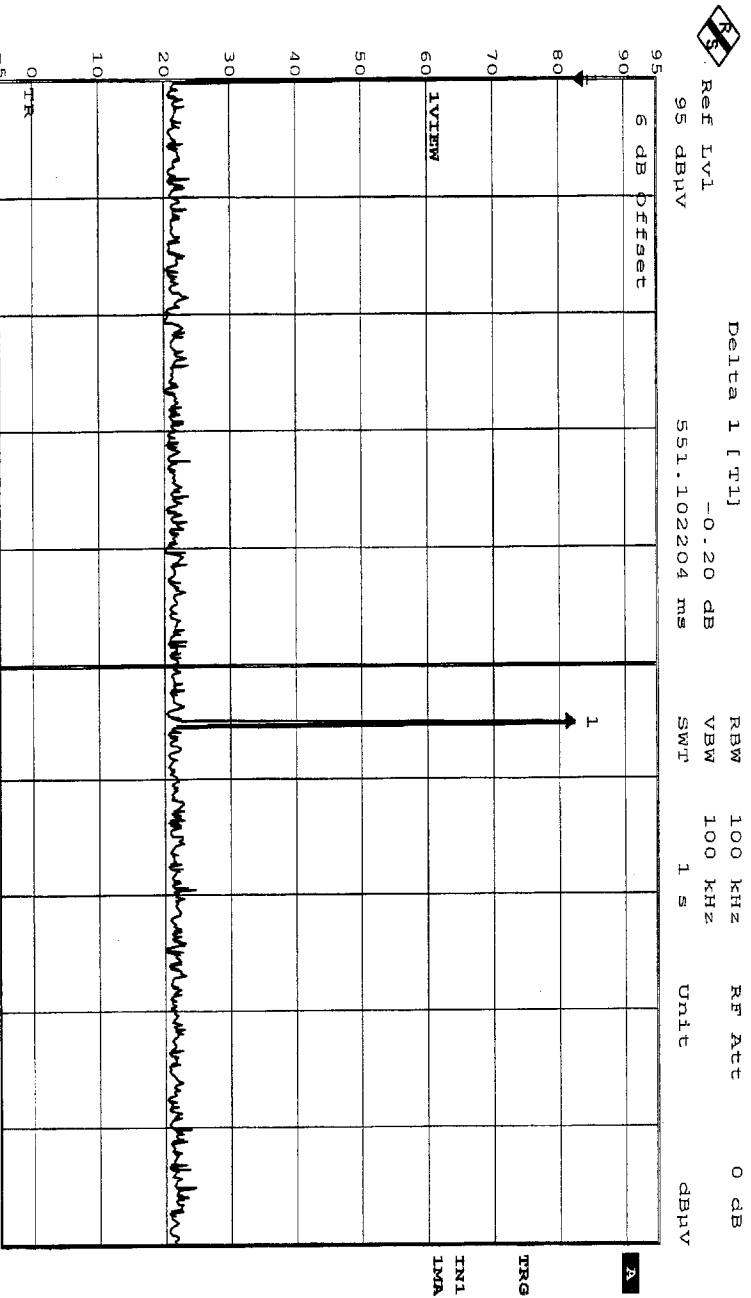
12/21/2005

Operating Mode:

Receiving signal, alarm sounding, Transmitting at 433.92 MHz

Notes:

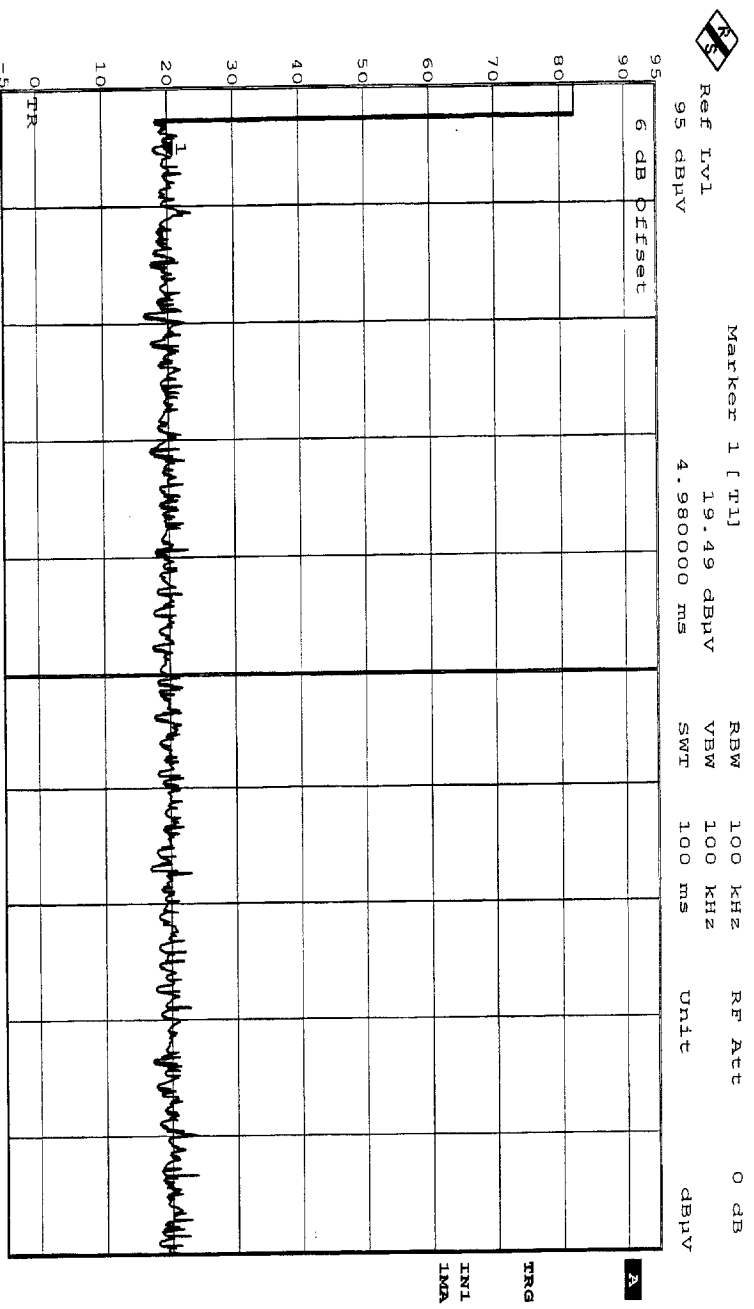
Transmit Frequency 433.92 MHz



# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

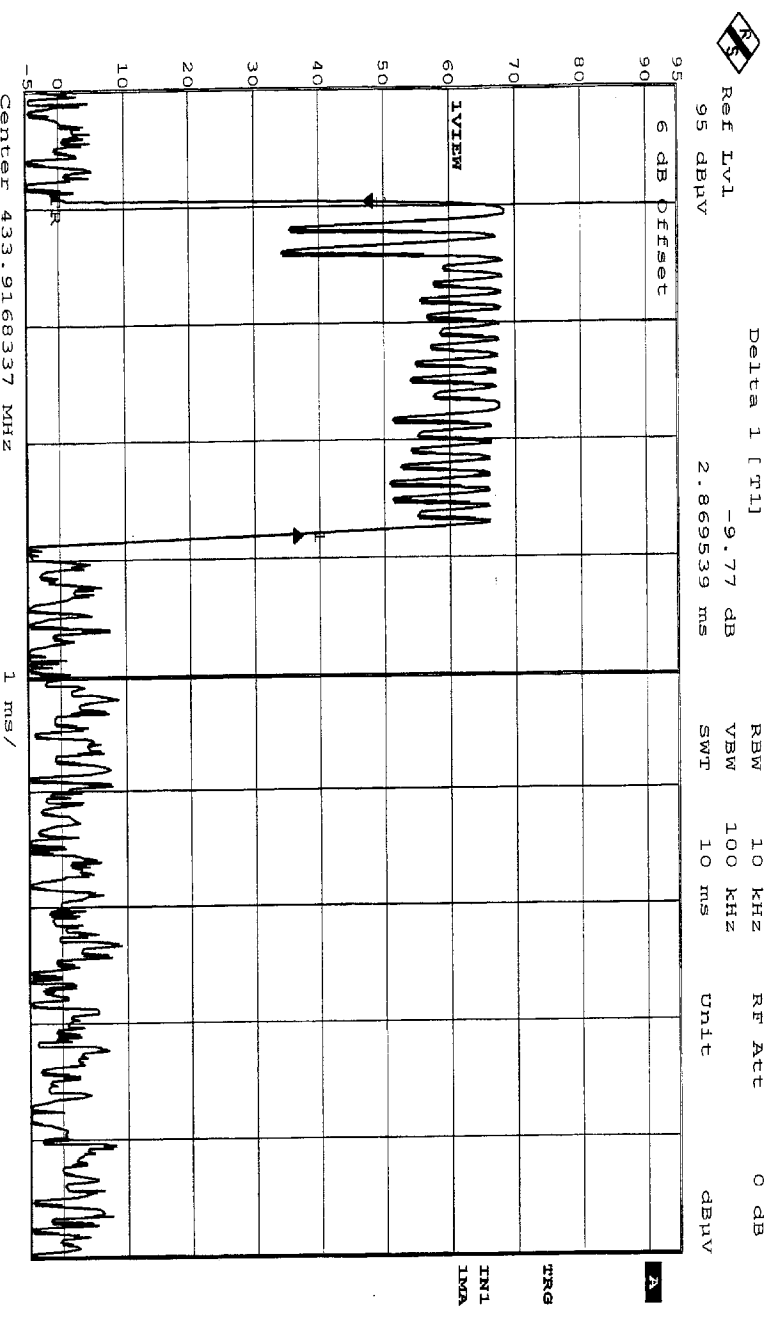
Test Method:		Duty Cycle Plots	
Customer:	Secure Gate Products, Inc.	Test Sample:	Home WATCH Exit Panel Transceiver
Model No:	A02350900	Serial No:	N/A
Test Specification:	FCC Part 15, Subpart C	Date:	15.231(b)
Operating Mode:	Receiving signal, alarm sounding, Transmitting at 433.92 MHz	Job No:	R-4525N
Notes:	Transmit Frequency 433.92 MHz	Technician:	I. Hannemann
		Date:	12/21/2005



# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

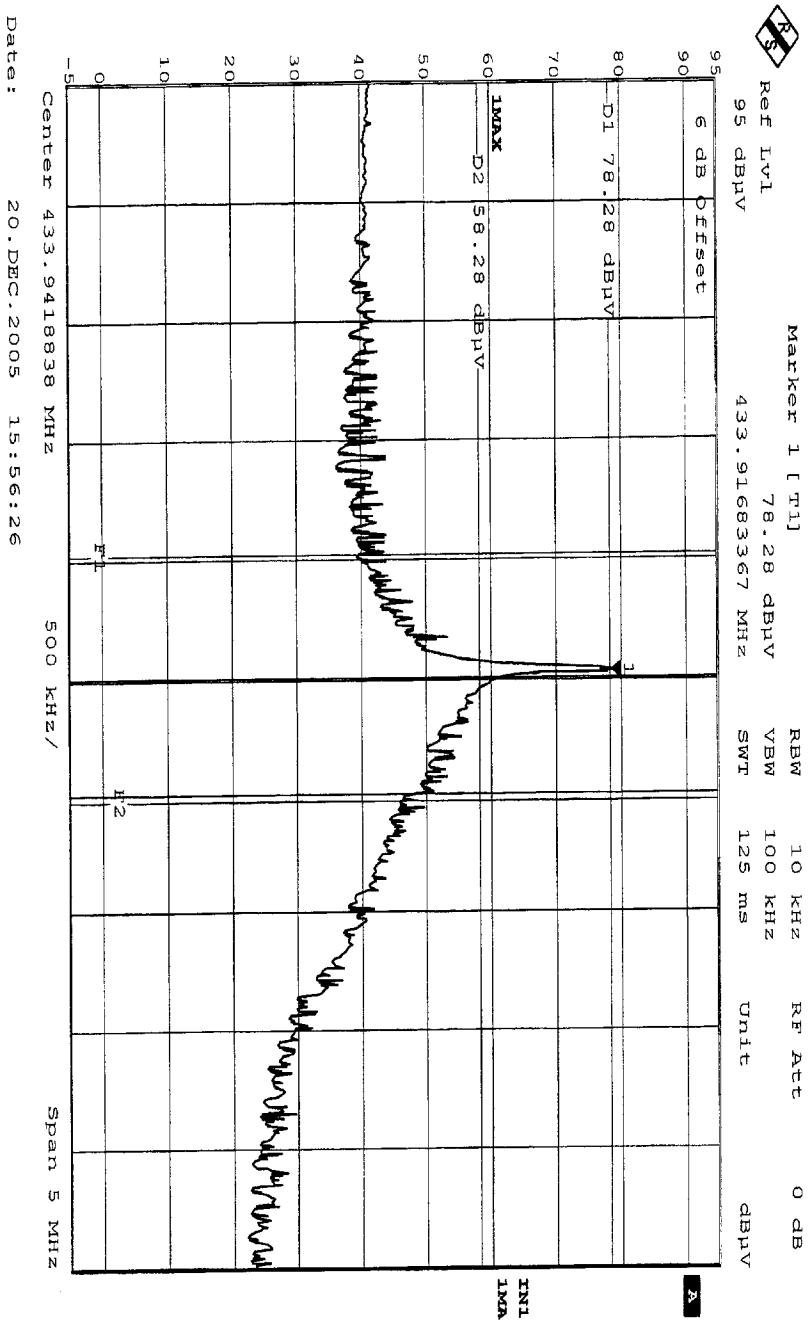
Test Method:		Duty Cycle Plots	
Customer:	Secure Care Products, Inc.	Test Sample:	Home WATCH Exit Panel Transceiver
Model No:	A02350900	Serial No:	N/A
Test Specification:	FCC Part 15, Subpart C		15.231(b)
Operating Mode:	Receiving signal, alarm sounding, Transmitting at 433.92 MHz	Job No.:	R-4525N
Notes:	Transmit Frequency 433.92 MHz	Technician:	T. Hannemann
		Date:	12/21/2005



# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

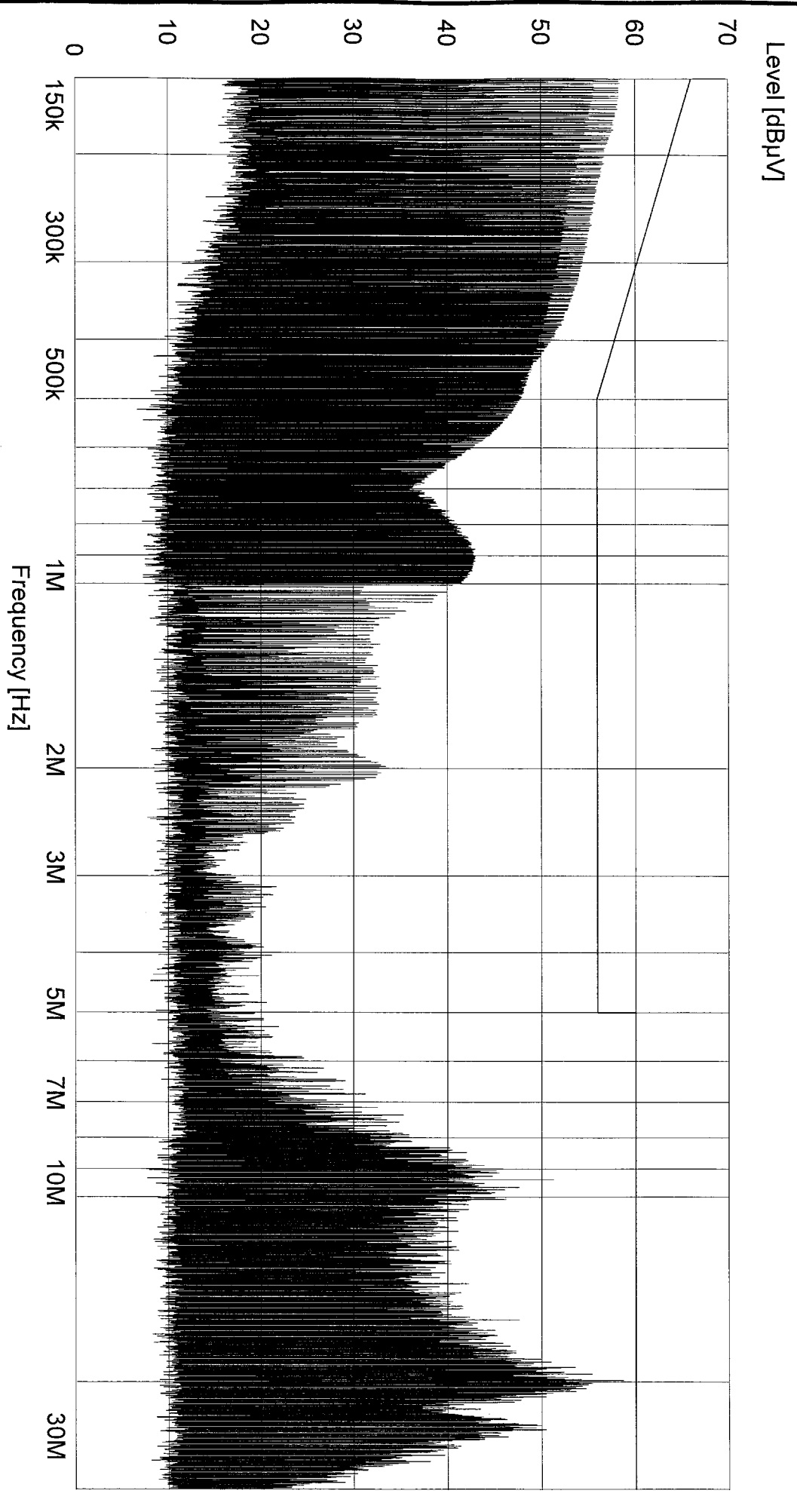
<b>Test Method:</b> Occupied Bandwidth		<b>Test Sample:</b> Home WATCH Exit Panel Transceiver	
<b>Customer:</b> Secure Care Products, Inc.	<b>Serial No.:</b> N/A	<b>Job No.:</b> R-4525N	<b>Technician:</b> T. Hannemann
<b>Model No.:</b> A02350900	<b>Serial No.:</b> 15.231(c)	<b>Date:</b> 12/20/2005	
<b>Test Specification:</b> FCC Part 15, Subpart C		<b>Receiving signal, alarm sounding, Transmitting at 433.92 MHz</b>	
<b>Notes:</b>			



# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

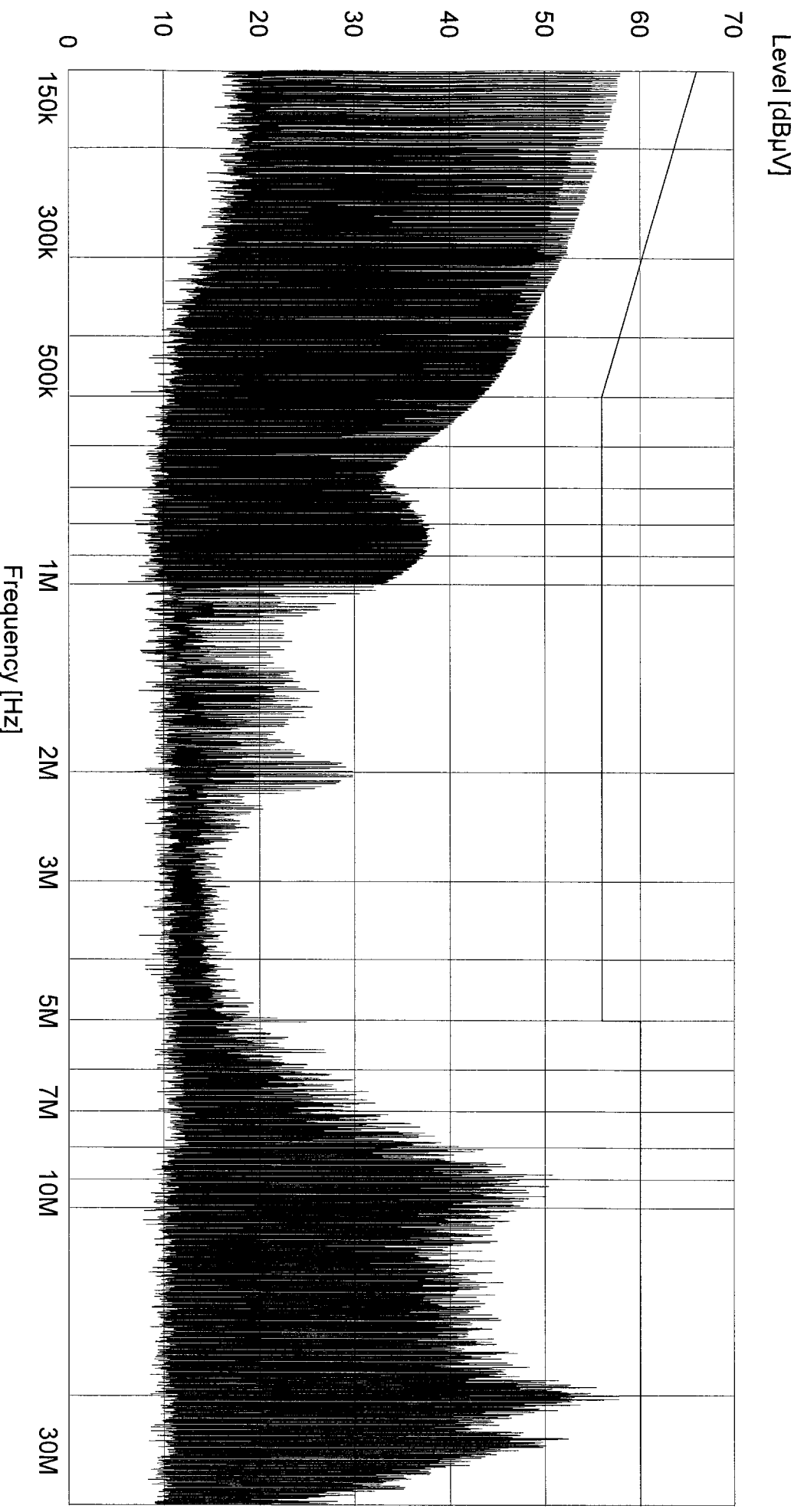
<b>Test Method:</b> Conducted Emissions 150 KHz to 30 MHz	
<b>Customer:</b> Secure Care Products, Inc.	<b>Test Sample:</b> Home WATCH Exit Panel Transceiver
<b>Model No.:</b> A02350900	<b>Serial No.:</b> N/A
<b>Test Specification:</b> FCC Part 15, Subpart C	<b>Job No.:</b> R-4525N
<b>Operating Mode:</b> Receiving signal, alarm sounding, Transmitting at 433.92 MHz	<b>Technician:</b> M. Seamans
<b>Notes:</b> Lead Tested: 120 VAC 60 Hz Hot Peak Readings to Quasi-Peak Limits.	<b>Date:</b> December 7, 2005



# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

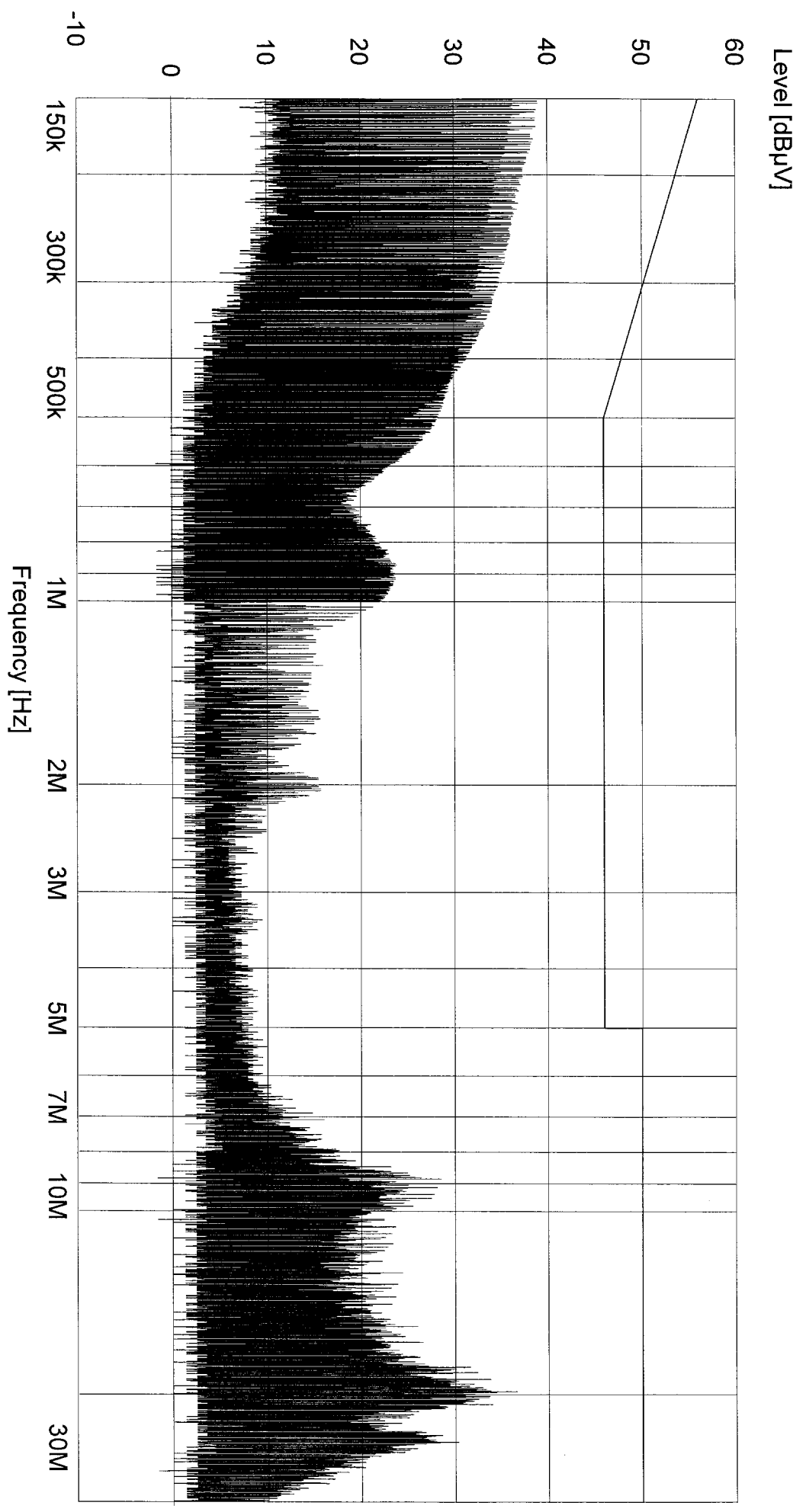
<b>Test Method:</b> Conducted Emissions 150 KHz to 30 MHz	<b>Job No.:</b> R-4525N
<b>Customer:</b> Secure Care Products, Inc.	<b>Test Sample:</b> Home WATCH Exit Panel Transceiver
<b>Model No.:</b> A02350900	<b>Serial No.:</b> N/A
<b>Test Specification:</b> FCC Part 15, Subpart C	<b>15.207 (a)</b>
<b>Operating Mode:</b> Receiving signal, alarm sounding, Transmitting at 433.92 MHz	<b>Technician:</b> M. Seamans
<b>Notes:</b> Lead Tested: 120 VAC 60 Hz Neutral Peak Readings to Quasi-Peak Limits.	<b>Date:</b> December 7, 2005



# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

<b>Test Method:</b> Conducted Emissions 150 KHz to 30 MHz		<b>Job No.:</b> R-4525N
<b>Customer:</b> Secure Care Products, Inc.	<b>Test Sample:</b> Home WATCH Exit Panel Transceiver	<b>Technician:</b> M. Seamans
<b>Model No.:</b> A02350900	<b>Serial No.:</b> N/A	<b>Date:</b> December 7, 2005
<b>Test Specification:</b> FCC Part 15, Subpart C		<b>15.207 (a)</b>
<b>Operating Mode:</b> Receiving signal, alarm sounding, Transmitting at 433.92 MHz		
<b>Notes:</b> Lead Tested: 120 VAC 60 Hz Hot Average Readings to Average Limits		

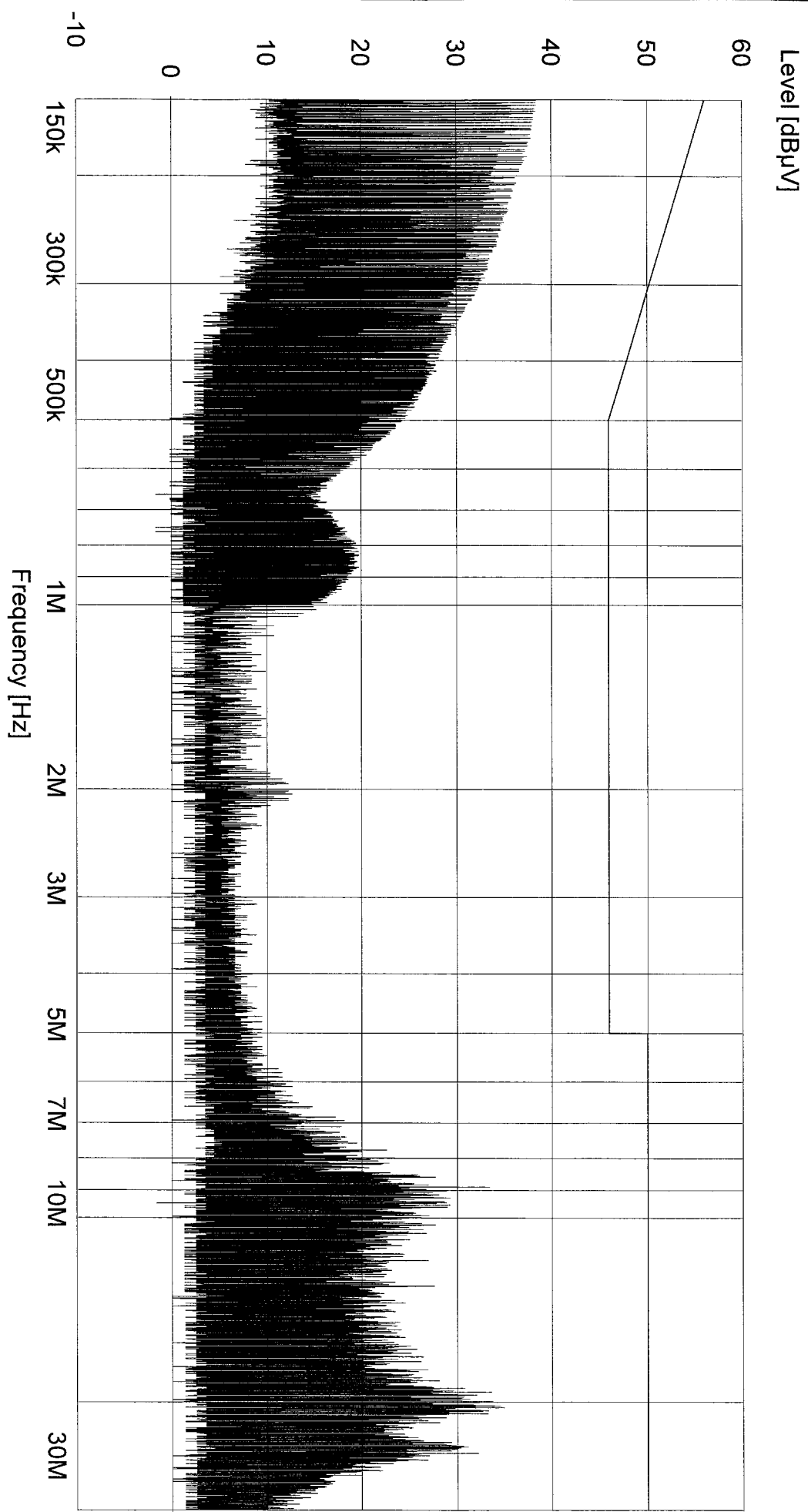




# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

Test Method:	Conducted Emissions 150 KHz to 30 MHz		
Customer:	Secure Care Products, Inc.	Test Sample:	Home WATCH Exit Panel Transceiver
Model No:	A02350900	Serial No.:	N/A
Test Specification:	FCC Part 15, Subpart C	15.207 (a)	Job No.: R-4525N
Operating Mode:	Receiving signal, alarm sounding, Transmitting at 433.92 MHz	Date:	December 7, 2005
Notes:	Lead Tested: 120 VAC 60 Hz Neutral Average Readings to Average Limits		



## EQUIPMENT LISTS

### Fundamental & Spurious Emissions

<b>EN</b>	<b>Type</b>	<b>Manufacturer</b>	<b>Description</b>	<b>Model No.</b>	<b>Cal Date</b>	<b>Due</b>
3258	Double Ridge Guide	EMCO	1 - 18 GHz	3115	08/21/2005	08/21/2006
4029B	Test Site Attenuation	Retlif	3 / 10 Meters	RNH	12/03/2004	12/31/2005
5053	Biconilog	EMCO	26 MHz - 3000 MHz	3142C	10/25/2005	10/25/2006
713	EMI Test Receiver	Rohde & Schwarz	20 Hz - 26.5 GHz	ES126	03/22/2005	03/22/2006

### Occupied Bandwidth & Duty Cycle

<b>EN</b>	<b>Type</b>	<b>Manufacturer</b>	<b>Description</b>	<b>Model No.</b>	<b>Cal Date</b>	<b>Due</b>
5037	6 DB Atten. (50 ohm)	Fluke	DC - 12.4 GHz	Y9303	02/08/2005	02/08/2006
713	EMI Test Receiver	Rohde & Schwarz	20 Hz - 26.5 GHz	ES126	03/22/2005	03/22/2006

### Conducted Emissions

<b>EN</b>	<b>Type</b>	<b>Manufacturer</b>	<b>Description</b>	<b>Model No.</b>	<b>Cal Date</b>	<b>Due</b>
4027	LISN	Solar Electronics	10 KHz - 30 MHz	9252-50-R-24BNC	11/21/2005	11/21/2006
4028	Isolation Transformer	Acme	N/A	120x240	01/31/2005	01/31/2006
5030	10 DB Atten. (50 ohm)	Narda	DC - 12.4 GHz	757C-10	02/07/2005	02/07/2006
713	EMI Test Receiver	Rohde & Schwarz	20 Hz - 26.5 GHz	ES126	03/22/2005	03/22/2006