EMC International, Inc.

FCC ID: ~~OEL~~-4-200-911
OFG

EMC MEASUREMENT/TECHNICAL REPORT

FCC Part 15.231, Certification

Radio Frequency Emission Testing

for

Caretaker Systems, Inc.

Product Name	Prevent Laser Perimeter Alarm Transmitter
Model No.	3-204-35
FCC ID No.	~~OEL~~-4-200-911 OFG

Report Date:	02 February 1999
Report Number:	0251SIG1

Prepared By:

EMC International, Inc.
762 Park Ave.
Youngsville, NC 27596
919-554-0901

EMC International, Inc.

FCC ID: ~~OBT~~-4-200-911
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Manufacturer	Caretaker Systems, Inc. 15540 N. 77th Street Scottsdale, AZ. 85260 USA 602-948-1199
Requester / Applicant	Les Mathews
Name of Equipment	Prevent Laser Perimeter Alarm Transmitter Model No. 3-204-35 Serial No. None
Type of Equipment	Transmitter
Class of Equipment	Class B
Application of Regulation(s)	FCC Title 47 CFR, Part 15.209 and 15.231
Application of Standard(s)	ANSI C63.4:1992

Date Received *1/4/99* Date Initiated *1/4/99* Date Completed *1/22/99* Date Issued *2/9/99*

The electromagnetic compatibility test and documented data described in this report has been performed and recorded by EMC International, Inc., in accordance with the standards and procedures listed herein. As the responsible authorized agent of EMCI, I hereby declare that the Prevent Laser Perimeter Alarm Transmitter (model no. 3-204-35) has been shown to be capable of complying with the emission requirements of the stated regulations and standards based on the results, special accessories and modifications listed in this report. This report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without the written approval of the laboratory.

09 FEB 1999

NVLAP Signatory
Dale Albright
President

Date

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DIRECTORY

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1.0 INTRODUCTION

1.1 Scope

This record is intended to document conformance with the essential requirements of FCC Title 47 CFR, Part 15.209 and 15.231 (01 Oct. 1997 Edition) and details the results of testing performed on 1/4/99 through 1/22/99 on the Prevent Laser Perimeter Alarm Transmitter manufactured by Caretaker Systems, Inc. This record only applies to the specific samples tested under the stated test conditions. It is the responsibility of the manufacturer to assure that additional production units of this model are manufactured with identical or EMI equivalent electrical and mechanical components.

1.2 Purpose

Testing was performed to evaluate the bandwidth and radio frequency emission performance of the Prevent Laser Perimeter Alarm Transmitter in accordance with the electromagnetic compatibility requirements and performance criteria defined in the application of regulations and application of standards listed in this report.

1.3 Summary

Test Performed	Test Standard	Parameters	Performance Criteria	Compliance Results
RF Field Emission	ANSI C63.4:1992	30 MHz to 4.5 GHz	15.209 and 15.231	Pass
Bandwidth	ANSI C63.4:1992	20 dB down from the modulated carrier	15.231 (c)	Pass

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2.0 General Information

2.1 Product Description

The information for all equipment used in the tested system, plus descriptions of cables, clock and microprocessor frequencies, EMI critical components, and operation modes is listed in the EMC Test Plan in Attachment A.

2.2 Related Submittal(s) / Grant(s)

The Prevent Perimeter Intrusion Alarm (FCC ID: OEL-3-204-35) is the receiver associated with the transmitter and has been simultaneously submitted. Reference EMCI Report Number 0251SIG2.

2.3 Emission Test Facility

The Open Area Test Site measurement facility used to collect the radiated data is located at Youngsville, North Carolina, USA. The site has been constructed in accordance with ANSI C63.7:1992 and measured in accordance with and verified to comply with the theoretical normalized site attenuation requirements of ANSI C63.4:1992 at a test distance of 3 and 10 meters. This site has been fully described in reports dated May 12, 1997, submitted to the FCC, and accepted by letter dated June 25, 1997 (31040/SIT 1300F2). The site is listed with the FCC and accredited by NVLAP (code 200094-0).

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2.4 Measurement Uncertainty

Two types of measurement uncertainty are expressed in this report, per ISO GUIDE TO THE EXPRESSION OF UNCERTAINTY IN MEASUREMENT, 1st addition 1995.

The *Combined Standard Uncertainty* is the standard uncertainty of the result of a measurement when that result is obtained from the values of a number of other quantities, equal to the positive square root of a sum of terms, the terms being the variances or covariances of these other quantities weighted according to how the measurement result varies with changes in these quantities. The term standard uncertainty is the result of a measurement expressed as a standard deviation.

The *Expanded Uncertainty* defines an interval about the result of a measurement that may be expected to encompass a large fraction of the distribution of values that could reasonably be attributed to the measurand. The fraction may be viewed as the coverage probability or level of confidence of the interval.

The EMCI laboratory test system for conducted emissions is defined as the LISN, spectrum analyzer, coaxial cables, and pads. The test system for radiated emissions is defined as the antenna, spectrum analyzer, pre-amplifier, coaxial cables, and pads. The conducted test system has a combined standard uncertainty of ± 1.2 dB. The radiated test system has a combined standard uncertainty of ± 1.6 dB. The expanded uncertainty at a level of 95% confidence is obtained by multiplying the combined standard uncertainty by a coverage factor of 2. Compliance criteria is not based on measurement uncertainty.

2.5 Calibration Traceability

All measurement instrumentation are traceable to the National Institute of Standards and Technology (NIST). Measurement method complies with ANSI/NCSL Z540-1-1994 and ISO Guide 25.

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3.0 SYSTEM TEST CONFIGURATION

3.1 Justification

The EUT was tested as table top equipment and was configured and operated in a manner consistent with it's intended use according to the test plan shown in Attachment A. Since the transmitter employs pulsed operation, a modification was made to allow the transmission of a continuous unmodulated signal. A new battery was used for testing.

3.2 EUT Exercise Software

There is no exercise program associated with the EUT.

3.3 Special Accessories

None added.

3.4 Equipment Modifications

None added.

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4.0 RADIO-FREQUENCY FIELD EMISSION

4.1 Test Methodology

Testing was performed according to the procedures and criteria contained in ANSI C63.4:1992. This test evaluates the EUT's potential for causing radio frequency interference to other electronic devices. This test method is approved by NVLAP Scope of Laboratory Accreditation. There were no deviations from the test standard.

4.2 Test Configuration

Preliminary Test: Preliminary emission profile testing was performed inside an anechoic chamber. The EUT was placed on a 1.0m x 1.5m non-conductive table 80cm above the floor. The center of the EUT was positioned at the center of the table. The receiving antenna was placed at a distance of 3m at a fixed height of 1.5m. Measurement equipment was located outside of the chamber. A video camera was placed inside the chamber to view the EUT.

Final Test: Final testing was performed on the OATS. The EUT was placed on a 1.0m x 1.5m non-conductive table 80cm above the ground plane. The placement of EUT was the same as for preliminary testing. Testing was performed at an antenna to EUT distance of 1 meter and 3 meters. (1 meter distance was used at higher frequencies to gain signal to noise ratio). A diagram and photograph of the final test configuration is shown in the attached data.

4.3 Test Procedure

Preliminary Test: A test program which controls all instrumentation and data logging was used to automate the preliminary RF emission test procedure. The frequency range of interest was divided into sub-ranges. For each frequency sub-range the turntable was rotated 360° while peak emission data was recorded and plotted over the frequency range of interest in horizontal and vertical antenna polarization's.

Final Test: For each frequency measured, the peak emission was maximized by manipulating the receiving antenna within 1 to 4 meters from the ground plane and placing it at the position which produced maximum signal strength reading. The turntable was then rotated through 360° while observing the peak signal and placing the EUT at the position which produced maximum radiation. The six highest emissions relative to the limit were measured unless such emissions were more than 20 dB below the limit. If less than six emissions are within 20 dB of the limit, than the noise level of the receiver is measured at frequencies where emissions are expected. Multiples of all oscillator and microprocessor frequencies were also checked.

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4.4 Test Results

Plots of the EUT's RF emissions are contained in the following sections. The plots show peak emissions in both horizontal and vertical polarization's and are used to select worst case modes of configuration and operation and to identify frequencies which require measurement on the OATS.

The EUT was found to be compliant to the requirements of the test standard, as originally tested. No modifications or special accessories were added to achieve compliance. The test data is listed in the **Radio Frequency Emission Data Record**.

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SOP 1 Radio-Frequency Emission rec. 1, rev 3

Tracking # 0251SIG

Manufacturer	SIGMA SOUTHWEST CORPORATION	Date	21 JAN 99
Witness	NA	Temp / Hum in	72°F / 38%
EUT Name	PREVENT: TRANSMITTER	Temp / Hum out	69°F / 42%
EUT Model	NA	Line AC / Freq	NA
EUT Serial	NA	RBW / VBW	1MHz/1MHz, 120KHz/300KHz
Specification	FCC PART 15:209, 15.231	Detector	PEAK, AVE
Test Method	ANSI C63.4:1992	Distance	3 METERS

Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBuV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBuV/m)	3 Meter Limit (dBuV/m)	Spec Margin (dB)
Pos C										
1302	H	1	FRONT	21.1	—	1.9	23.9	*54046.9	54.0	-7.1
1736	H	1	FRONT	18.8	—	2.5	25.2	46.5	54.0	-7.5
2170	H	1	FRONT	25.0	—	3.1	27.8	55.9	*54.8 60.9	-6.0
2604	H	1	FRONT	16.3	—	3.7	28.5	48.5	54.0	-5.5
3472	H	1	FRONT/R	15.9	—	4.9	30.4	51.2	54.0	-2.8
3906 MHz										
ACTION: MOVED ANTENNA TO 1M										
3906	H	1	FRONT	13.2	—	5.5	32.9	42.1	54.0	-11.9
4340	H	1	FRONT	12.6	—	6.1	33.8	42.9	54.0	-11.0
ACTION: CHANGED ANTENNA POLARITY TO VERTICAL										
4340	V	1	FRONT	17.9	—	6.1	33.8	48.3	54.0	-5.7
3906	V	1	FRONT	21.8	—	5.5	32.9	56.7	54.0	-3.3
ACTION: MOVED ANTENNA TO 3M									61.9 *	
3472	V	1	FRONT	24.3	—	4.9	30.4	59.6	54.0	-2.3
2604	V	1	LEFT	10.2	—	3.7	28.5	42.4	54.0	-11.6
2170	V	1	BACK/R	20.8	—	3.1	27.8	51.7	54.0	-2.3
1736	V	1	FRONT/L	16.0	—	2.5	25.2	43.7	54.0	-10.3
1302	V	1	FRONT	22.4	—	1.9	23.9	48.2	54.0	-5.8
ACTION: SEE P2 of										

Spec Margin = E-Field Value - Limit, E-Field Value = FIM Value - Amp Gain + Cable Loss + ANT Factor ± Uncertainty

Combined Standard Uncertainty $u_c(y) = \pm 1.6$dB Expanded Uncertainty $U = ku_c(y)$ $k = 2$ for 95% confidence

Notes: 1) THE EUT WAS POSITION IN THE X, Y, & Z PLANES. THE POSITION W/ THE HIGHEST AMPLITUDE WAS MEASURED FOR FINAL RESULTS.
2) AN * INDICATES A PEAK MEASUREMENT FOR FIM VALUE.
3) THE RESOLUTION BW FOR FREQS BELOW 1GHz = 120KHz, VIDEO BW FOR <1GHz = 300KHz
4) A DISTANCE CORRECTION FACTOR OF 20 log ⅓ dB WAS ADDED TO THE 1m FIM VALUE

Compliance Result: ☒ Pass ☐ Fail ☒ Final ☐ Preliminary List Test Equipment on Back

STAVE L. CHESNEY — Performed by (Name / Signature) — 21 JAN 99 Date

EMC Supervisor (Name / Signature) — 25 JAN 99 Date

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	Equipment	Manufacturer	Model #	Serial/Inst. #	Last Cal dd/mm/yy	Next Cal dd/mm/yy
☒	Amplifier, preamp	Hewlett Packard	8447D	1937A01766	15 OCT 98	15 OCT 99
☐	Amplifier, preamp	Mini-Circuits	ZFL-2000	Amp2		
☒	Ant. BiconiLog	EMCO	3142	1006	26 AUG 98	26 AUG 99
☐	Ant. BiconiLog	EMCO	3142	1007		
☒	Cable, Coax	Belden	RG-213	001	26 FEB 98	26 FEB 99
☒	Cable, Coax	Belden	RG-213	002	26 FEB 98	26 FEB 99
☒	Cable, Coax	Belden	RG-213	003	26 FEB 98	26 FEB 99
☐	Cable, Coax	Belden	RG-213	005		
☒	Cable, Coax	Belden	RG-213	006	26 FEB 98	26 FEB 99
☐	Meter, Multi	Extech	38096C	D023466		
☒	Meter, Multi	Fluke	79-3	69200606	06 OCT 98	06 OCT 99
☐	Meter, Temp/Hum/Bar	Fisher	02-400	01		
☒	Meter, Temp/Humidity	Dickson	TH550	6215304	01 MAY 98	01 MAY 99
☐	OATS	EMCI	1	1		
☒	OATS	EMCI	2	2	04 DEC 98	04 DEC 99
☒	Software, 3m ant. data	EMCI	Antfac3.dat	001	04 SEP 98	26 AUG 99
☐	Software,10m ant. data	EMCI	Antfac10.dat	001		
☒	Software, Cable Loss	EMCI	Cablfac.dat	001	09 NOV 98	09 NOV 99
☒	Software, Preamp + Syst	EMCI	EMCI17.exe	001	15 OCT 98	15 OCT 99
☒	Spectrum Analyzer, QP	Hewlett Packard	8591A r 3.1.90	3009A01066	12 OCT 98	12 OCT 99
☒	Spectrum Analyzer	Hewlett Packard	8591A r 3.1.90	3009A00692	19 JAN 99	19 JAN 00
☒	Chamber, Anechoic	Universal Shielding	USC-26	241210	CNR	CNR
☒	SPECTRUM ANALYZER	HEWLETT PACKARD	8546A	3710A00373	RENTAL	RENTAL

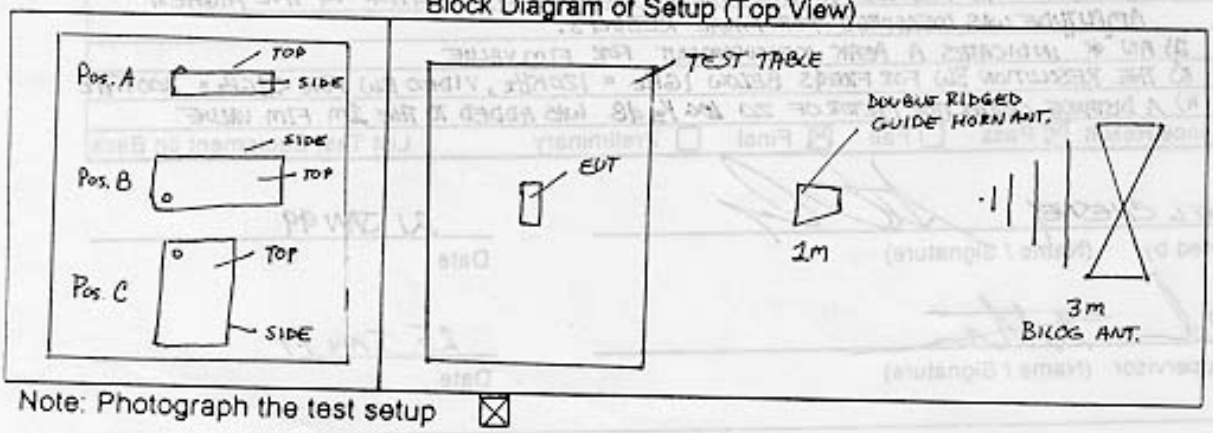
Description of Operating Mode and Configuration

EQUIPMENT LIST CONT'D

1) RF FILTER SECTION, HEWLETT PACKARD, 8546A, 3704A00341 RENTAL / RENTAL
2) ANTENNA, DOUBLE RIDGED GUIDE HORN, A.H. SYSTEMS, SAS-200/571, 143 20 JAN 99 / 20 JAN 00
3) CABLE, COAX BELDEN RG213 013 26 FEB 98 / 26 FEB 99

THE EUT WAS OPERATED IN CONTINUOUS TRANSMIT MODE AND WAS CONFIGURED AS SEEN BELOW.

Block Diagram of Setup (Top View)



Note: Photograph the test setup ☒

EMC International Inc

SOP 1 Radio-Frequency Emission — rec. 1, rev. 3

Tracking # 0251.SIG

Manufacturer	SIGMA SOUTHWEST CORPORATION	Date	21 JAN 99
Witness	NA	Temp / Hum in	72°F / 38%
EUT Name	PRESENT TRANSMITTER	Temp / Hum out	69°F / 42%
EUT Model	NA	Line AC / Freq	NA
EUT Serial	NA	RBW / VBW	1MHz / 1MHz, 120KHz / 300KHz
Specification	FCC PART 15.209, 15.231	Detector	PEAK, AVERAGE
Test Method	ANSI C63.4:1998	Distance	3 METERS

	Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBuV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBuV/m)	3 Meter Limit (dBuV/m)	Spec Margin (dB)	
ACTION:	SWR REPLACED DOUBLE RIDGED GUIDE HORN ANTENNA W/ EMCO 3142 BICOG ANT CHANGED ANTENNA POLARITY TO HORIZONTAL											
Pos. A	433.9938	H	1	BACK	78.0	26.0	8.5	17.0	77.5	80.8	-3.3	
ACTION:	CHANGED ANTENNA POLARITY TO VERTICAL											
* Pos. B	433.9938	V	1	BACK	75.0	26.0	8.5	17.0	74.5	80.8	-6.3	
Pos. C	867.98	V	1	BACK	35.2	26.0	13.5	23.2	45.9	54.0	-8.1	
* Pos. B	~~867.98~~ 631.7	V	1	BACK	~~33.8~~ 50.6	~~26.0~~ 26.0	~~13.5~~ 10.6	~~23.2~~ 21.0	~~44.5~~ 56.2	~~61.9~~ 61.9	~~17.4~~ -5.7	***

Spec Margin = E-Field Value - Limit, E-Field Value = FIM Value - Amp Gain + Cable Loss + ANT Factor ± Uncertainty

Combined Standard Uncertainty $u_c(y)$ = ± 1.6dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes:

Compliance Result: ☒ Pass ☐ Fail ☒ Final ☐ Preliminary List Test Equipment on Back

STEVE L. CHESNEY — Performed by (Name / Signature) — 21 JAN 99 — Date

EMC Supervisor (Name / Signature) — 25 JAN 99 — Date

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	Equipment	Manufacturer	Model #	Serial/Inst. #	Last Cal dd/mm/yy	Next Cal dd/mm/yy
☐	Amplifier, preamp	Hewlett Packard	8447D	1937A01766		
☐	Amplifier, preamp	Mini-Circuits	ZFL-2000	Amp2		
☐	Ant. BiconiLog	EMCO	3142	1006		
☐	Ant. BiconiLog	EMCO	3142	1007		
☐	Cable, Coax	Belden	RG-213	001		
☐	Cable, Coax	Belden	RG-213	002		
☐	Cable, Coax	Belden	RG-213	003		
☐	Cable, Coax	Belden	RG-213	005		
☐	Cable, Coax	Belden	RG-213	006		
☐	Meter, Multi	Extech	38096C	D023466		
☐	Meter, Multi	Fluke	79-3	69200606		
☐	Meter, Temp/Hum/Bar	Fisher	02-400	01		
☐	Meter, Temp/Humidity	Dickson	TH550	6215304		
☐	OATS	EMCI	1	1		
☐	OATS	EMCI	2	2		
☐	Software, 3m ant. data	EMCI	Antfac3.dat	001		
☐	Software,10m ant. data	EMCI	Antfac10.dat	001		
☐	Software, Cable Loss	EMCI	Cablfac.dat	001		
☐	Software, Preamp + Syst	EMCI	EMCI17.exe	001		
☐	Spectrum Analyzer, QP	Hewlett Packard	8591A r 3.1.90	3009A01066		
☐	Spectrum Analyzer	Hewlett Packard	8591A r 3.1.90	3009A00692		
☐	Chamber, Anechoic	Universal Shielding	USC-26	241210		
☐						

Description of Operating Mode and Configuration

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Block Diagram of Setup (Top View)

SEE PAGE #1 of 6

Note: Photograph the test setup ☒

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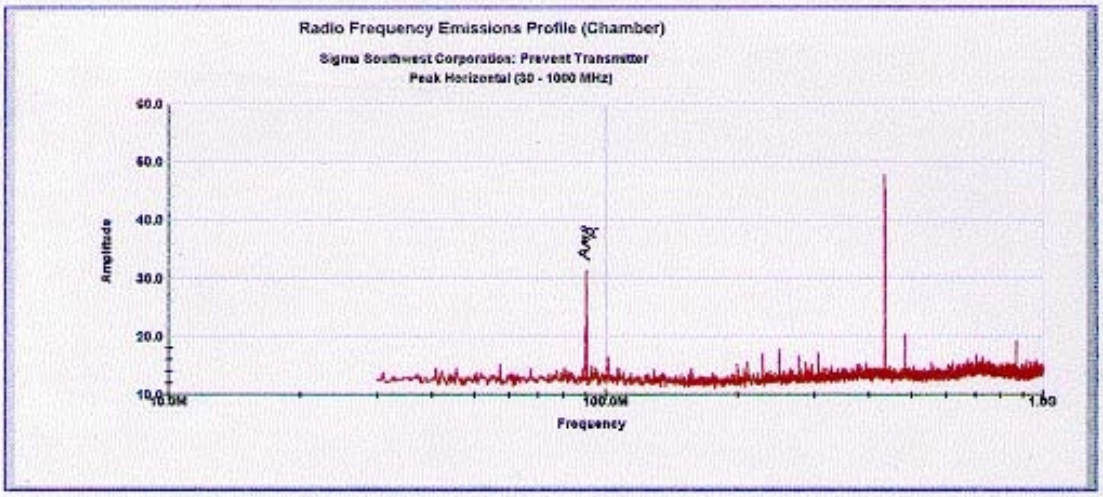
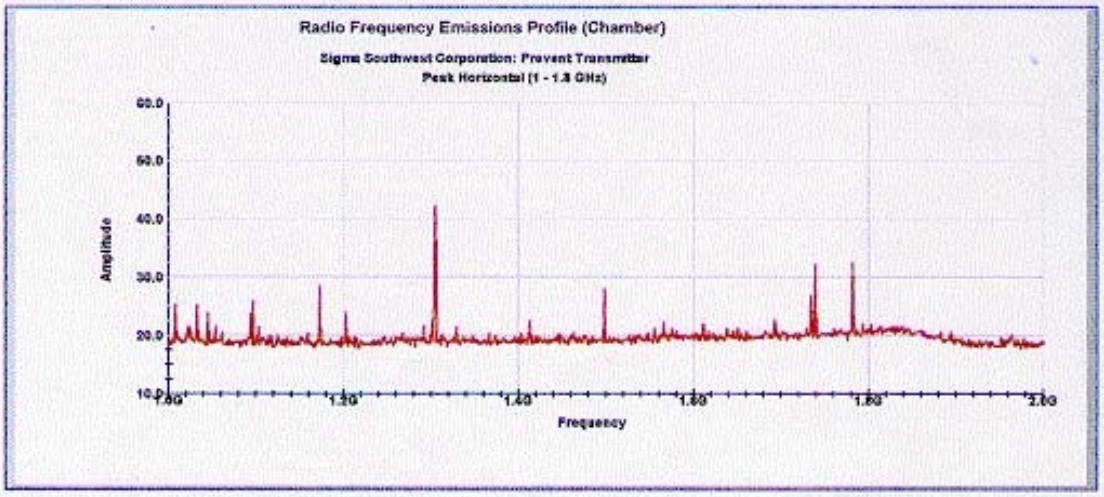
SOP 1 Radio Frequency Emission Profile record rev. 2

Tracking # 0251SIG

Manufacturer	Sigma Southwest Corporation	Date	04 Jan 99
Witness	NA	Temp / Hum in	68 deg. F/ 39% RH
EUT Name	Prevent Transmitter	Temp / Hum out	N/A
EUT Model	NA	Line AC / Freq	124 VAC / 60 Hz
EUT Serial	NA	RBW / VBW	30 kHz / 300 kHz
Specification	FCC Part 15	Detector	Peak
Test Method	ANSI C63.4:1992	Distance	3 Meters

Configuration: Continous transmit mode





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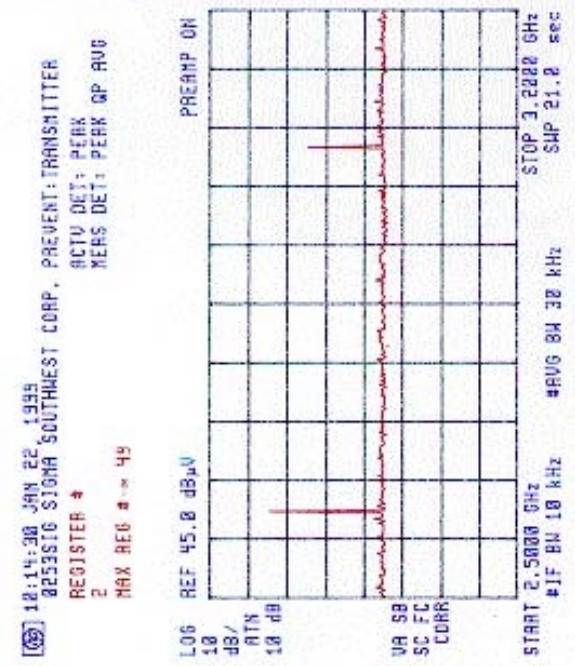
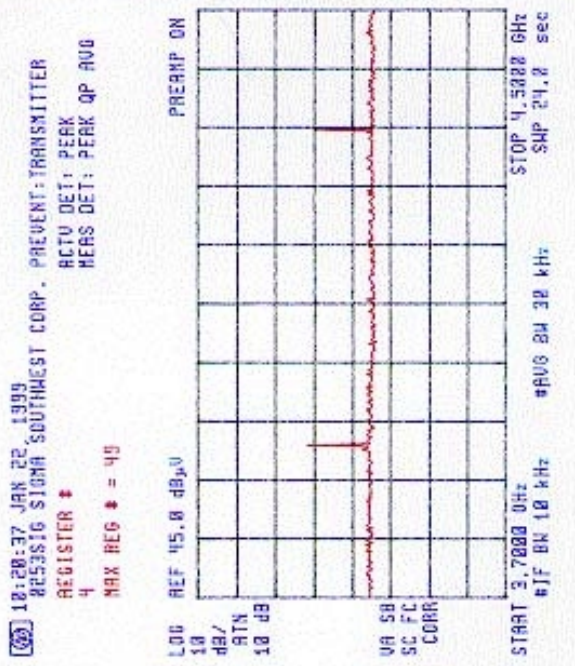
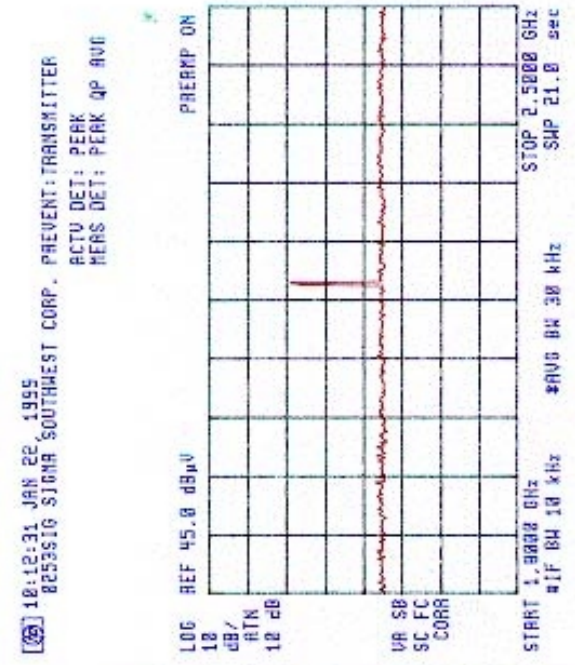
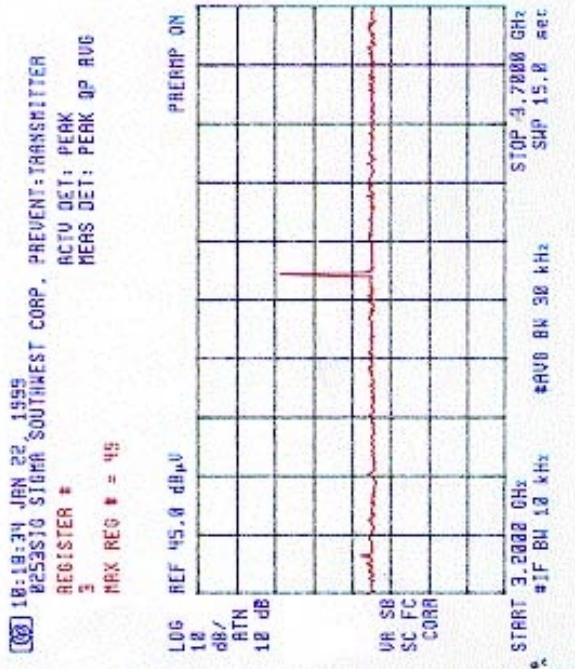
HORIZONTAL









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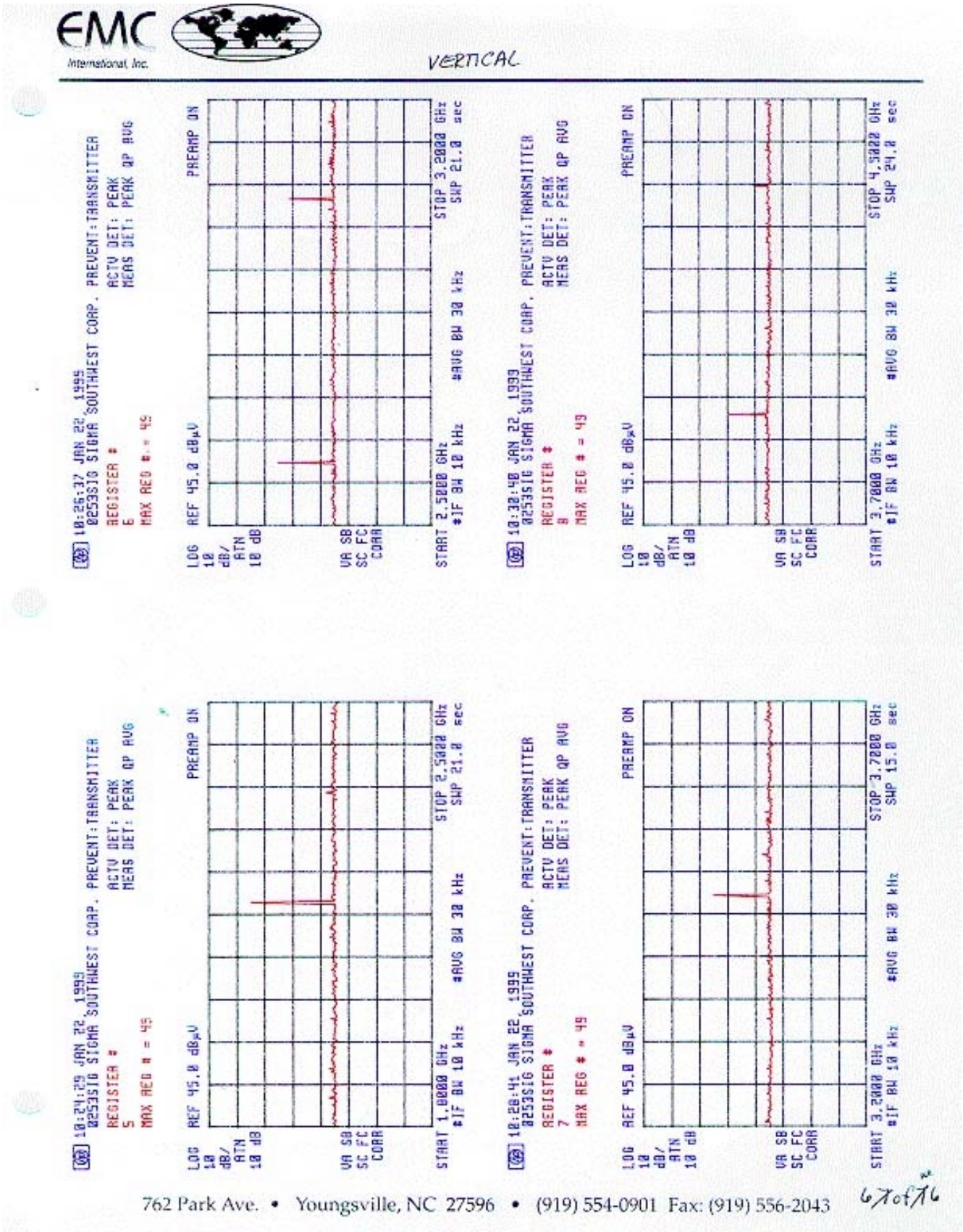
EMC
International, Inc.
VERTICAL
10:26:37 JAN 22, 1999
8253SIG SIGMA SOUTHWEST CORP. PREVENT:TRANSMITTER
REGISTER #
6
MAX REG # = 45
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
REF 45.0 dBµV
PREAMP ON
LOG
10
dB/
ATN
10 dB
VA SB
SC FC
CORR
START 2.5000 GHz
#IF BW 10 kHz
#AVG BW 30 kHz
STOP 3.2000 GHz
SWP 21.0 sec
10:30:40 JAN 22, 1999
8253SIG SIGMA SOUTHWEST CORP. PREVENT:TRANSMITTER
REGISTER #
8
MAX REG # = 49
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
REF 45.0 dBµV
PREAMP ON
START 3.7000 GHz
#IF BW 10 kHz
#AVG BW 30 kHz
STOP 4.5000 GHz
SWP 24.0 sec
10:24:29 JAN 22, 1999
8253SIG SIGMA SOUTHWEST CORP. PREVENT:TRANSMITTER
REGISTER #
5
MAX REG # = 45
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
REF 45.0 dBµV
PREAMP ON
START 1.0000 GHz
#IF BW 10 kHz
#AVG BW 30 kHz
STOP 2.5000 GHz
SWP 21.0 sec
10:28:41 JAN 22, 1999
8253SIG SIGMA SOUTHWEST CORP. PREVENT:TRANSMITTER
REGISTER #
7
MAX REG # = 49
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
REF 45.0 dBµV
PREAMP ON
START 3.2000 GHz
#IF BW 10 kHz
#AVG BW 30 kHz
STOP 3.7200 GHz
SWP 15.0 sec
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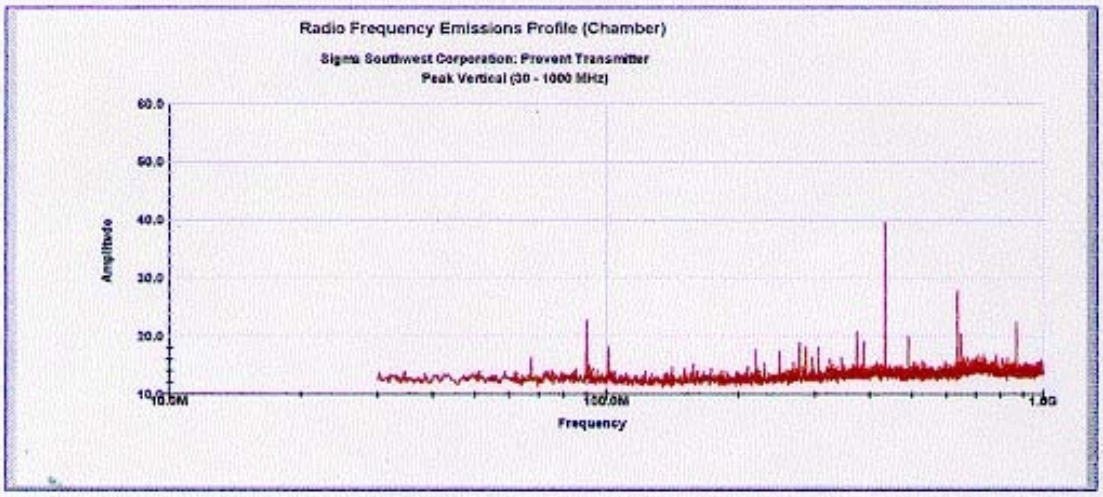
EMC International, Inc.

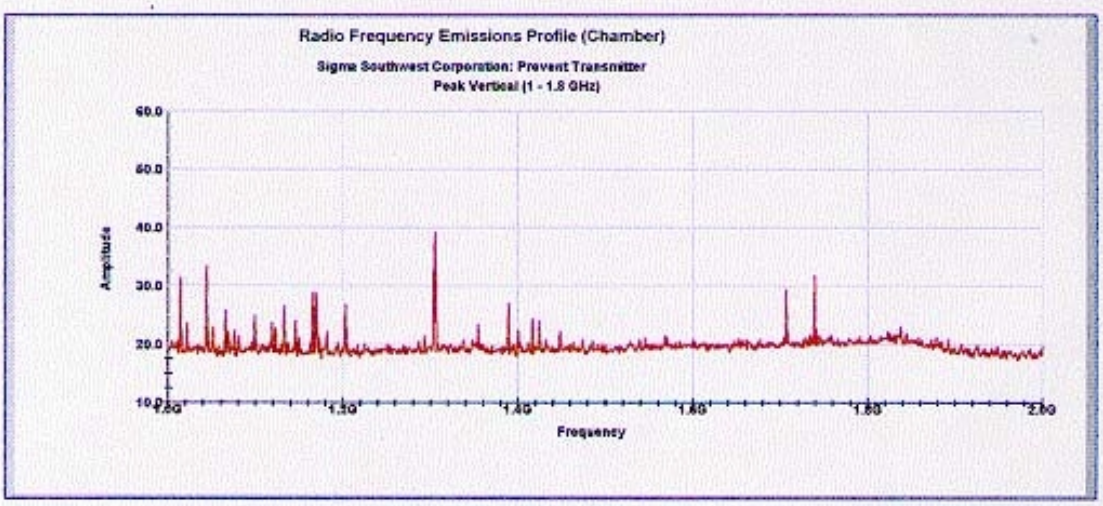
SOP 1 Radio Frequency Emission Profile record rev. 2

Tracking # 0251SIG

Manufacturer	Sigma Southwest Corporation	Date	04 Jan 99
Witness	NA	Temp / Hum in	68 deg. F/ 39% RH
EUT Name	Prevent Transmitter	Temp / Hum out	N/A
EUT Model	NA	Line AC / Freq	124 VAC / 60 Hz
EUT Serial	NA	RBW / VBW	30 kHz / 300 kHz
Specification	FCC Part 15	Detector	Peak
Test Method	ANSI C63.4:1992	Distance	3 Meters

Configuration: Continous transmit mode





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4.5 Sample Calculation

The field strength is calculated by subtracting the Amplifier Gain and adding the Cable Loss and Antenna Correction Factor to the measured reading. The basic equation is as follows:

Field Strength (dBμV/m) = FIM - AMP + CBL + ACF

Where: FIM = Field Intensity Meter (dBμV)

AMP = Amplifier Gain (dB)

CBL = Cable Loss (dB)

ACF = Antenna Correction Factor (dB)

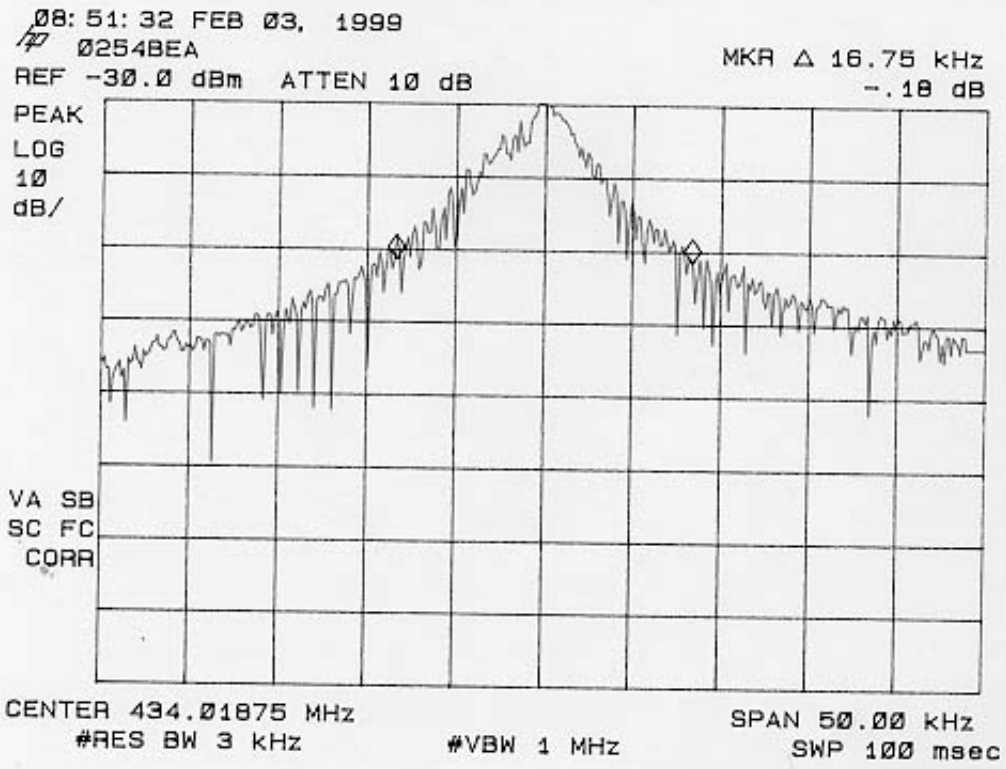
μV/m = Common Antilog [(dBμV/m)/20)]

5.0 AC Power Line Conducted Emission

This device operates on battery power only and does not provide connection to the public AC utility network.

6.0 BANDWIDTH

6.1 Graph



6.2 Bandwidth Limit

The Bandwidth was determined at the points 20dB down from the modulated carrier.

BANDWIDTH = 16.75 KHz

Bandwidth Limit = .0025(434 MHz) = 1.09 MHz.

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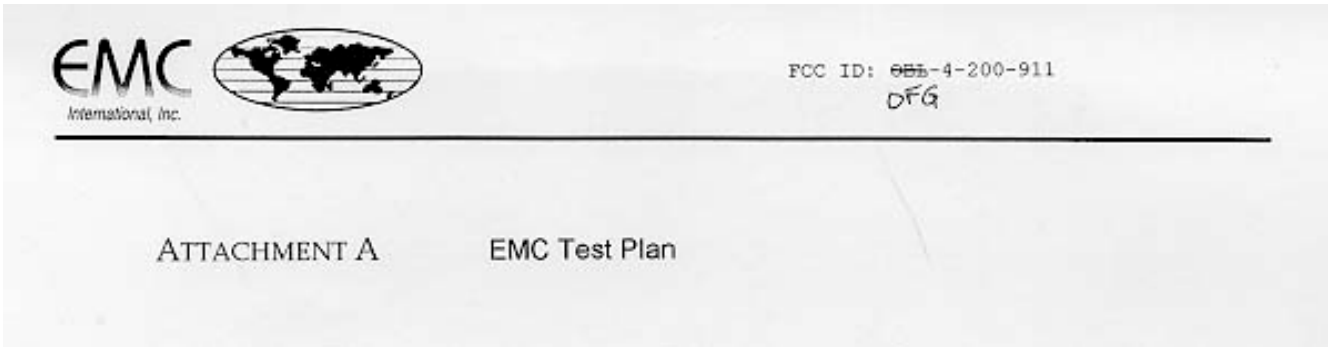
EMC
International, Inc.
FCC ID: ~~OBL~~-4-200-911
DFG
ATTACHMENT A
EMC Test Plan

EMC Test Plan

1.0 Identification of EUT

Trade Name: Prevent Transmitter

Model Number: None

Serial Number: None

Unique ID Number: None

Options Fitted: None

1.2 Description of EUT

Weight _____ Length _____ Height _____ Width _____

Frequency 433.92 Tuning Range Fixed RF Power Output _____

Please provide a general description of the EUT (approx. 2 to 3 paragraphs) that includes: what the EUT is designed to do; Chassis type and construction; Marketed configuration, i.e. does in include a keyboard - cable with integral ferrite bead.

~~See attached next page.~~

SEE ATTACHMENT B

EMC Test Plan

1.3 Classification of the EUT

The EUT is intended for use in the following class of environment:

☐ Class A ☒ Class B ☐ Classes A & B

Class A Limits are derived for typical commercial establishments for which a 30 meter protection distance is used. Class B Limits are derived for typical domestic establishments for which a 10 meter protection distance is used.

1.4 Interface Ports

Please state the applicable details of all the interface ports fitted to the EUT:

Examples of interface ports include: AC Mains Input, AC Mains Output, DC Power Input, DC Power Output, RS 232 Ports, Parallel Printer Port, Ethernet, Token Ring, etc.... Possible restrictions on cable types include: shielded, non-shielded, coax, UTP, STP, ferrite loaded, metal connectors, etc... I/O cables may be terminated, if required, using correct terminating impedance. If I/O cable length is not known, length may not exceed 1 meter. If cables are made in house, verify proper grounding of cable's shield to connector. NOTE: Attaching the drain wire to the connector or ground pin is usually not adequate.

Name or Function of Interface Port	Number of this type on EUT	Interconnect cable length	Maximum data rate if applicable	Description of Cable (length, shield, connector type)
None				

1.5 Oscillator / Microprocessor Frequencies

Frequency (MHz)	Description of Use
433.92	TRANSMIT FREQ.

EMC Test Plan

1.3 Classification of the EUT

The EUT is intended for use in the following class of environment:

☐ Class A ☒ Class B ☐ Classes A & B

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Name or Function of Interface Port	Number of this type on EUT	Interconnect cable length	Maximum data rate if applicable	Description of Cable (length, shield, connector type)
None				

1.5 Oscillator / Microprocessor Frequencies

Frequency (MHz)	Description of Use
433.92	TRANSMIT FREQ.

EMC Test Plan

2.0 Peripherals & Support Equipment for Test Purposes

Please give details of all support equipment which will be used to exercise the EUT during testing. Please state if EMCI needs to provide any of this support equipment.

Most specifications require that the EUT be tested in a "typical" configuration such that the EUT will operate in a manner consistent with it's intended use. In the case of multiple accessory external ports, at least one external accessory, simulator, or cable must be connected to one of each type of port.. Where several configurations are possible, each should be investigated and the worst case tested. If any doubt exists concerning the test configuration for a piece of equipment, please contact EMCI for advice prior to the day of the test. The accessories connected to the EUT must be unmodified, commercially available equipment.

Manufacturer	Trade Name	Model #	Serial #	Description
None				

2.1 Simulator Equipment for Test Purposes

Please provide a general description of simulator equipment:

None

EMC Test Plan

3.0 Test Configuration (Peripherals / Support Equipment / Simulators)

The EUT shall be setup for testing in a "typical" configuration consistent with it's intended use. Please provide a description of the proposed test configuration.
(Note: please see section 4.0 for clarification of equipment setup).

Emissions:

The final test configuration will be selected based on preliminary testing of the EUT in three axis.

Rationale for Test Configuration:

The EUT is a handheld device and may be used in any orientation.

EMC Test Plan

3.1 Proposed Operating Mode(s) for the Test

The EUT shall operate in a manner consistent with it's intended use. Please provide a description of the operating mode(s) used for testing. (eg. software programs, system interaction, frequency, data/scan rate, video resolution, load capacity, RPM, etc...).

Emissions:

The transmitter shall be set to continuously emit a CW signal.

Rationale for Operating Mode(s):

Required by the test standard.

EUT cycle time in the operating mode described: _____ seconds.

EMC Test Plan

4.0 Diagram of Proposed Test Configuration

Please show all relevant details including the position of each piece of support equipment with respect to the EUT. Please make reference on each device and cable with corresponding notation in section 1.4 and 2.0.

Equipment should be clearly marked as either FS (floor standing), RM (rack mount), or TT (table top).

SEE BACK SIDE of DATA RECORDS