



Test Report:

4W27578.2

Applicant:

PARADOX SECURITY SYSTEMS
780 INDUSTRIAL BLVD
ST-EUSTACHE
QUEBEC, CANADA, J7R 5V3

**Equipment Under Test:
(EUT)**

MG-SMK1 (433MHz), Wireless Smoke Detector

FCC ID:

KDYMGSMK1

In Accordance With:

FCC Part 15, Subpart C, 15.231

Tested By:

Nemko Canada Inc.
303 River Road, R.R. 5
Ottawa, Ontario K1V 1H2

A handwritten signature in blue ink, appearing to read 'Glen Westwell'.

Authorized By:

Glen Westwell, Wireless Specialist

Date:

13 October 2004

Total Number of Pages:

16

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EQUIPMENT: MG-SMK1 (433MHz), Wireless Smoke Detector

Section 1. Summary of Test Results

General

All measurements are traceable to national standards.

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, Subpart C. All tests were conducted using measurement procedure ANSI C63.4-1992. Radiated emissions are made on an open area test site. A description of the test facility is on file with the FCC.

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE. NONE
See " Summary of Test Data".



TESTED BY: _____
Chris Maidens, EMC Specialist

DATE: 7 October 2004

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This report applies only to the items tested.

EQUIPMENT: MG-SMK1 (433MHz), Wireless Smoke Detector

Summary Of Test Data

Name of Test	Para. Number	Results
Transmission Requirements	15.231(a)	Complied
Radiated Emissions	15.231(b)	Complied
Occupied Bandwidth	15.231(c)	Complied
Frequency Tolerance	15.231(d)	N/A(1)
Periodic Alternate Field Strength Requirements	15.231(e)	N/A(2)
Powerline Conducted Emissions	15.207	N/A(3)

Justification for N/A's	N/A(1)	The Eut does not transmit in the band 40.66-40.070MHz
	N/A(2)	The requirements of this section are not applicable to this EUT.
	N/A(3)	The EUT is Battery Powered (Single 9V battery)

Test Conditions:

Indoor	Temperature: 20°C
	Humidity: 49%

Section 2. Equipment Under Test

General Equipment Information

Manufacturer:	Paradox Security Systems
Company Number:	2438A
Model No.:	MG-SMK1
Serial No.:	001185
Date Received In Laboratory:	June 4, 2004
Nemko Identification No.:	9
EUT Description:	The EUT is a wireless smoke detector that functions with the Magellan alarm system.
Frequency Range (<i>or fixed frequency</i>):	Fixed, 433.92MHz
Type of Modulation:	ASK, 100% or OOK
Emission Designator (TRC-43:)	71K8L1D

Section 3. Transmission Requirements

Para. No.: 15.231(a)

Test Performed By: Chris Maidens

Date of Test: Sept. 23, 2004

Minimum Standard: 15.231(a) Continuous transmissions such as voice, video or data transmissions are not permitted.

15.231(a)(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds after being released.

15.231(a)(2) A transmitter activated automatically shall cease transmission within 5 seconds of activation.

15.231(a)(3) Periodic transmissions at regular pre-determined intervals are not permitted. However polling or supervisory transmissions to determine system integrity of transmitters used in security or safety applications are allowed if the periodic rate of transmission does not exceed one transmission of not more than one second duration per hour for each transmitter.

15.231(a)(4) Intentional radiators which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm.

Test Results: Complies

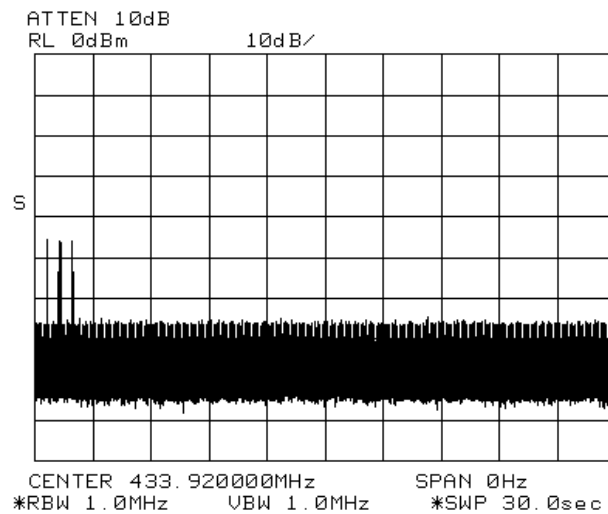
Test Data: Compliance was determined by verification of technical specifications and a functional test on the equipment.

EQUIPMENT: MG-SMK1 (433MHz), Wireless Smoke Detector

Rationale for Compliance with Transmission Requirements

15.231(a)(1) : N/A- The EUT does not continuously transmit voice, video or data, nor is it intended for manually activated transmissions

15.231(a)(2) : Complies- The EUT stops transmitting in less than 3 seconds (plot shows 3s/div)



15.231(a)(3) : N/A- The EUT employs no periodic polling or supervisory transmissions.

15.231(a)(4) : Complies- The EUT only transmits during an alarm state.

EQUIPMENT: MG-SMK1 (433MHz), Wireless Smoke Detector

Section 4. Radiated Emissions**Para. No.: 15.231(b)****Test Performed By: Chris Maidens****Date of Test: Sept. 23, 2004****Minimum Standard:**

Fundamental Frequency (MHz)	Field Strength of Fundamental ($\mu\text{V/m}$ @ 3m)	Field Strength of Spurious Emissions ($\mu\text{V/m}$ @ 3m)
40.66 - 40.70	2,250	225
70-130	1, 250	125
130-174	1,250 to 3,750*	125 to 375
174-260 (note 1)	3,750	375
260-470 (note 1)	3,750 to 12,500*	375 to 1,250
Above 470	12,500	1,250

Restricted Band Limits		
Frequency (MHz)	Field Strength ($\mu\text{V/m}$ @ 3m)	Field Strength (dB $\mu\text{V/m}$ @ 3m)
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above 960	500	54.0

Test Results: Complies.**Test Data:** See attached tabulated data.

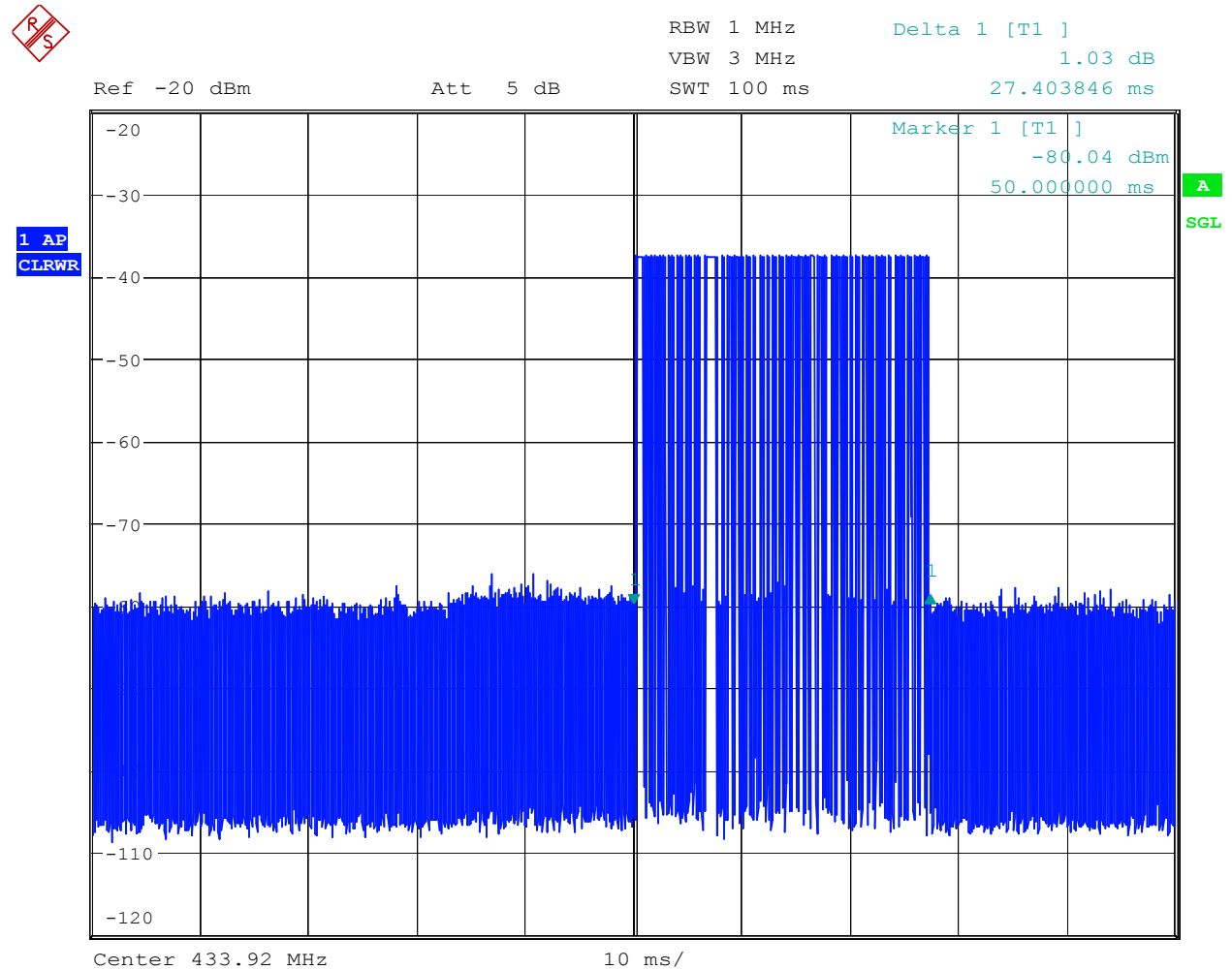
EQUIPMENT: MG-SMK1 (433MHz), Wireless Smoke Detector

Radiated Disturbance Test Data:

Test Date: September 23, 2004											
Engineer's Name: Chris Maidens											
Temperature (C°): 24							Humidity %: 54				
Tested as per Table Top											
Test Distance (meters): 3							Range: 1				
Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBµV)	Ant. Factor (dB)	Amp. Gain (dB)	Duty Cycle Corr. (-dB)	Cable Loss (dB)	Field Strength (dBµV/m)	Limit (dBµV/ m)	Margin (dB)	Amp.
433.9200	LP1	V	52.7	16.1	0	-11.2	2.7	60.3	80.8	20.5	None
433.9200	LP1	H	46.9	16.8	0	-11.2	2.7	55.2	80.8	25.6	None
867.8400	LP1	V	31.4	22.1	0	-11.2	3.9	46.2	60.8	14.6	None
867.8400	LP1	H	27.6	23.1	0	-11.2	3.9	43.4	60.8	17.4	None
1301.7600	Horn1	V	44.8	26.4	46.5	-11.2	3.3	16.7	54.0	37.3	1-2GHz
1301.7600	Horn1	H	49.9	26.3	46.5	-11.2	3.3	21.8	54.0	32.2	1-2GHz
1735.6800	Horn1	V	60.3	28.2	46.6	-11.2	3.9	34.5	60.8	26.3	1-2GHz
1735.6800	Horn1	H	57.0	28.0	46.6	-11.2	3.9	31.0	60.8	29.8	1-2GHz
2169.6000	Horn1	V	66.2	29.1	55.3	-11.2	4.7	33.4	60.8	27.4	2-4GHz
2169.6000	Horn1	H	65.2	29.1	55.3	-11.2	4.7	32.4	60.8	28.4	2-4GHz
2603.5200	Horn1	V	66.5	30.2	56.5	-11.2	8.0	37.0	60.8	23.8	2-4GHz
2603.5200	Horn1	H	66.0	30.2	56.5	-11.2	8.0	36.5	60.8	24.3	2-4GHz
3037.4400	Horn1	V	65.4	31.2	56.1	-11.2	6.1	35.3	60.8	25.5	2-4GHz
3037.4400	Horn1	H	62.5	31.4	56.1	-11.2	6.1	32.6	60.8	28.2	2-4GHz
3471.3600	Horn1	V	64.4	31.3	55.1	-11.2	7.2	36.6	60.8	24.2	2-4GHz
3471.3600	Horn1	H	61.5	31.5	55.1	-11.2	7.2	33.9	60.8	26.9	2-4GHz
3905.2800	Horn1	V	63.5	32.8	54.6	-11.2	7.6	38.1	54.0	15.9	2-4GHz
3905.2800	Horn1	H	61.7	32.8	54.6	-11.2	7.6	36.3	54.0	17.7	2-4GHz
4339.2000	Horn1	V	60.2	32.8	52.5	-11.2	8.3	37.6	54.0	16.4	4-8GHz
4339.2000	Horn1	H	58.9	32.8	52.5	-11.2	8.3	36.3	54.0	17.7	4-8GHz
Notes:		1) Emissions were searched to the 10 th harmonic of the fundamental (433.92 to 4339.2MHz) 2) The EUT was tested with a fresh battery. 3) The EUT was pre-evaluated in 3 orthogonal axes, the worst case was reported 4) Receiver bandwidth of 100kHz was used below 1GHz, & 1MHz bandwidth was used on emissions above 1GHz.									

EQUIPMENT: MG-SMK1 (433MHz), Wireless Smoke Detector

Duty Cycle Plots



Duty Cycle Calculation:

$$20\log(27.4/100)$$

$$=-11.2\text{dB}$$

EQUIPMENT: MG-SMK1 (433MHz), Wireless Smoke Detector

OATS Set up Photo



EQUIPMENT: MG-SMK1 (433MHz), Wireless Smoke Detector

Section 5. Occupied Bandwidth

Para. No.: 15.231(c)

Test Performed By: Chris Maidens

Date of Test: Sept. 17, 2004

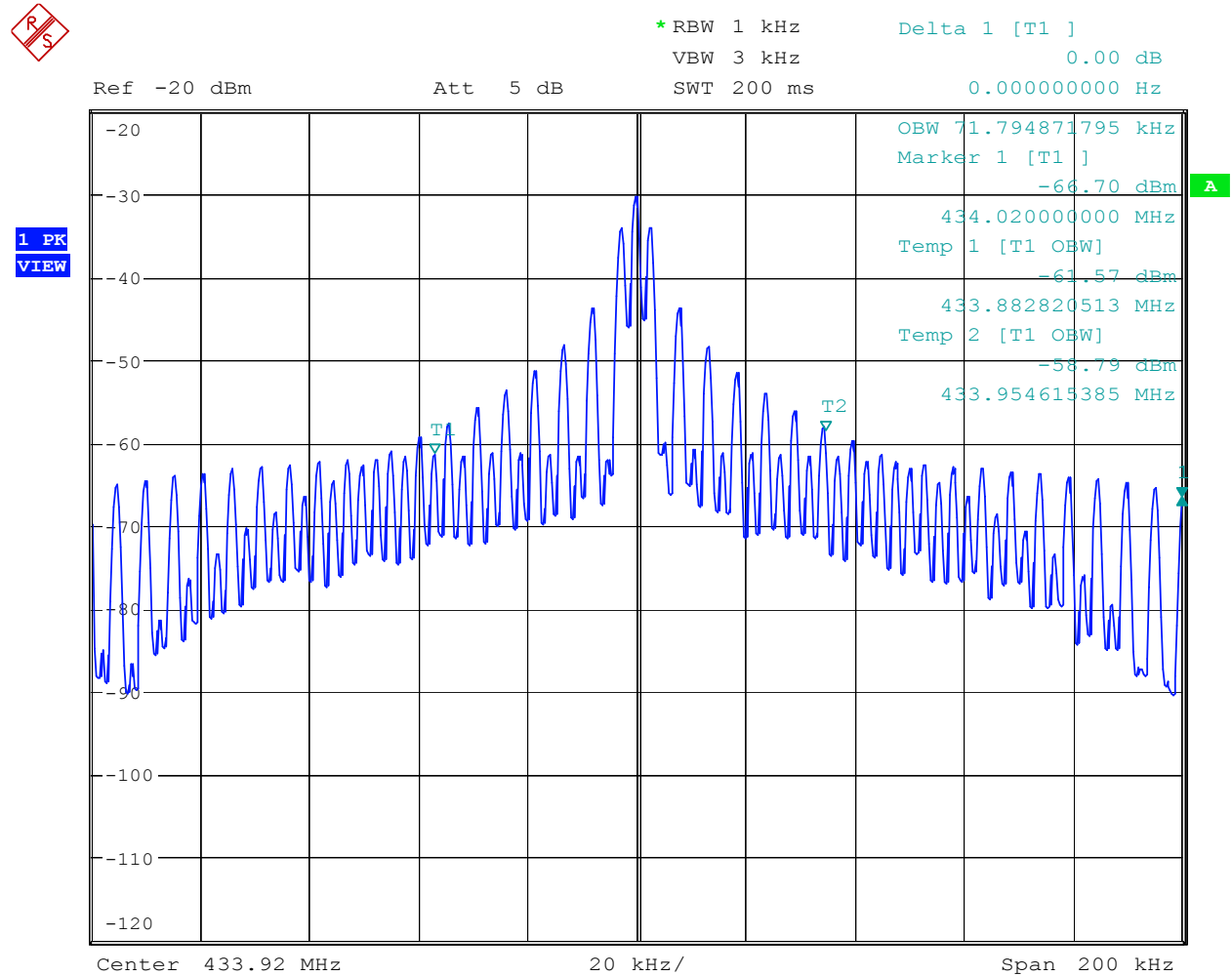
Minimum Standard: 15.231(c) The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

Test Results: Complies

Test Data: See attached graph.

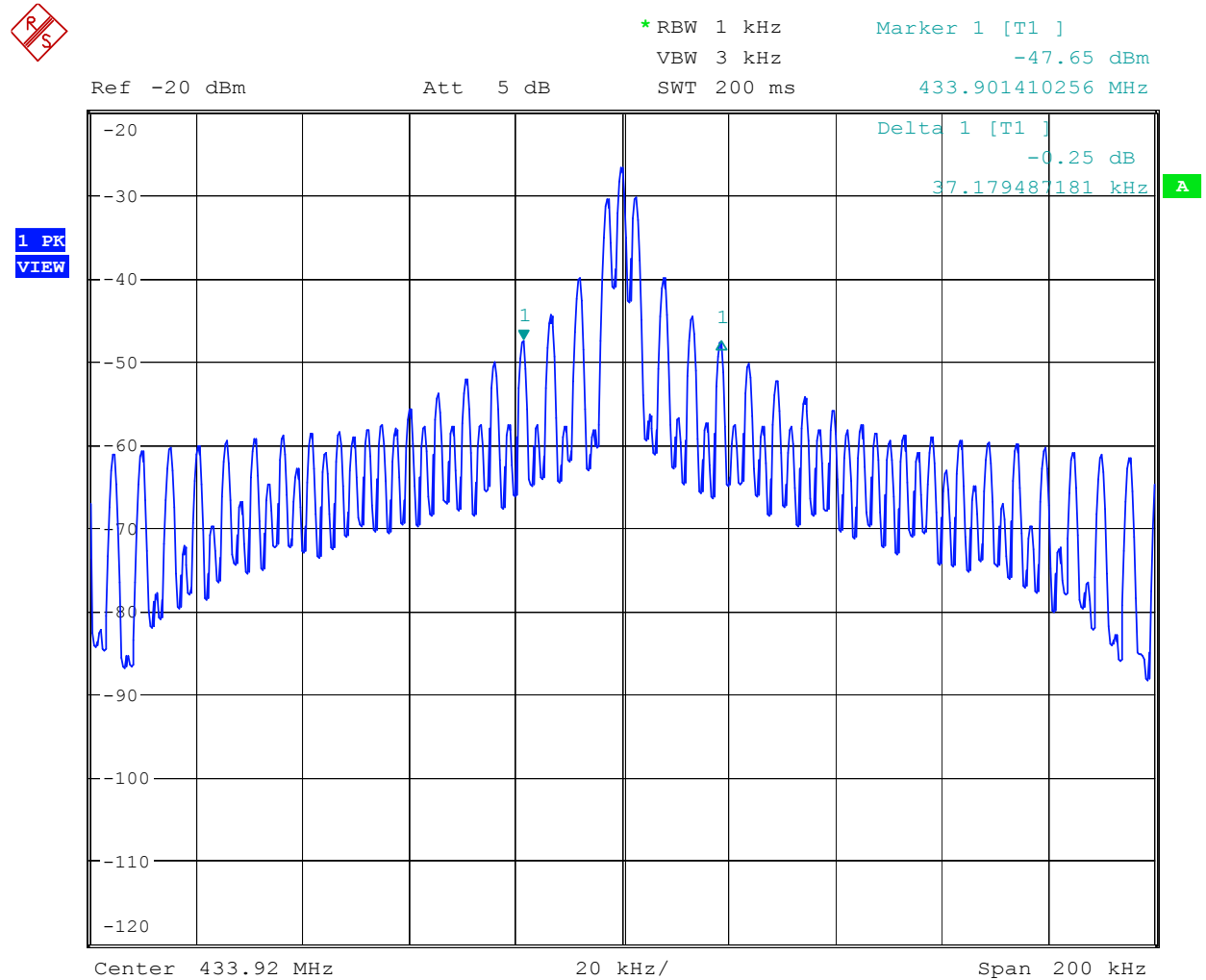
EQUIPMENT: MG-SMK1 (433MHz), Wireless Smoke Detector

99% Occupied BW:



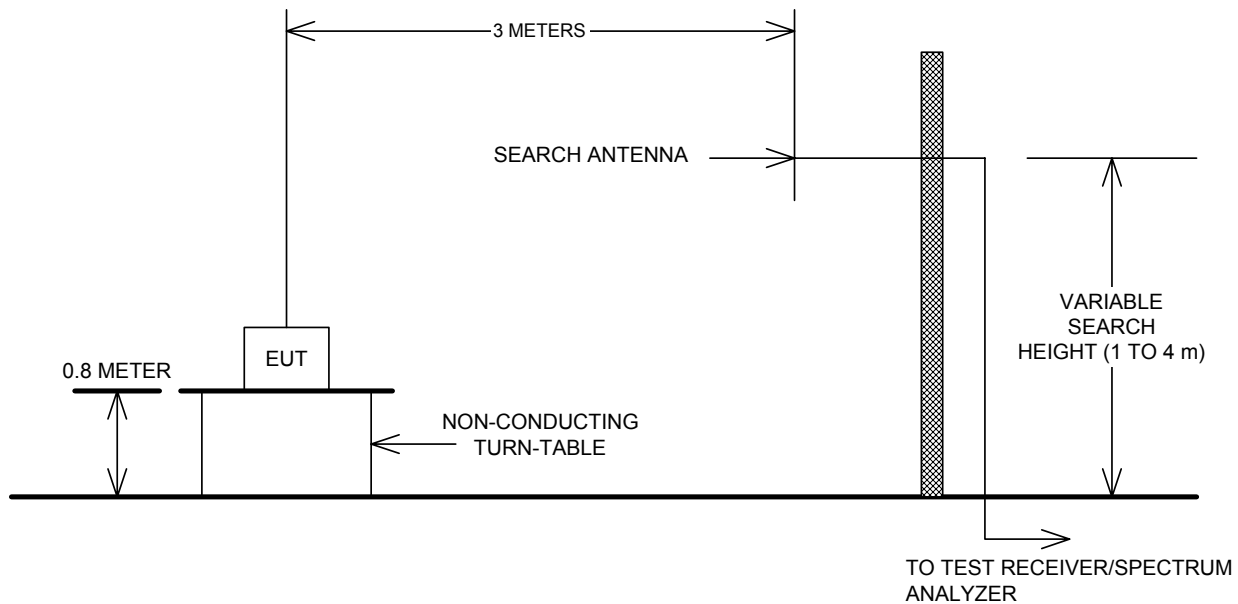
EQUIPMENT: MG-SMK1 (433MHz), Wireless Smoke Detector

20dB Bandwidth:



Section 6. Block Diagrams

Outdoor Test Site For Radiated Emissions



The spectrum was searched up to the 10th harmonic of the fundamental frequency of operation.

EQUIPMENT: MG-SMK1 (433MHz), Wireless Smoke Detector

Section 7. Test Equipment List

Equipment List - Radiated Emissions

CAL Cycle	Equipment	Manufacturer	Model No.	Asset/Serial No.	Last Cal.	Next Cal.
1 Year	Spectrum Analyzer	Hewlett-Packard	8564E	FA001367	June 28/04	June 28/05
1 Year	Horn Antenna #1	EMCO	3115	FA000649	Dec. 18/03	Dec. 18/04
1 Year	Dipole Antenna Set	EMCO #1	3121C	FA000814	April 21/04	April 21/05
1 Year	Log Periodic Antenna #2	EMCO	3148	FA001355	May 05/04	May 05/05
1 Year	1.0 – 2.0 GHz Amplifier	JCA	12-400	FA001498	June 18/04	June 18/05
1 Year	2.0 – 4.0 GHz Amplifier	JCA	24-600	FA001496	June 18/04	June 18/05
1 Year	4.0 – 8.0 GHz Amplifier	JCA	48-600	FA001497	June 18/04	June 18/05

Note: N/A = Not Applicable, NCR = No Cal Required, COU = CAL On Use, OUT = Out For CAL/Repair